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WILLOW ROCK ENERGY STORAGE CENTER

Final Staff Assessment

CALIFORNIA
ENERGY COMMISSION
Gavin Newsom,
Governor

July 2025
CEC-700-2025-003-FSA

DOCKET NUMBER 21-AFC-02

FINAL STAFF ASSESSMENT

Willow Rock Energy Storage Center

(21-AFC-02)

Lead Agency

California Energy Commission

July 2025

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Section 1

Executive Summary

1 Executive Summary

Introduction

On December 1, 2021, GEM A-CAES LLC (GEM, or the applicant) filed an Application for Certification (AFC) with the California Energy Commission (CEC) seeking to construct and operate the Gem Energy Storage Center (21-AFC-02) (TN 240751-1). On June 8, 2022, the CEC determined that the project is exempt from the Notice of Intention process under Public Resources Code section 25540.6(a)(3) and issued an order directing Staff to process the application as an AFC (TN 243543). On July 13, 2022, the CEC adopted the Executive Director's recommendation determining that the AFC was complete, initiating the 12-month timeline for the CEC to reach a final decision on the AFC pursuant to Public Resources Code section 25540.6 (TN 244093). On August 5, 2022, the applicant changed the name of the project to the Willow Rock Energy Storage Center (Willow Rock, or WRESC) (TN 244331). On June 21, 2023, the applicant's Status Report No. 10 stated that efforts to optimize the proposed WRESC were ongoing, including consideration of alternative surface facility configurations, cavern engineering options given the site geotechnical results, and alternate sites that may better support the cavern design. Alternative sites included adjacent and offsite properties in the area with potentially more favorable geologic conditions (TN 250707).

On July 12, 2023, CEC staff filed a motion requesting that the CEC Siting Committee for Willow Rock (Committee) grant an order suspending the AFC proceeding for Willow Rock and requested that the applicant be directed to submit a supplemental AFC that contains all necessary information for the updated project (TN 251029).

On August 9, 2023, the Committee issued an order (TN 251599) suspending the Willow Rock proceeding "while applicant completes its exploration of alternative sites, offsite properties, surface facility configurations and cavern engineering options." This order suspended the proceeding until the applicant filed a certified, complete supplemental AFC that reflected changes to the project description and all project modifications as well as satisfied the information requirements for an AFC as detailed in Appendix B to Article 6 of title 20 in the California Code of Regulations. The applicant was required to include in its supplemental AFC an attestation confirming completeness of the supplemental AFC. Last, the order required that, within 30 days of receipt of all required elements of the application, the CEC's Executive Director verify completeness of the supplemental AFC or docket staff's report indicating the deficiencies in the filing.

On March 1, 2024, the applicant filed a Supplemental AFC, changing the project location to 88.6 acres of private land immediately north of Dawn Road and between State Route (SR) 14 and Sierra Highway within unincorporated Kern County, California, approximately four miles north of Rosamond, California (TN 254774).

On April 23, 2024, CEC staff completed its data adequacy review of the Willow Rock Supplemental AFC and determined that it did not meet all the requirements listed in California Code of Regulations, title 20, section 1704, Appendix B, for the 12-month certification process (TN 255890). Staff provided a summary table and data worksheets for deficient areas, requesting information that staff deemed necessary to fulfill the AFC information requirements.

On July 16, 2024, CEC staff determined that topic areas identified as deficient were complete and the Executive Director recommended that the Committee accept the Supplemental AFC as complete (TN 257763).

On March 13, 2025, CEC filed a Partial Preliminary Staff Assessment, with a limited subset of sections establishing partial environmental analysis and engineering evaluation supporting CEC staff's conclusions and proposed conditions of certification (COCs), including: Facility Reliability, Transmission System Engineering, Efficiency and Energy Resources, Noise and Vibration, and Transmission Line Safety and Nuisance (TN 262184).

On April 29, 2024, CEC filed a complete Preliminary Staff Assessment, replacing the Partial Preliminary Staff Assessment (TN 262850).

The WRESC would be a nominal 520-megawatt (MW) gross (500 MW net) and 4,160 megawatt-hour (MWh) gross (4,000 MWh net) facility using Hydrostor, Inc.'s (Hydrostor's) proprietary, advanced compressed air energy storage (A-CAES) technology. The overall facility would consist of four nominal 130 MW gross power turbine trains, outputting a total of 500 MW net at the point of interconnection. The trains would contain electric motor-driven air compressors, heat exchangers, air turbine generators, air exhaust stacks, and ancillary equipment. The trains would share a common set of thermal storage tanks (hot and cold water), as well as the air storage cavern. Energy stored at the WRESC would be delivered to Southern California Edison's (SCE's) Whirlwind Substation located southwest of the WRESC at the intersection of 170th Street W and Rosamond Boulevard, via a new approximately 19-mile 230-kilovolt (kV) generation-tie (gen-tie) line. The WRESC would be capable of operating on a 24-hour basis, 365 days a year with an approximately 50-year lifespan.

As a long-duration energy storage asset, the WRESC would be able to provide power during periods of increased need on the grid such as times of high electrical load, periods when intermittent renewable source generation fluctuates, when baseload plants are not operating or are being brought online, or during grid emergency conditions or local reliability needs. To maximize efficiency, the facility is expected to charge during times of low demand on the grid such as times of low electrical load and during periods when renewable source generation is higher than the instantaneous system demand, thus affording the ability to store excess renewable generation that might otherwise be lost.

1.1 Proposed Project Location

The project as presently proposed would be on undeveloped land in an area zoned Exclusive Agriculture (A) District. The area surrounding the project boundary is largely undeveloped with very sparse residential development; the nearest residence is approximately 0.8 mile northwest of the northwest corner of the WRESC site.

1.2 Summary of Engineering Evaluation, Environmental Impact Assessment, and LORS Conformance

Below is an overview of the analysis included in **Section 5, Environmental Impact Assessment**. Impacts are categorized by the type of impact as follows:

- No Impact. The scenario in which no adverse changes to (or impacts on) the environment would be expected.
- Less Than Significant Impact. An impact that would not exceed the defined significance criteria or would be eliminated or reduced to a less than significant level through implementation of the applicant's project measures and/or compliance with existing federal, state, and local laws and regulations.
- Less Than Significant with Mitigation Incorporated. An impact that would be reduced to a less than significant level through implementation of the identified mitigation requirements.
- Significant and Unavoidable Impact. An adverse effect that meets the significance criteria, but there appears to be no feasible mitigation available that would reduce the impact to a less than significant level. In some cases, mitigation may be available to lessen a given impact, but the residual effects of that impact would continue to be significant even after implementation of the mitigation measure(s).

Table 1-1 summarizes the engineering evaluation and environmental impacts and consequences of the project, including mitigation proposed and the project's compliance with laws, ordinances, regulations, and standards (LORS).

TABLE 1-1 SUMMARY OF ENGINEERING EVALUATION AND ENVIRONMENTAL IMPACTS AND LORS COMPLIANCE

Technical Area	Conforms with LORS?	Impacts Mitigated?
Engineering Design		
Facility Design	Yes	N/A
Facility Reliability	N/A	N/A
Transmission System Engineering	Yes	Yes
Worker Safety and Fire Protection	Yes	Yes
Environmental Impact Assessment		
Air Quality	Yes	Yes
Biological Resources	Yes	Yes
Climate Change and Greenhouse Gas Emissions	Yes	Yes
Cultural and Tribal Cultural Resources	Yes	Yes

TABLE 1-1 SUMMARY OF ENGINEERING EVALUATION AND ENVIRONMENTAL IMPACTS AND LORS COMPLIANCE

Technical Area	Conforms with LORS?	Impacts Mitigated?
Efficiency and Energy Resources	Yes	Yes
Geology, Paleontology and Minerals	Yes	Yes
Hazards, Hazardous Materials, and Wildfire	Yes	Yes
Land Use, Agriculture, and Forestry	Yes	Yes
Noise and Vibration	Yes	Yes
Public Health	Yes	Yes
Socioeconomics	Yes	Yes
Solid Waste Management	Yes	Yes
Transmission Line Safety and Nuisance	Yes	Yes
Transportation	Yes	Yes
Visual Resources	Yes	No
Water Resources	Yes	Yes
Public Benefits	N/A	N/A
Environmental Justice	Yes	N/A

Note: N/A = not applicable (technical area not subject to CEQA consideration or has no applicable LORS the project must conform with)

1.2.1 Engineering Evaluation and LORS Conformance

Facility Design. Staff concludes that the design and construction of the project, including the underground storage cavern, surface reservoir, power block, cooling systems, and linear facilities, would comply with the applicable LORS. In addition, staff proposed conditions of certification (COCs) include measures to ensure conformance with applicable LORS.

Facility Reliability. WRESC would be built to operate in a manner consistent with industry norms for reliable operation and would be expected to demonstrate an equivalent availability factor of 95 percent, which is an acceptable level of availability. The proposed project would perform reliably and would not adversely affect project reliability.

Transmission System Engineering. The Transmission System Engineering COCs include measures to ensure project conformance with applicable LORS and that the WRESC is reliably and safely interconnected to the SCE transmission grid. Therefore, the project would be reliably and safely interconnected to the transmission grid, thereby reducing impacts to less than significant.

Worker Safety and Fire Protection. *Less Than Significant with Mitigation Incorporated.* The WRSEC project includes both surface construction and operations and below surface cavern excavation. The greatest hazard to workers would be the excavation of the underground cavern because it would be by conventional mining methods including drilling and controlled detonation. Subsurface controlled detonations would be a particular dangerous operation for workers during construction if not

handled properly and subsurface fires are also dangerous. A detailed controlled detonations plan and subsurface fire protection plan would be required and implemented. Surface facilities that pose the greatest risk to workers would be the stored energy in pressure vessels and pipes. Both a construction safety and health program and an operations and safety and health program, containing numerous safety measures and fire protection plans and infrastructure, would be required to be developed and implemented. Staff found that the need for rescue from the subsurface cavern during construction is evident and that the Kern County Rescue Unit located in Bakersfield would be inadequate to provide timely rescue. Staff therefore finds a direct impact exists on the Kern County Fire Department and has proposed mitigation.

1.2.2 Environmental Impact Assessment and LORS Conformance

Except for Visual Resources, CEC staff concludes that with the implementation of the COCs potentially significant impacts would be avoided or reduced to less than significant levels. In Visual Resources, staff finds that the project creates significant unavoidable impacts to the visual character from certain observation points. In addition, staff concludes the project would conform with all applicable LORS. The following summarizes staff's conclusions.

Air Quality. *Less Than Significant with Mitigation Incorporated.* With the implementation of COCs, the project would have a less than significant impact on air quality and conform to applicable LORS. Staff's proposed COCs are effective and comprehensive for reducing air quality impacts during construction. The COCs related to the operations of the project are required for the emergency generators and diesel fire water pump to comply with the Eastern Kern Air Pollution Control District requirements.

Biological Resources. *Less Than Significant with Mitigation Incorporated.* The project would have a less than significant impact to biological resources with the implementation of COCs and would conform with applicable LORS. The project would conform to relevant Kern County regulations protecting biological resources and would be in compliance with CESA and ESA requirements.

Climate Change and Greenhouse Gas Emissions. *Less Than Significant Impact.* The project would have a less than significant impact related to greenhouse gas emissions and would conform with applicable LORS adopted for the purpose of reducing the emissions of greenhouse gases (GHGs). In addition, the project would lead to a net reduction in GHG emissions across the State's electricity system.

Cultural and Tribal Cultural Resources. *Less Than Significant with Mitigation Incorporated*. Staff's analysis identified five archaeological resources eligible for the California Register of Historical Resources (CRHR) with another 11 assumed eligible for this project and therefore treated as historical resources. Additionally, staff finds that the proposed project has a moderate to high sensitivity for the presence of buried Native American and historic archaeological resources. Staff's analysis further determined that ground disturbances associated with construction of the proposed

WRESC could damage human remains that meet CEQA's criteria for historical, unique archaeological, or tribal cultural resources. The adoption and implementation of staff's proposed conditions of certification, including avoidance and a rigorous construction monitoring program, are proposed to prevent significant impacts to archaeological resources. If avoidance is not possible, data recovery prior to construction will be necessary to reduce impacts to those resources.

CEC staff agrees with the applicant's recommendation that six historic built environment resources in the project area of analysis are eligible for the CRHR and should be considered historical resources under CEQA. One of those resources, the Tropico Gold Mine Historic District, would experience significant impacts and require mitigation. Impacts to the Tropico Gold Mine Historic District would primarily affect the resource's integrity of setting and feeling. Staff proposes conditions of certification to reduce impacts on built environment historical resources to a less than significant level.

Staff concludes that with implementation of staff recommended COCs, the project would comply with applicable LORS and result in less than significant impacts on Cultural and Tribal Cultural Resources.

Efficiency and Energy Resources. *Less Than Significant Impact.* Energy consumed by WRESC would not create significant adverse effects on energy supplies or resources, nor would it consume energy in a wasteful or inefficient manner. Furthermore, through energy-efficient design, storage and renewable electricity generation, the project would neither conflict with nor obstruct state or local plans for renewable energy or energy efficiency and, therefore, would have no impact on those plans.

Geology, Paleontology, and Minerals. *Less Than Significant with Mitigation Incorporated.* The proposed project would be constructed and operated in a seismically active geologic environment. Several potential geologic hazards could impact construction and operation of the WRESC, architectural berm, and temporary laydown sites, including strong seismic ground shaking, seismically induced ground failure, unstable geologic units and soils, and soil erosion. In addition to the above hazards, the preferred gen-tie line is susceptible to landslides in two locations. Construction of underground openings, the A-CAES cavern and vertical shafts, creates a collapse hazard for the overlying areas, including the WRESC, architectural berm, and temporary laydown sites. Impacts from potential geologic hazards associated with surface fault rupture, soil settlement, expansive soils, and subsidence are expected to be less than significant.

Implementation of proposed COCs would ensure that construction of the WRESC, including related components such as the architectural berm and gen-tie line would reduce potential impacts from geologic hazards on the project, including human life, property, and grid reliability to less than significant.

There is a potential for fossils to be encountered during grading, excavation, and construction. Staff concludes that implementation of proposed COCs would protect and preserve any significant paleontological resources that might be uncovered. No unique geologic features or resources of commercial, scientific, or recreational value, including mineral resources, were identified in the project area.

Hazards, Hazardous Materials/Waste, and Wildfire. *Less Than Significant with Mitigation Incorporated.* The WRESC project would involve limited transport, storage, use, and disposal of hazardous materials and hazardous wastes during construction, operation and maintenance, and decommissioning activities. The amounts of hazardous materials used and hazardous waste produced during construction, operations, and decommissioning are far less than those found at other types of energy production projects, thus reducing the risks posed by hazardous materials and wastes on workers and the public. As an example, no chemicals that would require either adherence to the California Accidental Release Prevention Program (CalARP Program) or the CAL OSHA Process Safety Management Program would be used on this site. However, controlled detonations would be conducted to excavate the subsurface cavern and the numerous laws, ordinances, regulations, and standards (LORS) that regulate explosives used for controlled detonations would mitigate impacts to less than significant. While wildfire risk may be slightly elevated during construction and operation of the WRESC like the construction of any project, the project would address these risks by complying with all applicable LORS and implementing best management practices and engineering controls described by the applicant. Proper planning and mitigation measures would avoid and minimize potential for accidental wildfire ignition, particularly during construction of the transmission generation-tie (gen-tie) line. Additionally, the project would conduct an emergency response planning session to address public concerns regarding wildfire risk. Therefore, the risk of wildland fires is less than significant at the project site or along the gen-tie line.

Land Use, Agriculture, and Forestry. *Less Than Significant Impact.* The project would not divide a community, impact Important Farmland, impact any land under a Williamson Act contract, or impact forest land or timberland. The project would have less than significant impacts resulting from conflicts with land use plans, policies, or regulations adopted for the purpose of avoiding or mitigating an environmental effect, and less than significant impacts resulting from conflicts with agricultural zoning. The project is in the Exclusive Agriculture zoning district, which would require a Conditional Use Permit if the project was under the jurisdiction of Kern County. The project meets Kern County's required findings for issuance of a Conditional Use Permit. Implementation of staff's recommended COCs would ensure the project's compliance with applicable LORS.

Noise and Vibration. *Less Than Significant with Mitigation Incorporated.* Despite the generation of noise louder than ambient levels, such as controlled detonations, with implementation of staff's recommended COCs, the project would have a less than

significant impact related to noise and vibration and would conform with applicable LORS.

Public Health. *Less Than Significant with Mitigation Incorporated.* With the implementation of COCs, the project would have a less than significant impact on public health and conform to applicable LORS. Staff's proposed COCs would be effective and comprehensive for reducing public health impacts of exposure to potential Valley Fever during construction. No COCs related to the operations of the project is needed since its public health impacts are less than significant.

Socioeconomics. *Less Than Significant Impact.* With implementation of staff's recommended COCs, the project would comply with applicable LORS and have less than significant impact related to socioeconomics. Project construction and operation impacts on population and housing, public services, and recreation would be less than significant.

Solid Waste Management. *Less Than Significant Impact*. Solid waste generated during project construction and operation would be recycled if possible and otherwise disposed at certified local landfills with available capacity. In conclusion, wastes generated by the proposed project, including those sent to landfills, as well as materials handled by third party waste disposal resulting from construction and operation of the WRESC would have a less than significant impact.

Transmission Line Safety and Nuisance. *Less Than Significant with Mitigation Incorporated.* With implementation of staff's recommended COCs, potential hazards and impacts to receptors associated with transmission lines and related structures and facilities for the project would have a less than significant impact related to Transmission Line Safety and Nuisance and would conform with applicable LORS.

Transportation. *Less Than Significant with Mitigation Incorporated.* During construction, the project could degrade the level of service (LOS) at the State Route (SR) 14 southbound ramps and Dawn Road intersection during the afternoon peak hour. Additionally, during both construction and operation, the project could substantially increase hazards to vehicles, bicyclists, and pedestrians on the surrounding roadway network, including SR 14, due to the use of oversize or overweight vehicles transporting hazardous substances. However, with implementation of staff's recommended COCs, impacts to LOS and roadway safety would be reduced to less than significant levels. The COCs would ensure compliance with local and state design standards for access and roadway improvements, and the applicant would be required to obtain all necessary permits for the safe transport of materials to the project site.

Visual Resources. *Significant and Unavoidable Effect on the Environment.* Staff conducted an evaluation of the physical change to the existing physical environment by the proposed project that concluded it would degrade the existing visual character or quality of the public view of the site and its surroundings as seen from key observation

points 2, 3, and 4. See subsection 1.4 below for a discussion on evaluation of overriding considerations under CEQA and California Code of Regulations, title 20, section 1748(b)(8). Regarding new light and glare by the project, given the existing physical environment, with implementation of staff's recommended COCs, the project would comply with applicable LORS and have a less than significant impact.

Water Resources. *Less Than Significant Impact with Mitigation Incorporated*. Potential adverse impacts resulting from stormwater runoff, wastewater management practices, and to the water supply would be mitigated to less than significant with implementation of CEC staff's proposed COCs and via adherence to applicable LORS. Due to the height and holding capacity, the outer berm of the hydrostatic compensating reservoir meets the definition of a jurisdictional dam per California Water Code Sections 6002 and 6003. The construction and operation of the hydrostatic compensating reservoir berm is subject to design approval of the Department of Water Resources, Division of Safety of *Dams (DSOD).*

1.3 Cumulative Projects

Preparation of a cumulative impact analysis is required under CEQA. In the CEQA Guidelines, "a cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the EIR together with other projects causing related impacts" (Cal. Code Regs., tit. 14, § 15130(a)(1)). Cumulative impacts must be addressed if the incremental effect of a project, combined with the effects of other projects, is "cumulatively considerable" (Cal. Code Regs., tit. 14, § 15130(a)). Such incremental effects are to be "viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects" (Cal. Code Regs., tit. 14, § 15064(h)(1)). Together, these projects comprise the cumulative scenario which forms the basis of the cumulative impact analysis.

The discussion of cumulative impacts must reflect the severity of impacts, as well as the likelihood of their occurrence, yet "the discussion need not provide as great detail as is provided for the effects attributable to the project alone. The discussion of cumulative impacts shall be guided by standards of practicality and reasonableness, and shall focus on the cumulative impact to which the identified other projects contribute rather than the attributes of other projects which do not contribute to the cumulative impact" (Cal. Code Regs., tit. 14, § 15130(b)).

Definition of the Cumulative Project Scenario

The cumulative impacts analysis is intended to identify past, present, and probable future projects that are closely related either in time or location to the project being considered and consider how they have harmed or may harm the environment. Most of the projects on the master cumulative project list below (**Table 1-2**) are required to undergo their own independent environmental reviews under CEQA. Staff developed the master cumulative project list by contacting planning staff with Kern County. Staff also reviewed proposed project information from other agencies, including Imperial

County Planning Department, Bureau of Land Management, and the CEQANet database to develop a list of past, present, and reasonably foreseeable projects.

Under CEQA, there are two commonly used methodologies for establishing the cumulative impact setting or scenario: the "list approach" and the "projections approach." The first approach would use a "list of past, present, and probable future projects producing related or cumulative impacts." (Cal. Code Regs., tit. 14, § 15130(b)(1)(A)). The second approach would use a "summary of projections contained in an adopted local, regional or statewide plan, or related planning document, that describes or evaluates conditions contributing to the cumulative effect" (Cal. Code Regs., tit. 14, § 15130(b)(1)(B)). This PSA uses the "list approach" for purposes of state law to provide a tangible understanding and context for analyzing the potential cumulative effects of the proposed project. All projects used in the cumulative impacts analyses are listed in the master cumulative project list table (**Table 1-2**), and locations are shown on **Figure 1-1**.

Approach to Cumulative Impact Analysis

This PSA evaluates cumulative impacts within the analysis of each resource area, following three steps:

- Define the geographic scope of cumulative impact analysis for each discipline, based on the potential area within which impacts of the proposed project could combine with those of other projects.
- Evaluate the effects of the project in combination with past and present (existing) projects within the area of geographic effect defined for each discipline.
- Evaluate the effects of the proposed project with foreseeable future projects that occur within the area of geographic effect defined for each discipline.

TABLE 1-2 MASTER CUMULATIVE PROJECT LIST

Figure 1-1 Location Point #	Project Title	Description	Location	Distance to Proposed Project (Miles)	Status
1	Edwards Air Force Base Solar Project	Photovoltaic (PV) solar project on 4,000-acre Edwards Air Force Base (AFB) property and generation tie (gen-tie) line approximately 16 miles in length. Greater than 100 megawatts (MW) but not more than 750 MW, with the generated energy distributed to investor owned utilities, municipalities, other energy off-takers and/or Edwards AFB	Located on Edwards AFB, approximately six miles northeast of the community of Rosamond and 6 miles south of Mojave	2.5 miles northeast of the project site	Construction completed 2023
2	Investment Concepts Inc	Conditional Use Permit (CUP) 118 multi-unit apartment complex	County Assessor's Parcel Numbers (APN) 471-112-06	2.8 miles south of the project site	Applied
3	Dewalt Corp for Rosamond 5 properties	Construct 89-unit multifamily project	APN 473-022-23	4.1 miles south of the project site	Approved
3	Dewalt Corp	Precise development of 87 duplex structures (174 units)	APN 473-022-23	4.1 miles south of the project site	Approved
4	Investment Concepts Inc	CUP for apartment complex	APN 252-161-49	3.9 miles northwest of the project site	Approved
4	Kern County Planning Dept	Kern County Housing Element Implementation 2022, zone change to R-3 Site No.6	APN 252-161-49	3.9 miles northwest of the project site	Approved
5	Westpark LLC, Howard Field	Proposed hotel development	APN 471-022-07	1.8 miles south of the project site	Applied
6	Halterty development	Develop plan for mixed commercial, retail development	APNs 251-181-145, 251-181-152	3.0 miles south of the project site	Approved
7	BHT Developers, LLC	Auto Auction Facility	APNs 473-023-042, 473-023-059, 473-023-067, 473-023-061	4.1 miles south of the project site	Applied

TABLE 1-2 MASTER CUMULATIVE PROJECT LIST

Figure 1-1 Location Point #	Project Title	Description	Location	Distance to Proposed Project (Miles)	Status
8	Golden Queen Mining Company, LLC	Addendum to EIR approved for surface mining and reclamation plan	APN 429-190-69	5.5 miles north of the project site	Approved
9	Interex Property advisors	Development plan for auto service station, motel, retail, and restaurants	APN 251-120-010	3 miles south of the project site	Applied
10	RE McCollum, LLC	Self-storage development plan	APN 258-090-02	3 miles south of the project site	Applied
11	GEM Hill Quarry (CalPortland Company)	Surface mining operation and development of a reclamation plan on approximately 82.2 acres, 15 MM tons of volcanic tuff GEM Hill	APNs 345-294-17, 345-032-05, 345-032-31, 345-031-02 and 345-032-02	3.1 miles west of the project	Approved
12	FH II LLC / Frontier Communities	Change zoning to allow for 120-unit single family residential development	APN 472-100-63	3.6 miles southwest of the project site	Approved
13	Garo Karakoulian	CUP for auto dismantling and recycling facility	APN 258-160-26	3.5 miles south of the project site	Applied
14	SSI Rosamond Solar, LLC	Solar array accessory to water treatment facility	APN 471-040-01	3.4 miles north of the project site	Approved
15	True North Renewable Energy	Amendments to Kern County General Plan and Willow Springs Specific Plan to designate the site as Solid Waste Disposal Facility and CUP to allow a renewable energy facility on 117 acres.	APNs 429-101-30 through 429-101-37	5.4 miles north of the project site	Approved
16	Capella Solar	Approximate 5 MW modular commercial concentrating solar power plant with a supercritical CO2 power cycle and solid media thermal, which is comprised of an approximately 117-acre field of computer-controlled heliostat mirrors focusing solar energy on receiver apertures on top of an approximate 330-foot-tall, centralized power	APNs 429-060-13 through 429-060-19	5.4 miles north of the project site	Processing

TABLE 1-2 MASTER CUMULATIVE PROJECT LIST

Figure 1-1 Location Point #	Project Title	Description	Location	Distance to Proposed Project (Miles)	Status
		tower, and ancillary. The project would be operated as a test facility.			
17	Enterprise Solar	Construction and operation of a PV solar facility and associated infrastructure necessary to generate 600 MWs of renewable electrical energy with up to 4,000 megawatt-hours (MWh) of energy storage capacity (approximately 1,000 MW) on approximately 2,320 acres. Infrastructure includes laydown yards, a meteorological station, and a substation. PV panels, inverters, converters, foundations, and transformers will be installed onsite.	Cross Streets: SR14 and SR58	7.6 miles northeast of the project site	Approved
18	Castellanos Truck Parking and Storage	General Plan Amendment, Zone Classification Change, Precise Development plan to allow a Truck Parking and Storage Facility	APN 430-053-08	2.5 miles north of the project site	Applied
19	Babkan Safarian & Denise Rodriguez	General Plan Amendment, Zone Classification Change, Precise Development plan to allow vehicle and cargo container storage	APN 430-141-27	3.2 miles north of the project site	Applied
20	Irvine Camillo	Precise Development Plan for commercial development	APN 472-100-15	3.2 miles southeast of the project site	Applied
21	Antonio & Jeanette Vergara	CUP for construction materials recycling facility	APN 429-010-02	4.4 miles north of the project site	Applied
22	Carl Wood	Precise Development Plan for new retail development	APNs 258-170-16, 258-170-17	2.9 miles south of the project site	Applied
23	Walter DeBoer, BRPH	Modification to Precise Development Plan for change of occupancy to manufacturing.	APN 258-160-42	3.4 miles south of the project site	Applied

TABLE 1-2 MASTER CUMULATIVE PROJECT LIST

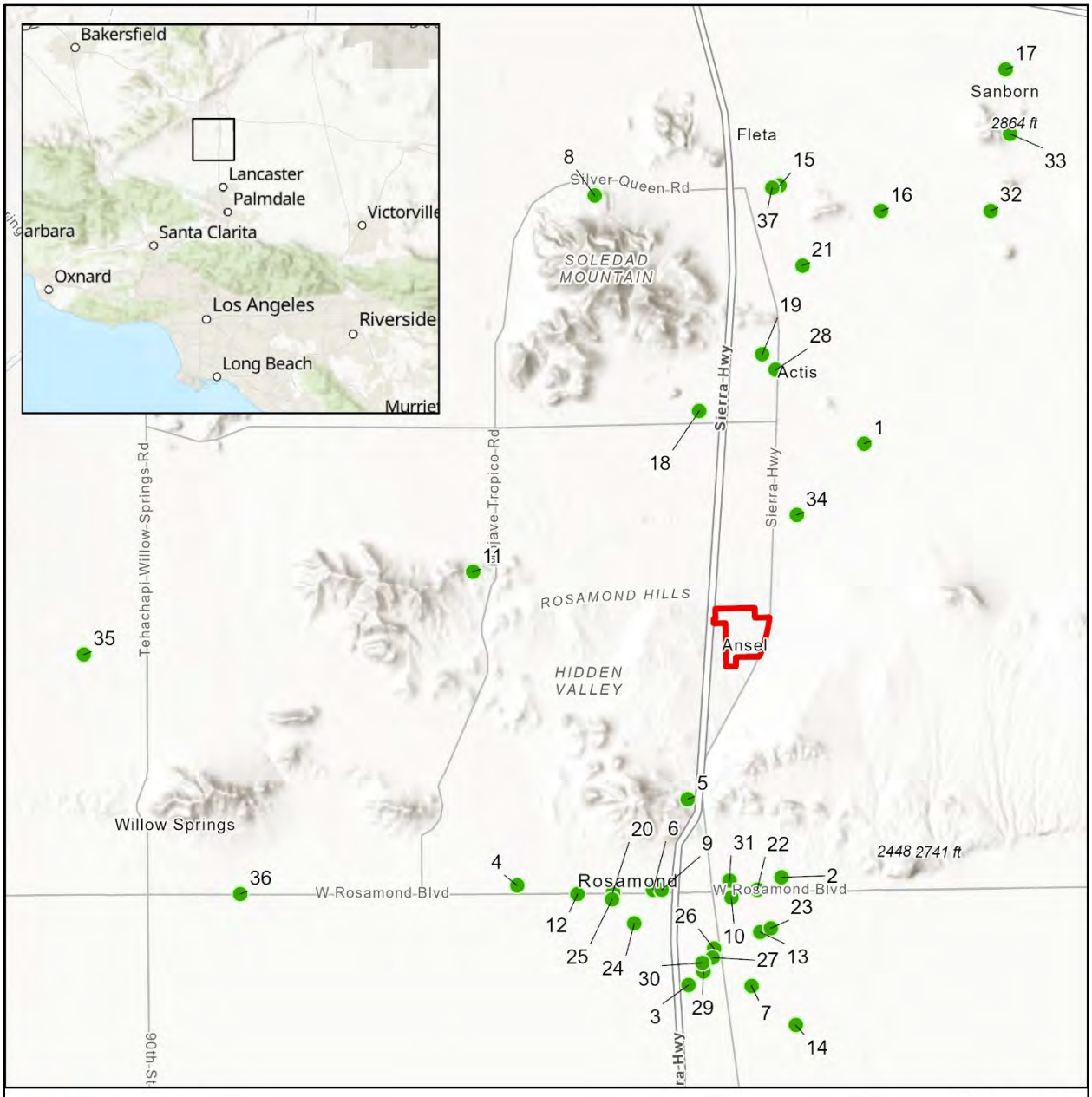
Figure 1-1 Location Point #	Project Title	Description	Location	Distance to Proposed Project (Miles)	Status
24	Silvia Valdez	CUP for installation of mobile home greater than 10 years	APN 251-191-13	3.5 miles southeast of the project site	Applied
25	Aaron Rivani by Cindy Parra	Zone classification change from A-1 to R-1	APN 472-100-16	3.2 miles southeast of the project site	Applied
26	Kern County Planning Dept	Kern County Housing Element Implementation 2022, Zone change to R3 Site No, 4	APNs 258-120-12, 258-130-16, 258-150-02, 258-130-23	3.6 miles south of the project site	Approved
27	Kern County Planning Dept	Kern County Housing Element Implementation 2022, plan amendment to 5 1/2.5 and zone classification change to R3, Site No.9	APN 473-031-03	3.7 miles South of the project site	Approved
28	Kern County Planning Dept	Kern County Housing Element Implementation 2022, Zone change to R3 Site No.2	APN 430-030-10	3.1 miles north of the project site	Approved
29	Kern County Planning Dept	Kern County Housing Element Implementation 2022, Zone change to R3 Site No.7	APN 473-031-09	3.9 miles south of the project site	Approved
30	Kern County Planning Dept	Kern County Housing Element Implementation 2022, Zone change to R3 Site No.5	APN 473-031-27	3.8 miles south of the project site	Approved
31	Matthew McCormick	CUP for single family residence in C-2	APN 251-025-09	2.7 miles south of the project site	Applied
32	Sanborn Solar	Solar PV power generating facilities and associated facilities that would generate up to a combined total of 300 MW of renewable electrical energy and up to 3 GWh of energy storage capacity	Cross Streets: SR 14 and Silver Queen Road and SR 58 (Business) and Lone Butte Road	5.9 miles northeast of the project site	Approved
33	Bellefield Solar Project	Solar PV facility and energy storage system along with associated infrastructure necessary to generate up to 1,500 MW of alternating	Cross Streets: Altus Avenue & State Route 58	6.9 miles northeast of the project site	Approved

TABLE 1-2 MASTER CUMULATIVE PROJECT LIST

Figure 1-1 Location Point #	Project Title	Description	Location	Distance to Proposed Project (Miles)	Status
		current and up to 1,500 MWh energy storage capacity			
34	Mojave Micro Mill	Construct and operate a micro mill facility and associated infrastructure necessary to produce rebar from scrap metal through various recycling processes. Development would include an approximate 475,800 square-foot steel mill facility with an additional 51,221 square feet of accessory buildings and structures, as well as an approximate 63-acre accessory solar array on 174 total acres of privately owned land. Outdoor storage for scrap materials and staging is proposed as part of the project.	Cross streets: Sopp Road and Sierra Highway	1.3 miles north of the project site	Completed in 2025
35	Bullhead Solar	PV solar facility with associated infrastructure on approximately 1,343.2 acres. Preferred and optional generation-tie (gen-tie) routes to the Rosamond and Whirlwind substations, only one of which would be constructed. The project also includes laydown yards, a meteorological station, a microwave/ communication tower, and a substation.	Along Dawn Road off Sierra Hwy 14 between 105th Street West and 75th Street West, north of Favorito Avenue Dawn Road and South of Champagne Avenue.	8.1 miles west of the project	Approved
36	Gettysburg Solar/AV Apollo	Approximately 30t MW photovoltaic (PV) electric generating facility, including approximately 30 MW of energy storage capacity, on approximately 158 acres of privately-owned land in unincorporated Kern County.	Rosamond, ¼ miles east of intersection of Rosamond Blvd and 80th	6.9 miles southwest of the project site	Approved
37	Organics Energy Solar	High solids anaerobic digestion (HSAD) facility with incidental advanced composting for the management and processing of residential, commercial, and industrial organic waste and	Silver Queen Road and United Street	5.4 miles north of the project site	Processing

TABLE 1-2 MASTER CUMULATIVE PROJECT LIST

Figure 1-1 Location Point #	Project Title	Description	Location	Distance to Proposed Project (Miles)	Status
		green material. The Project would provide organics processing infrastructure and organic materials diversion from regional landfills and generate renewable energy through the HSAD process			


Bakersfield
Lancaster
Palmdale
Victorville
Santa Clarita
Oxnard
Los Angeles
Riverside
Long Beach
Fleta
Sanborn
2864 ft
Silver Queen Rd
SOLEDAD MOUNTAIN
Sierra Hwy
Actis
Ansel
ROSAMOND HILLS
HIDDEN VALLEY
Tehachapi-Willow Springs Rd
Mojave-Tropico Rd
Willow Springs
W Rosamond Blvd
Rosamond
2448 2741 ft
Willow Rock Site
Cumulative Projects
0
2
4
Miles
Figure 1-1
Cumulative Projects
Sources:
WSP, GEM A-CAES LLC

1.4 Significant Impacts That Cannot be Avoided or Mitigated, and Evaluation of Overriding Considerations Under CEQA

California Code of Regulations, title 14, section 15091 and California Code of Regulations, title 20, section 1748(b)(8) provides that the CEC cannot approve a project with one or more significant environmental effects unless the CEC makes certain findings based on substantial evidence in the record.

These findings include specific economic, legal, social, technological, or other considerations, including provision of employment opportunities for highly trained workers, make infeasible the mitigation measures or project alternatives identified in the environmental analysis.

In addition, California Code of Regulations, title 14, section 15093, authorizes an agency, based on substantial evidence to, balance, as applicable, the economic, legal, social, technological, or other benefits, including region-wide or statewide environmental benefits, of a proposed project against its unavoidable environmental risks when determining whether to approve the project. If the specific economic, legal, social, technological, or other benefits, including region-wide or statewide environmental benefits, of a proposed project outweigh the unavoidable adverse environmental effects, the adverse environmental effects may be considered acceptable.

Taken together, the regulations require an agency to not approve a project with significant and unavoidable impacts unless, after careful consideration, the agency identifies other benefits of the project that outweigh the environmental damage.

As detailed in **Section 5.15, Visual Resources**, significant and unavoidable impacts have been identified in the area of visual resources. Specifically, staff concludes given the existing physical landscape, the project would substantially degrade the existing visual character or quality of public views of the site and its surroundings from the following key observation points:

#2 State Highway 14, Dawn Road Off-ramp East,

#3 10th Street West, Parallel To The Project Site, and

#4 Rosamond Boulevard West, Near Los Angeles Department of Water & Power Easement.

While staff is concluding there is a significant and unavoidable impact to visual resources, staff concludes there is substantial and compelling evidence in the record to support a CEC decision to approve the project by issuing a statement of overriding considerations. As set forth in **Section 3, Project Description, Section 4.1, Facility Design, Section 5.1, Air Quality, Section 5.3, Climate Change and Greenhouse Gas Emissions, Section 5.11, Socioeconomics,** and **Section 7, Public Benefits**, the project provides regional economic benefits, construction and engineering jobs,

deployment of innovative long duration energy storage, grid reliability benefits, support for California's renewable energy and GHG emission reduction goals, and displacement of fossil fuel generation and corresponding air pollution.

With these benefits described in detail, if the CEC decides to approve the project, there would be substantial evidence to support such action.

Section 2

Introduction

2 Introduction

2.1 Purpose of the Staff Assessment

The purpose of this Staff Assessment is to provide objective information regarding the Willow Rock Energy Storage Center's (WRESC or Willow Rock) significant effects on the environment, identify possible ways to minimize the significant effects, describe reasonable alternatives to the project, and assess the project's conformance with applicable local, state, and federal laws, ordinances, regulations, and standards. This information will be considered by the Committee of two California Energy Commission (CEC) Commissioners assigned to this proceeding in deciding whether to recommend the CEC grant a certificate to build and operate the ENGP. The Staff Assessment is based on information from the application for certification (AFC) and associated submittals, site visits, data requests and responses, and additional staff research, including consultation with other agencies, such as responsible and trustee agencies, and relevant information received during any public meetings.

2.2 California Energy Commission Application for Certification Process

The CEC has the exclusive authority to certify the construction, modification, and operation of thermal electric power plants 50 megawatts (MW) or larger (and related facilities) in California. The CEC certification is in lieu of any permit required by state, regional, or local agencies, and federal agencies to the extent permitted by federal law, for use of the site and related facilities, and supersedes any applicable statute, ordinance, or regulation of any state, local, or regional agency, or federal agency to the extent permitted by federal law (Pub. Resources Code, § 25500). The CEC must review thermal power plant AFCs to assess potential environmental, public health and safety impacts, engineering assessment related to facility efficiency, health and safety and potential measures to mitigate those impacts and ensure compliance with applicable governmental laws or standards (Pub. Resources Code, §§ 25519 and 25523(d)).

The CEC's siting regulations require staff to review the proposed project, assess whether the potential environmental impacts have been properly identified, and whether the applicant's proposed mitigation is complete or other, more effective, mitigation measures are necessary, feasible, and available (Cal. Code Regs., tit. 20, § 1742(b)). Additionally, staff is required to assess the adequacy of the measures proposed by the applicant to ensure the assessment evaluates the safety and reliability of the project (Cal. Code Regs., tit. 20, § 1742(b)). Staff is required to develop a compliance plan (coordinated with other agencies) to ensure that applicable laws, ordinances, regulations, and standards (LORS) are met and adhered to (Cal. Code Regs., tit. 20, § 1744(b)).

The CEC's power plant site certification program has been certified by the Secretary of the California Natural Resources Agency as meeting all requirements of a certified regulatory program (Pub. Resources Code, § 21080.5 and Cal. Code Regs., tit. 14, § 15251 (j)), constituting an environmental analysis in accordance with the requirements of the California Environmental Quality Act (CEQA). The CEC is the lead agency. No additional environmental impact report (EIR) is required.

CEC staff prepares a preliminary staff assessment (PSA) that presents staff's initial analyses, conclusions, and recommendations to the applicant, intervenors, agencies, California Native American tribes, interested parties, and members of the public. Where it is appropriate, the PSA incorporates comments received from agencies, the public, parties to the siting case, and comments made at public meetings.

Following the publication of the PSA, CEQA regulations establish a 45-day public comment period (Cal. Code Regs., tit. 14, Section 15105(a)), consistent with Pub. Resources Code, § 21091(a) (amended, Ch.97, Statutes 2021) for environmental impact reports submitted to the State Clearinghouse. The PSA is circulated for agency and public review, posted to the project's CEC docket, and distributed to those on the project's subscription list. The subscription list is an automated CEC system by which information about this proceeding is emailed to persons who have subscribed.

The comment period is used to: 1) solicit input on the staff analysis; 2) resolve issues between parties to the siting case; and 3) where consensus on issues exists, narrow the scope of issues to be adjudicated in subsequent evidentiary hearings. During the public 45-day comment period from April 29 to June 16, 2025, staff publicly noticed and conducted a hybrid workshop on June 6, 2025, with a follow-up remote-only workshop, held on June 10, 2025, to give the parties, agencies, tribes, and public the opportunity to discuss the conclusions, proposed mitigation, and verification measures in the staff assessment. Based on the workshop dialogue and the written comments received, staff may refine its analyses, correct errors, and modify its proposed conditions of certification. These revisions and changes are present in the final staff assessment (FSA). The FSA will be distributed as described in the previous paragraph for the PSA.

The FSA is only one piece of evidence that will be considered by the Committee in reaching a decision on whether to recommend that the full Energy Commission certify the proposed project. At the public evidentiary hearings, all formal parties will be afforded an opportunity to present evidence and to rebut the testimony of other parties, thereby creating a hearing record on which a decision on the project can be based. The hearing before the Committee also allows all parties to present their positions on disputed matters, if any, and provides a forum for the Committee to receive comments from agencies, tribes, and the public.

Following the hearings, the Committee's recommendation to the full Energy Commission on whether to approve the proposed project, and under what set of conditions, will be contained in a document entitled the Presiding Member's Proposed Decision (PMPD).

Following its publication, the PMPD is circulated for written public comments. At the conclusion of that comment period, the Committee may prepare a revised PMPD. At the close of the comment period for the PMPD, or a revised PMPD if there is one, the PMPD or revised PMPD is submitted to the full Energy Commission for final consideration and a decision.

2.3 Agency Coordination

As noted above, the CEC decision (certification) is in lieu of any permit required by state, regional, or local agencies and federal agencies to the extent permitted by federal law for use of the site and related facilities, and supersedes any applicable statute, ordinance, or regulation of any state, local, or regional agency, or federal agency to the extent permitted by federal law (Pub. Resources Code, § 25500). However, the CEC staff seeks comments from, and works closely with, other regulatory agencies that administer LORS that are applicable to proposed projects.

In accordance with California Code of Regulations, Title 20, section 1714, staff provided notification of the WRESC AFC to stakeholder agencies via an Agency Request for Participation letter, which was sent to appropriate agencies on March 15, 2022 (TN 242326). These agencies included Eastern Kern Air Pollution Control District, California Air Resources Board, United States Environmental Protection Agency Region 9, California Department of Fish and Wildlife, Central Region (Region 4), United States Fish and Wildlife Service, Pacific Southwest Region, Native American Heritage Commission, California Office of Historic Preservation, Kern County Planning and Natural Resources Department, California Office of Environmental Health Hazard Assessment, State Board of Equalization, Lahontan Regional Water Quality Control Board, State Water Resources Control Board, California Department of Transportation, California Public Utilities Commission, California Independent System Operator, California Highway Patrol, and California Division of Occupational Safety and Health (Region 4, Bakersfield District Office). The mailing list used to engage with stakeholder agencies can be found in **Appendix B**.

2.4 Consultation with Tribes

CEC staff sent letters to California Native American tribes on a Native American Heritage Commission (NAHC) list of tribes identified as having cultural affiliation in the project vicinity and interested in consulting on development projects in the project area. On April 8, 2024, the CEC staff requested from the NAHC a search of the Sacred Lands File and a list of contacts among California Native American tribes affiliated with the WRESC area. Following receipt of the NAHC's response, the CEC staff mailed letters to 21 individuals among the following 14 California Native American tribes on July 26, 2024. Emails were also sent to the tribes. The letters and emails invited the tribes to comment on the proposed project and offered to hold face-to-face consultation meetings if any were requested. CEC staff received the following responses/requests:

- The Fernandeno Tataviam Band of Mission Indians responded via email on August 19, 2024.
- The Kern Valley Indian Community provided feedback via telephone conversations and requested project documents and studies be provided to better inform consultation on August 8, 2024.
- The Morongo Band of Mission Indians responded via email to CEC staff on August 19, 2024, stating that the proposed project is outside the boundaries of the ancestral territory or traditional use area of the Cahuilla and Serrano people of the Morongo Band of Mission Indians and did not request consultation.
- The Yuhaaviatam of San Manuel Nation (formerly the San Manuel Band of Mission Indians) responded via email on August 15, 2024, expressing interest in consultation regarding the proposed project as it is located within the ancestorial territory of the tribe.
- In a telephone conversation with CEC staff on August 16, 2024, the Tejon Indian Tribe expressed concern with the project and expressed interest in consulting with the CEC on the matter.

CEC staff continued consultation with the responding tribes who requested consultation with the CEC. Consultation with the Kern Valley Indian Community, Tejon Indian Tribe, and Yuhaaviatam of San Manuel Nation informed the development of the PSA and this FSA.

CEC staff has not received responses to consultation invitations from representatives of the Barbareño/Ventureño Band of Mission Indians, Chumash Council of Bakersfield, Kitanemuk & Yowlumne Tejon Indians, Northern Chumash Tribal Council, San Fernando Band of Mission Indians, Serrano Nation of Mission Indians, and Tule River Indian Tribe. More detail on CEC staff's consultation efforts with California Native American tribes can be found in **Section 5.4, Cultural and Tribal Cultural Resources**.

2.5 Public Outreach and Notification

The CEC's public outreach program is primarily facilitated by the CEC's Office of the Public Advisor, Energy Equity, and Tribal Affairs. The Public Advisor's Office contacted local elected officials, interested parties, agencies, and school districts. The Committee conducted an Informational Hearing and Site Visit on November 6, 2024, the public notice for which was distributed on October 31, 2024 (TN 259869). This is an ongoing process, and efforts are discussed in greater detail in **Section 6, Environmental Justice** of this PSA.

As specified in California Code of Regulations, Title 20, section 1713(a), staff prepared a summary of the WRESC AFC, which included a description of the CEC's procedures for an AFC proceeding. This summary, called a "Notice of Receipt" (TN 241982), was sent on February 28, 2022, to public libraries in the communities near the proposed site

(Rosamond Library) as well as libraries in Eureka, Fresno, Los Angeles, San Diego and San Francisco; and to all members, to the ex officio members, to the public advisor, to the hearing officer, to the general counsel, to the applicant, to any person who requests such mailing or delivery, and to all parties to the proceeding (Cal. Code Regs, tit. 20, § 1713(b)). As required by section 1713(c), the summary was published in a newspaper of general circulation in the county of the project site. The summary was published in Rosamond News (English) on March 28, 2022 (TN 242487), and El Popular News (Spanish) on April 8, 2022 (TN 242632).

2.6 Organization of this Staff Assessment

The Staff Assessment is prepared to conform to the requirements of CEQA, the CEQA Guidelines (California Code of Regulations, title 14, section 15000 et seq.), the Warren-Alquist Act (Public Resources Code, section 25000 et seq.), and CEC's siting regulations (California Code of Regulations, title 20, section 1701 et seq.).

This Staff Assessment is organized into nine sections, as described below:

- Section 1 Executive Summary. This section provides an overview of the proposed project; a list of cumulative projects; the environmental impacts that would result from the proposed project; conditions of certification identified to reduce or eliminate these impacts; project alternatives; and issues to be resolved.
- Section 2 Introduction. This section describes the CEC's authority and function of the Staff Assessment; the environmental review process; and the organization of the Staff Assessment.
- Section 3 Project Description. This section summarizes the proposed project, including the location of the site and project boundaries, characteristics of the proposed project, and objectives sought by the proposed project.
- Section 4 Engineering Evaluation. This section evaluates the applicant's proposed design criteria, describes the design review and construction inspection process, and establishes conditions of certification that would monitor and ensure compliance with engineering LORS and any other special design requirements. Staff's engineering evaluation is broken down into the following topics:
  - Facility Design
  - Facility Reliability
  - Transmission System Engineering
  - Worker Safety and Fire Protection
- Section 5 Environmental Setting, Environmental Impacts and Mitigation. This section includes the environmental setting; regulatory background; approach to analysis; project-specific and cumulative impacts; and mitigation measures, when appropriate. Staff evaluates the potential environmental impacts that might reasonably be anticipated to result from construction and operation of the proposed project. Staff's analysis is broken down into the following environmental resource topics derived from CEQA Appendix G and Warren Alquist Act requirements:
  - Air Quality
  - Noise and Vibration

- Biological Resources
- Climate Change and Greenhouse Gas Emissions
- Cultural and Tribal Cultural Resources
- Efficiency and Energy Resources
- Geology, Paleontology, and Minerals
- Hazards, Hazardous Materials/Waste, and Wildfire
- Land Use, Agricultural, and Forestry
- Public Health
- Socioeconomics
- Solid Waste Management
- Transmission Line Safety and Nuisance
- Transportation
- Visual Resources
- Water Resources

For each subject area, the analysis includes a description of the existing conditions and setting related to the subject area, an analysis of the proposed project's potential environmental impacts, and a discussion of mitigation measures and conditions of certification, if necessary, to reduce potentially significant impacts to less than significant levels and ensure conformance with LORS.

- Section 6 Environmental Justice. This section includes an analysis of how the project would potentially impact an Environmental Justice Population.
- Section 7 Public Benefits. This section includes a discussion of any public benefits from the project including, but not limited to, economic benefits, environmental benefits, and electricity reliability benefits.
- Section 8 Alternatives. This section includes a discussion of a reasonable range of alternatives to the proposed project, or to the location of the project, which could feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and an evaluation of the comparative merits of the alternatives. This section also includes an evaluation of the no project alternative.
- Section 9 Compliance Conditions and Compliance Monitoring Plan (Compliance Plan). The Compliance Plan contains the means for ensuring all aspects of construction, operation and closure comply with LORS and with conditions/mitigations adopted by the CEC.

Section 3

Project Description

3 Project Description

3.1 Project Overview

The Willow Rock Energy Storage Center (WRESC, or Willow Rock) would be on approximately 88.6 acres of private land immediately north of Dawn Road and between State Route (SR) 14 and Sierra Highway within unincorporated, southeastern Kern County, California. The WRESC would be a nominal 520-megawatt (MW) gross (500 MW net) and 4,160 megawatt-hour (MWh) gross (4,000 MWh net) facility using Hydrostor, Inc.'s (Hydrostor's) proprietary, advanced compressed air energy storage (A-CAES) technology. Energy stored at the WRESC would be delivered to Southern California Edison's (SCE's) Whirlwind Substation located southwest of the WRESC at the intersection of 170th Street W and Rosamond Boulevard, via a new approximately 19-mile long 230-kilovolt (kV) generation-tie (gen-tie) line. The WRESC would be capable of operating on a 24-hour basis, 365 days a year with an approximately 50-year lifespan.

The proposed project would include the following key features:

- A-CAES Energy Storage Process, Cooling Systems and Electric Transmission
  - Eight electric-motor-driven air compressors configured in four trains, totaling nominally 500 MW net
  - Four nominally 130 MW air-powered turbine generators with 100-foot-tall air vent stacks
  - Heat extraction and recovery main process heat exchangers
  - Thermal storage system using water, including up to six, 87.5-foot-diameter by 100-foot-tall (maximum) hot-water spherical storage tanks and two 150-foot-diameter, 60-foot-tall cold-water storage tanks
  - Cooling system: three air-cooled heat exchangers with evaporative mist system using excess internally produced process water
  - One approximately 21.5-acre, 600-acre-foot capacity hydrostatically compensating surface reservoir with liner and interlocking shape floating cover
  - Aboveground piping pipe racks and filter houses
  - Underground compressed air storage cavern (approximately 900,000 cubic yards capacity)
  - Interconnecting conduits for movement of compressed air to and from the cavern

  - Potential permanent aboveground architectural berm for onsite re-use of excavated cavern rock[1]
  - Onsite 230 kV substation with oil-filled transformers with 230/13.8 kV rating
  - One approximately 19-mile-long 230 kV single-circuit double-bundle conductor gen-tie line interconnecting to the SCE Whirlwind Substation with a preferred gen-tie route and route options
  - Approximately 186 transmission poles (approximately 0.2 acres permanent disturbance)
- Operation and Maintenance Facilities, Ancillary Support Systems, and Other Features
  - Site stormwater drainage system and stormwater percolation/evaporation pond
  - Water supply connection to an existing Antelope Valley East Kern Water Agency's supply pipeline adjacent to Sierra Highway east of the WRESC Site
  - Fire detection and fire monitoring systems
  - Firewater tank and fire suppression system
  - Acoustic enclosures for Turbomachinery
  - Weather Enclosures for Motor Control Center
  - One primary all-electric and one secondary diesel-fired 345-kilowatt (kW) (460 horsepower) emergency fire pump
  - Three diesel-fired up to 2.5 MW, 4.16 kV emergency backup power supply engines to maintain critical loads in the event of a loss of power
  - One combined office, control room, and maintenance building
  - Employee and visitor parking area with electric vehicle charging ports and landscaping
  - Primary and secondary entrances with security access gates and site perimeter fencing
  - Permanent plant access roads within the WRESC Site
  - Extension/upgrades to Dawn Road between the SR 14 interchange and Sierra Highway
- Temporary Construction Facilities

1 Approximately 1.3 million cubic yards of crushed rock (accounting for swell and void space) would be extracted during construction of the cavern. The WRESC would include options for managing the extracted rock that may be implemented alone or in any combination, including (a) permanent on-site storage in the form of an architectural berm around portions of the WRESC; (b) off-taker transport for commercial use; and (c) off-taker transport for permanent off-site storage. The size of the potential architectural berm would depend on the quantity of rock. The height is expected to not exceed approximately 10 feet. If all the rock were re-used onsite, the total facility size would increase by up to an additional approximately 74.6 acres for a total of approximately 163.5 acres.

- Up to approximately 122.2-acre total laydown areas including cavern construction laydown area, construction phase earthwork areas, cavern rock temporary re-use areas, cavern rock temporary backup re-use areas, and parking areas located on adjacent and nearby parcels
- Rock crushing facility and concrete batch plant to support cavern construction and excavated rock management (acreage included in total temporary disturbance)
- Two temporary entrances for construction; the Dawn Road construction entrance may be converted to permanent
- An estimated up to 1.5 miles of unpaved temporary access road along the gen-tie line corridor as needed (approximately 3.7 acres)
- Approximately 35 conductor pull and tensioning sites (approximately 21.5 acres total)
- Approximately 75- by 75-foot temporary disturbance for placement of each transmission pole (approximately 23.6 acres total)

Willow Rock would not require the combustion of fossil fuel and would not produce combustion-related air emissions during normal operation.[2]

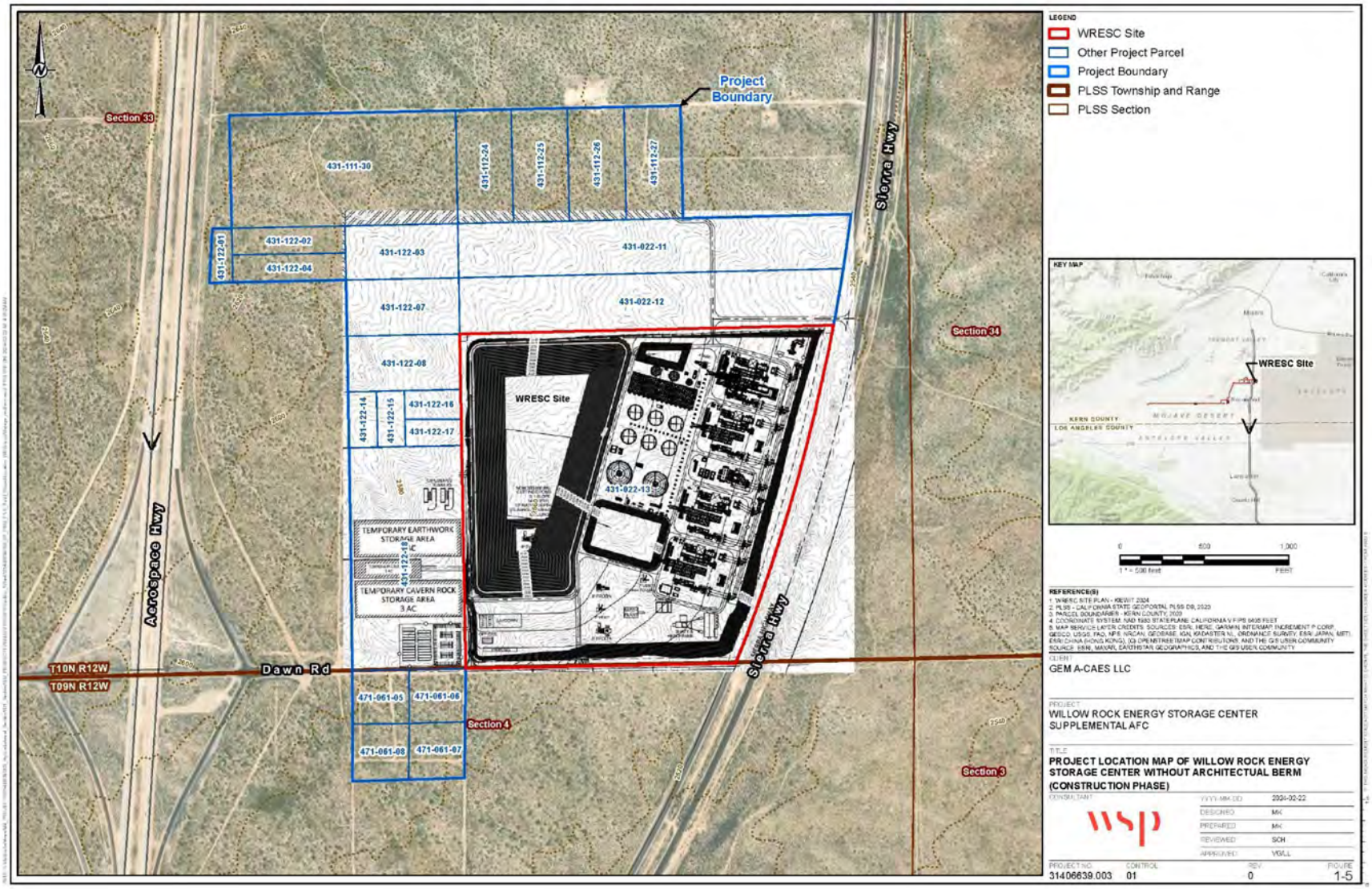
The WRESC site is immediately north of Dawn Road and immediately west of Sierra Highway, Rosamond, California, on the 88.6-acre portion of Assessor's Parcel Number 431-022-13, located west of Sierra Highway. The final site boundary and potential construction laydown areas depend on whether the facility would include onsite re-use of excavated cavern rock in an architectural berm on the west and north sides of the facility.

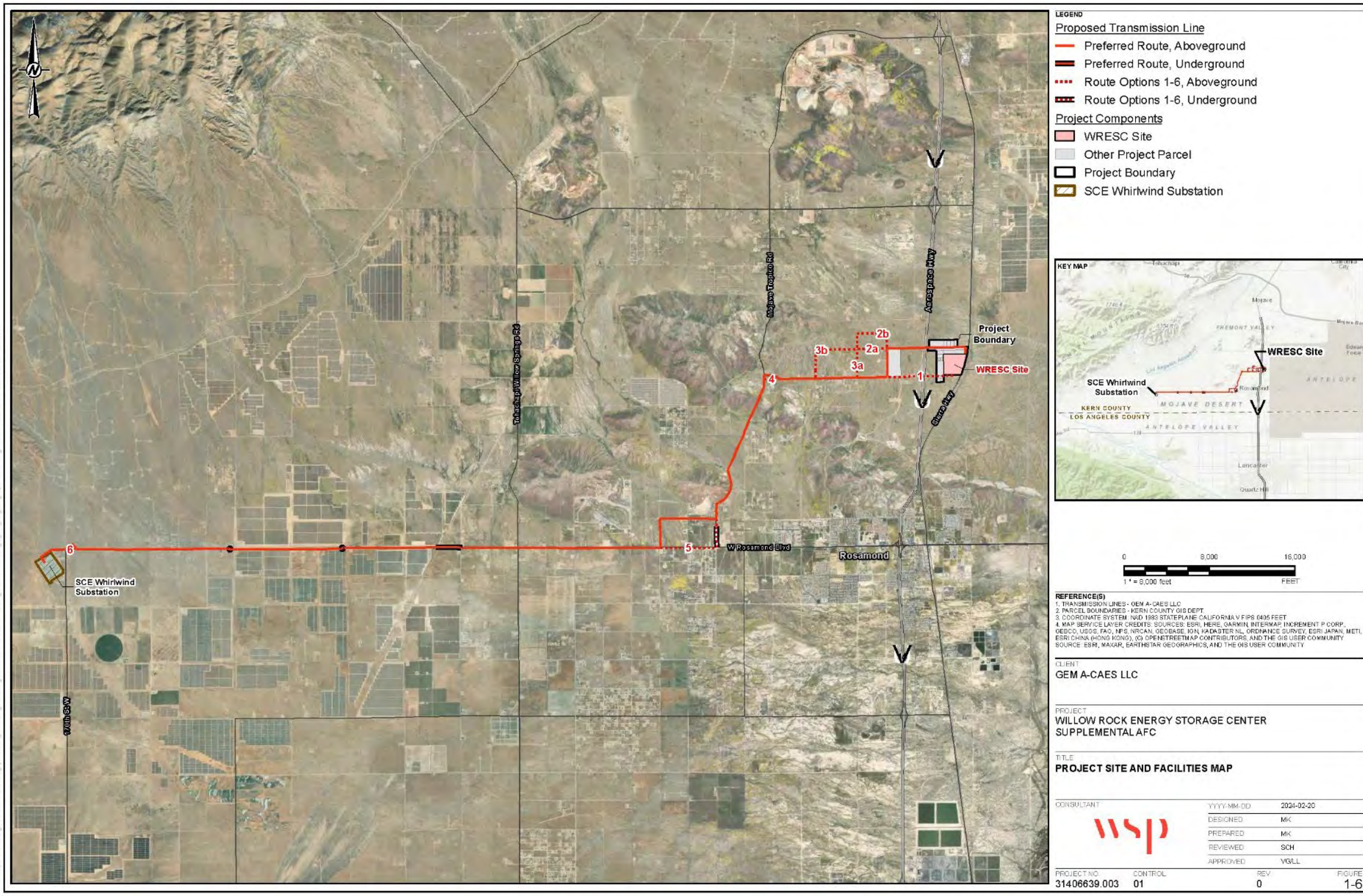
3.2 Project Location

In March 2024, the applicant filed a Supplemental AFC for the project, changing the location to 88.6 acres of private land immediately north of Dawn Road and between State Route (SR) 14 and Sierra Highway within unincorporated Kern County, California, approximately 4 miles north of Rosamond, California. The new project site is on undeveloped land in an area zoned Exclusive Agriculture (A-1) District. The area surrounding the project boundary is largely undeveloped with very sparse residential development; the nearest residence is approximately 0.8 mile northwest of the

2 The project would include three emergency diesel-fired engines to maintain critical loads in the event of a loss of power and one diesel-fired fire pump engine. These engines are expected to operate less than 50 hours per year for reliability testing and maintenance and would not operate concurrently during testing. The diesel-fired engines would operate in an emergency for other critical facility loads when electric power is not available. A separate diesel-engine-driven fire pump would provide water in the event of an emergency. This emergency backup equipment does not need to operate for the WRESC to function during normal operation.

northwest corner of the WRESC site. Figure 1-5 and Figure 1-6 show the WRESC site layout and a regional location map.


Project Boundary
Section 33
Section 34
Section 4
Section 3
Sierra Hwy
Aerospace Hwy
Dawn Rd
T10N R12W
T09N R12W
WRESC Site
TEMPORARY EARTHWORK STORAGE AREA 4AC
TEMPORARY CAVERN ROCK STORAGE AREA 3 AC
431-111-30
431-112-24
431-112-25
431-112-26
431-112-27
431-122-01
431-122-02
431-122-03
431-122-04
431-122-07
431-122-08
431-122-14
431-122-15
431-122-16
431-122-17
431-022-11
431-022-12
431-022-13
471-061-05
471-061-06
471-061-08
471-061-07
LEGEND
WRESC Site
Other Project Parcel
Project Boundary
PLSS Township and Range
PLSS Section
KEY MAP
WRESC Site
KERN COUNTY
LOS ANGELES COUNTY
MOJAVE DESERT
ANTELOPE VALLEY
0
500
1,000
1 " = 500 feet
FEET
REFERENCE(S)
1. WRESC SITE PLAN - KIEWIT 2024
2. PLSS - CALIFORNIA STATE GEOPORTAL PLSS DB, 2020
3. PARCEL BOUNDARIES - KERN COUNTY, 2020
4. COORDINATE SYSTEM: NAD 1983 STATEPLANE CALIFORNIA V FIPS 0405 FEET
5. MAP SERVICE LAYER CREDITS: SOURCES: ESRI, HERE, GARMIN, INTERMAP, INCREMENT P CORP, GEBCO, USGS, FAO, NPS, NRCAN, GEOBASE, IGN, KADASTER NL, ORDNANCE SURVEY, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), (C) OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY
SOURCE: ESRI, MAXAR, EARTHSTAR GEOGRAPHICS, AND THE GIS USER COMMUNITY
CLIENT
GEM A-CAES LLC
PROJECT
WILLOW ROCK ENERGY STORAGE CENTER
SUPPLEMENTAL AFC
TITLE
PROJECT LOCATION MAP OF WILLOW ROCK ENERGY STORAGE CENTER WITHOUT ARCHITECTUAL BERM
(CONSTRUCTION PHASE)
CONSULTANT
wsp
(YYY-MM-DD) 2024-02-22
DESIGNED MK
PREPARED MK
REVIEWED SCH
APPROVED YGLL
PROJECT NO 31406639.003
CONTROL 01
REV 0
FIGURE 1-5


LEGEND
Proposed Transmission Line
Preferred Route, Aboveground
Preferred Route, Underground
Route Options 1-6, Aboveground
Route Options 1-6, Underground
Project Components
WRESC Site
Other Project Parcel
Project Boundary
SCE Whirlwind Substation
KEY MAP
WRESC Site
SCE Whirlwind Substation
KERN COUNTY
LOS ANGELES COUNTY
MOJAVE DESERT
ANTELOPE VALLEY
Project Boundary
WRESC Site
SCE Whirlwind Substation
Rosamond
W Rosamond Blvd
Mojave Tropico Rd
Aerospace Hwy
Sierra Hwy
Tehachapi Willow Springs Rd
170th St W
1
2a
2b
3a
3b
4
5
6
0
8,000
16,000
1 " = 8,000 feet
FEET
REFERENCE(S)
1. TRANSMISSION LINES - GEM A-CAES LLC
2. PARCEL BOUNDARIES - KERN COUNTY GIS DEPT.
3. COORDINATE SYSTEM: NAD 1983 STATEPLANE CALIFORNIA V FIPS 0405 FEET
4. MAP SERVICE LAYER CREDITS: SOURCES: ESRI, HERE, GARMIN, INTERMAP, INCREMENT P CORP., GEBCO, USGS, FAO, NPS, NRCAN, GEOBASE, IGN, KADASTER NL, ORDNANCE SURVEY, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), (C) OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY
SOURCE: ESRI, MAXAR, EARTHSTAR GEOGRAPHICS, AND THE GIS USER COMMUNITY
CLIENT
GEM A-CAES LLC
PROJECT
WILLOW ROCK ENERGY STORAGE CENTER
SUPPLEMENTAL AFC
TITLE
PROJECT SITE AND FACILITIES MAP
CONSULTANT
YYYY-MM-DD 2024-02-20
DESIGNED MK
PREPARED MK
REVIEWED SCH
APPROVED VG/LL
PROJECT NO. 31406639.003
CONTROL 01
REV. 0
FIGURE 1-6

3.3 Statement of Project Objectives

The objectives for the project include:

- Provide 500 MW of quick-starting, flexible, controllable generation with the ability to ramp up and down through a wide range of electrical output to facilitate the integration of renewable energy into the electrical grid in satisfaction of California's Renewables Portfolio Standard and climate objectives.
- Interconnect the project to the California Independent System Operator-controlled SCE Whirlwind Substation, a major substation in or near the Tehachapi Renewable Wind Resource Area, to facilitate the integration of onshore and offshore renewable energy development.
- Implement a proven sustainable energy storage technology that provides improved technological diversity, non-combustible energy storage, minimal residual hazardous waste at asset retirement, a long-term commercial lifespan of 30 years or greater, and non-degrading energy storage.
- Use A-CAES technology to provide dispatchable long-duration storage and energy delivery for a minimum of 8 hours to achieve the following:
    - fossil fuel and greenhouse gas emissions-free operation,
    - flexible capacity with minimal response time,
    - long-duration storage to avoid curtailment through energy storage and to facilitate the further integration of renewable resources,
    - peaking energy for local contingencies,
    - voltage support and primary frequency response, including synchronous power output to support grid resiliency without the need for fossil fuel,
    - superior transient response attributes, including synchronous power output; and superior round-trip thermodynamic efficiency.
- Locate the facility on a site with adequate geologic characteristics for the underground facilities for compressed air storage, including suitable overburden characteristics (limited thickness, constructable soil type); deep subsurface geological formation (2,000 to 2,500 feet below ground surface) of sufficient quality and definition at the required depth for construction of the excavated storage cavern; ultra-low hydraulic conductivity and permeability in deep subsurface geological formation to retain water and air under pressure within the excavated storage cavern; and competent geological structural integrity to sustain an excavated storage cavern at depth intact indefinitely, allowing for repeated compressed air injection and discharge cycles over the life of the project without eroding or collapsing.
- Site the project near adequate water supply for construction.

- Locate the project on a site that is available to provide adequate site control, through long-term lease or purchase.
- Site the project on land with acceptable constructability and with adequate access and size for construction of aboveground facilities—at least approximately 80 acres.
- Minimize additional supporting infrastructure needs and reduce potential environmental impacts by locating the facility near existing and planned infrastructure, including access to an existing substation with available transmission capacity.
- Create jobs in Kern County and the state of California through both construction and operation of the facility.
- Be a good corporate citizen and respected member of the community through the lifecycle of the project.

3.4 Land Use Zoning

3.4.1 Site Land Use

The main project site was recently rezoned by the Kern County Board of Supervisors, at the request of the applicant after talks with the Kern County Planning and Natural Resources Department, from Limited Agriculture to Exclusive Agriculture (Kern County 2025). Exclusive Agriculture is consistent with the General Plan Designation of Resource Management.

The Exclusive Agriculture zoning district allows “electrical power generating plants”, and therefore, energy storage, with approval of a Conditional Use Permit (CUP). Temporary construction processes, such as rock crushing and a concrete batch plant, would also be permitted, subject to a CUP.

A potential architectural berm would be located on the north and west sides of the project on parcels zoned Exclusive Agriculture. The berm and laydown and parking yards would be under the jurisdiction of Kern County.

The proposed gen-tie line passes through a variety of base zoning designations and their zoning overlays, including the general base zoning designations of: Estate, Exclusive Agriculture, Limited Agriculture, General Commercial, Neighborhood Commercial, Light Industrial, Open space, Low Density Residential, Platted lands, and Recreation forestry. The gen-tie line is permitted under all these zoning designations as transmission lines and supporting infrastructure.

3.4.2 Surrounding Land Uses

The approximately 88.6-acre undeveloped WRESC site (the eastern portion of the 112-acre parcel bisected by the Sierra Highway) is bounded on the north and west by vacant, undeveloped property, on the east by Sierra Highway, and on the south by

Dawn Road. Additional parcels adjacent to the WRESC site on the north and west sides may be used for project activities including temporary parking, construction laydown, or construction of an architectural berm. The area surrounding the project site is mostly undeveloped, with a few sparsely scattered residences, the closest one being approximately 0.8 miles northwest of the WRESC site.

3.4.3 Important Farmland and Williamson Act

The project and its linears are not located on lands under a Williamson Act contract for preservation of agricultural land. There are a few parcels under a Williamson Act contract just south of the gen-tie line along Rosamond Boulevard, and one just west of the Whirlwind Substation with which the gen-tie line would connect (DOC 2022b), but project construction and operation would not cross any of these parcels.

3.5 Project Overview and General Description of the Project's Technical and Environmental Characteristics

3.5.1 Generating Facility Description, Design, and Operation

The WRESC would be a nominal 4,160 MWh energy storage facility capable of charging and discharging daily. The overall facility would consist of four nominal 130 MW (gross) trains, outputting a total of 500 MW net at the point of interconnection. Each train would contain an electric motor-driven air compressor drivetrain, heat exchangers, an air turbine generator, air exhaust stacks and ancillary equipment. Each train would share a common set of thermal storage tanks (hot and cold water), as well as the air storage cavern.

The WRESC would be designed and constructed following the design criteria provided in the applicant's Appendix 2A, Engineering Design Criteria (ESHD 2024o) following applicable laws, ordinances, regulations, and standards (LORS).

3.5.1.1 General Site Arrangement and Layout

The main access to the Willow Rock site would be from Dawn Road. There would be two entry/exit points from Dawn Road for heavy load traffic. Access at the west side would lead to the laydown area, while access at the east side would lead to the east end of the power block. Temporary access during construction would be obtained from crushed rock driveways from both Dawn Road and Sierra Highway; the Dawn Road temporary construction access may be converted to permanent. The Sierra Highway access point would enter the WRESC Site at the construction laydown areas to the north. The permanent entrances and main plant roads within WRESC Site would be surfaced to provide internal access to all project facilities and onsite buildings. Personnel parking spaces, electric vehicle charging stations, and parking lot landscaping would be provided and would conform to Kern County requirements. The areas around equipment would have crushed rock surfacing, not paved or concreted.

3.5.1.2 Process Description

Hydrostor's proprietary A-CAES technology is a bulk-scale energy storage solution. It is intended to provide long-duration, emission-free energy storage that can be sited where the electricity grid requires long-duration storage, providing multi-hundred MW of generation capacity and a suite of ancillary services with an estimated 30-year service life for major equipment and an estimated 50-year service life for the cavern. This is enabled by combining industry-proven technologies with two key innovations: the use of hydrostatically compensated air storage caverns and a proprietary water-based thermal management system.

The system stores compressed air in a purpose-built underground storage cavern, analogous to those used worldwide for hydrocarbon storage or the salt caverns used by traditional compressed air energy storage technologies elsewhere nationally and internationally. The WRESC storage cavern is filled with water through a hydraulic conduit from a water storage compensation reservoir at the ground surface level. The hydrostatic pressure from the water in this compensation reservoir and the associated water shaft maintains a near-constant air pressure in the cavern throughout both the charging and discharging cycles, supporting efficient operation, and significantly reducing the cavern volume requirements.

The water-based thermal management system captures the heat developed during air compression, stores it, and re-uses it when generating electricity, making the process nearly adiabatic. This increases the system's efficiency and eliminates the need for burning fossil fuels.

When the Hydrostor A-CAES system is charging (known as the "charge cycle"), off-peak energy or surplus electricity (such as excess solar that might otherwise be curtailed when production exceeds demand) from the grid is used to drive air compressors, converting the electrical energy into potential energy in the compressed air and heat energy stored by the thermal energy management system. At multiple points in the compression process, the heat generated during air compression is transferred to boiler-grade water as the only thermal water by a set of heat exchangers and is stored separately for later use during the discharge cycle.

The air stream exits the compression process at the same pressure as that maintained in the air storage cavern which is governed by the vertical distance between the cavern and the connected hydrostatic compensation reservoir located at the surface. As air is charged into the storage cavern, water is displaced up the hydraulic conduit and into the surface reservoir. This maintains near-constant air pressure within the cavern and stores substantial potential energy in the elevated water. Once in the cavern, the air can be stored until electricity is required.

To generate electricity (known as the "discharge cycle"), compressed air is discharged from the cavern, which allows the compensation water to flow back into the cavern. Similar to the charge cycle, the compensation water from the reservoir maintains near-

constant air pressure in the cavern during discharging. The cool high-pressure air exiting the cavern is reheated using the heat stored by the thermal management system and the same set of heat exchangers that were initially used to extract it. The reheated compressed air is then used to drive air- expansion turbine generators, which efficiently convert the stored potential energy back into electricity for the grid. **Table 3-1** summarizes the main process.

TABLE 3-1 ENERGY STORAGE PROCESS STEPS

STEP 1 Air Compression Using Electricity	STEP 2 Heat Capture in a Thermal Management System	STEP 3 Compressed Air Storage	STEP 4 Compressed Air Conversion to Electricity
Off-peak or surplus electricity from the grid is used to operate air compressors that produce high-pressure heated compressed air.	Heat is extracted from the compressed air and stored in a proprietary thermal management system. This nearly adiabatic process increases overall cycle efficiency and eliminates the subsequent need for burning fossil fuels.	Air is stored in a purpose-built storage cavern, where hydrostatic compensation is used to maintain the system at near-constant air pressure during operation.	Hydrostatic pressure forces air back to the surface, where it is recombined with the stored heat and expanded through turbine generators to generate electricity on demand.

The actual net electrical output of the system would vary in response to ambient air temperature conditions, electrical grid operating requirements such as voltage or volt ampere reactive (VAR) support and other operating factors. Operational modes would be driven by good operating practices, market conditions, and grid dispatch requirements.

3.5.1.3 Facility Operational Modes

Hydrostor's facility is an electrical energy storage technology with unique operating characteristics that must be considered across its operating states (charge, discharge, standby).

Based on 95 percent availability, the facility would be designed to operate:

- Up to 13.5 hours per day and 4,960 hours per year in charging mode at a total capacity of 500 MW (plus 213 hours at 75 percent or less).
- Up to eight hours per day and 2,976 hours per year in discharging mode at a total capacity of 500 MW (plus 128 hours at 75 percent or less).
- A minimum of 372 hours in standby mode.

Facility Charge Cycle Mode

The facility would be designed for 520 MW gross rated capacity on both charge and discharge with an 8-hour discharge duration at full rated capacity. The facility would be designed to achieve an average round trip efficiency (RTE) of 55 to 60 percent. This

means that the facility would return 55 to 60 percent of the electric energy used to complete the storage cycle as useful power output during the discharge cycle and that a complete charge of the cavern would require about 13.5 hours at full rated capacity (eight hours divided by 60 percent RTE).

The frequency of charging the system is dependent on the electrical grid operator's requirement to discharge the system. The system could be charged, or partially charged, daily. It could feasibly remain charged for long durations before discharging, but the hot water stored in the spherical tanks must be maintained by electrical heaters for very long standby periods (exceeding a few days).

When electricity from the electrical grid is available, the system would enter charge mode. While charging, electricity is drawn from the electrical grid to operate multi-stage, electrically driven air compressors. Air at atmospheric pressure and ambient temperature is compressed to cavern storage pressure. The cavern storage pressure is expected to be 870 to 1,100 pounds per square inch gauge (psig) across three sequential pressure sections of compression, low pressure, intermediate pressure, and high pressure (LP, IP, and HP, respectively), to allow storage in an underground hydrostatically compensated rock cavern with a floor depth of approximately 2,000 to 2,500 feet below ground surface (bgs).

As the compressed air enters the storage cavern, the air pressure would overcome the hydrostatic head of the compensation water system, forcing an equivalent volume of water out of the cavern and up the compensation shaft (water conduit), increasing the water level of the surface reservoir.

The hot air exiting each section of compression is cooled using boiler-grade water in the LP, IP, and HP heat exchangers. The water exits each heat exchanger and combines into a common stream. The heated water (water) flows to the hot-water spherical tanks, where it is stored at its vapor pressure to avoid vaporization. This is achieved through a system of self-pressurization whereby water vapor generated inside the tank acts as the head gas to maintain positive pressure.

Facility Generation/Discharge Mode

When the plant is sufficiently charged and is called to operate as a power generation facility, a discharge cycle would commence. A grid signal would initiate the operation of the appropriate electrical breakers and transformers, heat exchangers, and balance-of-plant equipment and begin operation of the turbine generators. With the air flowing from the storage cavern, the turbine generators would start receiving reheated high-pressure air, which would allow the turbine generators to ramp up to "sync-idle" speed, whereupon they can be electrically synchronized to the grid. Thereafter the turbine generators would begin loading (increasing electrical output) until they reach the required plant electrical output.

While discharging, the high-pressure air from the cavern would pass through three turbine sections (HP, IP, and LP) to expand the gas from cavern pressure down to atmospheric pressure. The power produced by the turbine would drive a synchronous electrical generator. The turbine stages are pressure-grouped into the same number of pressure sections as the compressors, and, just as in the case with the compressor, air would flow though the turbine sections sequentially. As the air exits the cavern, the surface water reservoir level would decrease and the compensation water level would increase in the cavern, maintaining a near-constant cavern pressure throughout discharge.

For the discharge cycle, the same heat exchangers (LP, IP, and HP) that were used to remove heat-of- compression for storage would be used, but in reverse, using the stored hot water to increase the temperature of the air before each expansion through each turbine section. This is necessary to avoid low temperatures and liquid condensation from the air as it is expanded and naturally cooled through the turbine's blade path. As the water passes through the heat exchangers, it would be cooled by the air, but would not reach a low enough temperature for the next charge cycle. Accordingly, a secondary cooling system is used to reduce the water temperature as required.

Facility Standby/Idle Mode

When the plant is not actively charging or discharging, it would be maintained in standby/idle mode. Standby/idle mode may occur either at the end of a charge cycle (e.g., the plant is ready and waiting to be called to operate as a power generator) or can occur at the end of a discharge cycle (e.g., the need for power generation has ceased and there is no immediate need to (re)charge the facility with potential energy (high-pressure air and hot water). The electrical power draw of the facility during standby/idle primarily consists of relatively small pumps, heaters, and coolers in various sections of the plant.

If the standby/idle mode follows a complete charge cycle, the stored air contained in the cavern would be at the maximum level and maintained at a high pressure by the hydrostatic compensation system, and the stored thermal energy (heat) would be maintained in the insulated hot-water spherical tanks, which are full. Both the motor-driven air compressors and the air-expansion turbine generators would be idle, with the lubricating oil systems heated and lubricating oil circulating through them to keep them warm and ready to start, slow-speed turning gears operating if required, and with the generators or motors internally heated to keep them at an optimum temperature.

If the standby/idle mode follows a full discharge cycle the stored air contained in the cavern would be at the minimum level and the cavern would be mostly filled with compensation water, leaving the water level in the surface- level compensation reservoir at its minimum level, while the remaining air in the cavern stays at constant hydrostatic pressure. Very little water would remain in the hot-water spherical tanks, and the cooled water would be held in the cold thermal storage tank. Both the motor-

driven air compression equipment and the air-expansion turbine generators would be idle, with heated lubricating oil circulating, and motor and generator heaters maintaining them at optimum temperatures, all to keep them ready to start. With the hot-water storage tanks are holding a low level of liquid, the temperature would reduce quickly due to the small amount of water in the tank. Therefore, supplementary heating via tank immersion heaters would be initiated to counteract any temperature and pressure drops.

In very exceptional circumstances (e.g., a complete plant shutdown for major maintenance), the complete plant could be in a wholly de-pressurized, and potentially a wholly cooled state, with potentially all piping and tanks in a de-watered state (except for the cavern and the compensation reservoir), and all turbomachines allowed to cool as major work is conducted.

3.5.1.4 Air Compression Equipment Drivetrain

The WRESC would include four air compression drivetrains in the system, one LP compressor, and one IP/HP compressor for each nominal 130 MW gross train, totaling a nominal 520 MW gross load during charge mode.

The compression/charge portion of the basic facility design would consist of a two-part compression drivetrain, each part using a dedicated electrical motor. The basic framework for the charge/compression equipment consists of:

- **LP compressor:** A dedicated LP compressor drawing filtered ambient air, driven by a synchronous electrical motor, with capacity flow and surge control managed by inlet flow mechanisms combined with discharge piping blow-off valves. Filtration and moisture knockout provisions are fitted as required. A non-return valve would be fitted in the LP compressor discharge to prevent air backflow. The “low-pressure” air discharge from the LP compressor, after being cooled by the downstream heat exchanger, would then be piped to the inlet of the IP/HP compressor, as described below.
- **IP/HP compressor:** A separate compressor with a combined IP compressor and HP compressor, all driven by a single, separate, synchronous electrical motor. Cooled and filtered inlet air for both pressure groups in this combined compressor would be delivered from the upstream air-to-water heat exchanger. The high-pressure discharge from the HP compressor section would be directed to a final air-to-water heat exchanger and the resulting cooled air would thereafter be directed to the air storage cavern at near-constant pressure. All compressors would utilize heavy process-industry quality synchronous motors with brushless excitation. Each compressor would be fitted with a dedicated lubricating/control oil system, dedicated synchronous motor controllers, and protective relaying. The compressor surge controller would be integrated to monitor and manage the compressors.

3.5.1.5 Air-Expansion Turbine Generators

The WRESC system would include four air-expansion turbine generators. There would be one turbine and one generator for each 130 MW (gross) train for a plant-wide total of 520 MW (gross).

All turbine generators would be single-casing axial-bladed machines with multiple air inlets and outlets, driving a synchronous generator, and would be complete with power-generation-industry-quality speed/load controls, generator-protective relaying, voltage regulators, and synchronizing equipment. Each unit would have a dedicated lubricating/control oil system, a dedicated turbine and generator control, and protection systems.

Each air-expansion turbine would consist of three sections or pressure groups. The high-pressure air (produced from the charge cycle) that has been stored in the underground cavern would be utilized to power the turbine. The discharge air would first be piped to the first HP set of heat exchangers where it would be heated, using the hot water from the hot-water (spherical) tanks. The heated air would be used to power the HP heated turbine sections.

After the HP turbine section, the exiting air would have cooled due to the expansion process and would be routed to the IP heat exchangers, where it would be reheated using the hot water. After the IP turbine section, the cooled air would be routed to the LP heat exchangers. This reheated air would be admitted to the low-pressure expansion section of the turbine machine, after which it would exit to the atmosphere via an exhaust stack.

3.5.1.6 Thermal Management System

The thermal management system would consist of water, main process heat exchangers, fin fan coolers, and both hot and cold thermal storage tanks. During charging, the system would use water to extract heat from the air in the compression process. This heated water would be stored separately in a dense and insulated environment. During discharging, the heat from the heated water would be re-injected back into the air during the expansion process on discharge. The thermal management system is key to an adiabatic and fuel/emission-free process.

The water management system is a closed system whereby the water would be passed between the hot- and cold-water storage tanks during the charge and discharge cycles (as described above). The stored volume within each of the tanks would fluctuate as part of normal operations. Make-up water for the thermal management system would be taken from the reservoir or the Antelope Valley East Kern (AVEK) water supply line and treated before it is sent to the cold-water tank.

Cold water would be stored outdoors in two cylindrical tanks (approximately 150 feet in diameter by 60 feet high). The cold-water tanks would be fitted with a nitrogen

blanketing system, operated at low pressure, to prevent air ingress and oxygenation of the treated water.

Hot water would be stored outdoors in up to six spherical storage tanks, each with a diameter of approximately 87.5 feet and a maximum estimated height of up to 100 feet, including appurtenances. The head gas in the hot-water tanks is steam in liquid-vapor equilibrium with the stored water.

The hot-water tanks would be outfitted with immersion fluid electrical heaters that would counteract any thermal losses. Each tank would be insulated for heat conservation.

The LP, IP, and HP heat exchangers would be designed to both heat the air on discharge and cool the air on charge. They are standard industrial shell and tube heat exchangers and would be insulated to retain heat on standby periods.

3.5.1.7 Hydrostatically Compensating Surface Reservoir

An approximately 600-acre-foot surface reservoir would be excavated and constructed predominantly in cut (below finished grade) using earthen berms approximately 6 feet high. The reservoir would cover a surface area of approximately 21.5 acres and have an average depth of approximately 45 feet. The berms would be constructed from a combination of excavated soil and excavated rock from underground storage cavern construction. Each berm would have an approximate height of up to 6 feet from the exterior toe (native soil) to the berm's top. The water level in the reservoir would fluctuate to maintain constant underground air storage pressure and be designed to operate with a minimum freeboard of approximately 4 feet at full state of charge. The surface reservoir would be equipped with an engineered liner on the bottom (to prevent percolation and possible comingling with groundwater) and a floating cover consisting of interlocking shapes to minimize evaporative water loss.

The applicant designed the reservoir to not be Department of Water Resources, Division of Safety of Dams (DSOD) jurisdictional. However, the applicant was informed during consultation with DSOD that the design and construction would require the project to be reviewed under relevant sections of the Water Code and DSOD regulations. The reservoir would be constructed in compliance with all applicable laws, ordinances, regulations and standards (LORS).

3.5.1.8 Underground Storage Infrastructure (Cavern and Shafts)

The A-CAES facility would utilize underground storage infrastructure consisting of one underground manmade cavern for the storage of compressed air and compressed air as well as manmade shafts for conveyance of air and water between the cavern and topside facility.

The storage cavern would be constructed in the bedrock below the WRESC site targeting a depth of approximately 2,000 to 2,500 feet bgs. Initial access to the cavern

depth (“cavern access”) for mobilization of the construction equipment and crews would be accomplished by one of two methods:

1. Construction of a large-diameter conventionally sunk shaft, or
2. Construction of several rotary drilled (blind bore) shafts.

The preferred cavern access approach is still being finalized, so both options have been shown on the plot plan to date. Regardless of the cavern access technique employed, cavern excavation would be accomplished using the same mining approach and techniques. The cavern construction requirements associated with each of these approaches are described below.

Cavern Access

To access the cavern during construction, a combination of conventionally sunk shafts and/or rotary drilled shafts would be constructed on a 24-hour-per-day, 7-day-per-week basis.

Conventionally Sunk Shaft

If a conventionally sunk shaft is used for cavern construction access, a concrete-lined shaft with 24 feet inside diameter would be constructed and equipped with a double-drum hoist, service hoist, dual ventilation ducts, and utilities to support cavern construction. For construction of this shaft, controlled detonations would occur from the top of bedrock surface (approximately 50 to 100 feet bgs) until the cavern construction horizon (2,000 to 2,500 feet bgs) is reached. The controlled detonation associated with shaft construction would increase in depth and decrease in frequency as the shaft is advanced from the surface down to the cavern construction depth. The amount and frequency of controlled detonations would depend on rock properties, but an average of one or two controlled detonations per day are anticipated. Each detonation would last less than a few seconds.

It is expected that the rate of conventional shaft sinking would be around of five to eight feet/day, with an overall shaft construction duration of about 12 to 14 months, including pre-grouting of the overburden. Deeper grouting of the broken bedrock zones would be performed from within the shaft as a step in the sinking cycle if and when necessary.

Once completed, this 24-foot shaft would be sufficient for supporting the hauling, ventilation, and equipment/personnel all in one shaft.

Rotary Drilled Shafts

If rotary drilled shafts are used for construction access, it is expected that five- by eight-foot-diameter shafts would be constructed to support the proposed operations. No controlled detonation would be done at the surface or during the drilling phase of the cavern construction if this approach is utilized. Of the five shafts that are

constructed, one would be used for equipment and personnel access, two would be used for material movement (rock hauling), and two would be used for ventilation. To construct these shafts, a lined drill cuttings pond would be required that would hold up to approximately three times the shaft volume in water to support the boring operations. Once complete, the pond would be emptied and backfilled. The drilling water would be used for reservoir fill or disposed offsite by a licensed hauler. Liner material from the drill pond would be removed or perforated, and surplus muck would be spread on top of the settled drill cuttings to completely backfill the pond excavation.

A-CAES Process Shafts

Two types of flow conduits connected to the cavern would be necessary to operate the A-CAES facility: one for the conveyance of air and another for water. It is expected that up to two shafts would be constructed for water conduits, and up to four shafts would be constructed as air conduits. It is possible that fewer shafts would be constructed, but a conservative case is being assumed for this AFC.

If rotary drilled shafts are used for cavern access, two of the cavern access shafts are expected to be repurposed for use as the water shafts for A-CAES operation upon completion of construction. In this case, only the four air wells would need to be constructed. If a conventionally sunk shaft is utilized for cavern construction access, then all six shafts would need to be drilled.

Similar to the rotary drilled cavern access shafts, a drill cuttings pond would be required for the delivery of the A-CAES process shafts. This pond would be sized so that it holds up to approximately three times the shaft volume in water to support the boring operations. Once complete, surplus water would be pumped into the water reservoir, liner material from the drill pond would be removed or perforated, and surplus rock would be spread on top of the settled drill cuttings to completely backfill the pond excavation.

Water Shaft

One large-diameter blind bore or conventionally sunk shaft, approximately 8 feet (blind bore) to 24 feet (conventional) in diameter, would be constructed for use as water conduit during A-CAES operations. Depending on the cavern access used, the shaft either would be a converted construction shaft (for blind bore access) or would be purposely constructed (for conventionally sunk access). The water shaft would be used to convey compensation water between the cavern and topside compensation reservoir during A-CAES operations. The water shaft would be lined and cemented in place to provide formation isolation. The lower end of the water shaft would extend into a sump below the cavern floor to ensure that a water seal would be maintained at all times during operation.

Air Shaft

Up to two blind-bored air shafts, approximately four feet in diameter, would be constructed during the cavern construction for use as air shafts during A-CAES operations. The air shaft would be lined and cemented in place for formation isolation. These air shafts would be used to convey compressed air between the cavern and topside process trains during A-CAES operations. The lower end of the air shaft would be located at a high point in the roof of the cavern, such that it is never submerged during operation.

Cavern Excavation

The cavern would be constructed by conventional mining methods including drilling and controlled detonation. The cavern layout would be designed to have a room and pillar or parallel gallery layout. The size and shape of excavated openings would depend on the strength of the host rock and would be finalized during detailed engineering. The size and shape selection of the excavated openings does not materially influence the overall volume of the cavern or rock excavated.

After completion of the cavern access shaft(s), cavern excavation would begin using a combination of conventional controlled detonation methods and physical/mechanical excavation. Cavern excavation would continue on a 24-hour-per-day, seven-day-per-week basis until excavation is complete. The following are the typical steps included in the normal full-scale mining cycle:

1. A jumbo face-drill drills holes into the working face on a predetermined pattern and to a predetermined depth.
2. The drilled holes are loaded with explosives and the charges are set off to break the rock into muck (broken rock).
3. Load-haul-dump vehicles load the muck and haul it from the working face to the production shaft, where it is dumped into the loading pocket and hoisted to the surface.
4. The roof and sidewalls are scaled to remove any loose hanging rock.
5. Rock bolting machines install appropriate ground support (typically rock bolts and wire mesh) for the newly exposed roof and sidewalls.
6. The centerline and drill pattern are marked on the new working face by surveyors and the cycle is repeated.

During underground construction, twice-daily controlled detonation episodes of a few seconds duration each would occur at the beginning of each shift. Controlled detonation would not be continuous throughout the day and would occur on a regular schedule of approximately 10- to 12-hour intervals. During full-scale cavern excavation, explosives would be placed in closely spaced locations and detonated remotely. Early in the cavern excavation process, personnel would clear the underground area and remain

aboveground during the detonation sequence. Once the cavern is large enough, personnel would remain underground during the detonation sequence.

For gallery construction, a top heading would be initially driven, and roof support would be installed as the excavation advances. One or more successive benches would then be excavated to develop the cavern opening to full height. Waste muck would be crushed underground and brought to the surface via a shaft skip. The cavern floors would be graded to drain toward water sump and shaft. Where geology and ground conditions permit, roofs would be sloped up to naturally vent into the air shaft and avoid the possibility of trapped air pockets. Most caverns are completed with unlined, bare rock surfaces, though some are lined with a thin layer of shotcrete for worker safety and geotechnical integrity. Grouting may also be used, if required, to seal large fractures that could permit water inflow. Upon completion of cavern excavation, the cavern would be commissioned into operations which would require the filling and sealing of the construction shafts that are not converted for use in A-CAES operations.

During operations, the cavern would be filled with water through a hydraulic conduit from the surface reservoir. The weight of the water in this surface reservoir would maintain a near-constant air pressure in the cavern throughout both the charging and discharging cycles. This approach supports efficient operations and significantly reduces the cavern volume requirements. The dimensions and design of the cavern are presented in **Table 3-2.**

TABLE 3-2 CAVERN DESIGN

Design Element	Value
Depth	Approximately 2,000 to 2,500 feet bgs
Pressure	870 to 1,100 psig
Volume	Approximately 900,000 cubic yards

bgs = below ground surface; psig = pounds per square inch gauge

3.5.1.9 Major Electrical Equipment and Systems

The net electric power generated at the WRESC would be transmitted to the electrical grid at the point of interconnection. Transmission and auxiliary uses are discussed in the following subsections. The electric power required for charging the system would be drawn from the electrical grid with additional power for the auxiliaries. Refer to the preliminary single-line diagram provided in Chapter 3.0, Electric Transmission (Figure 3-3) (ESHD 2024i) depicting the onsite Willow Rock main substation, including applicable ratings of key equipment. The facility would not be designed to be black start capable (i.e., capable of starting up without an external utility power feed).

For metering of the import and export of power, a power quality meter suitable for revenue metering of MWh and megavolt ampere reactive-hours would be located at the

SCE Whirlwind Substation. The power revenue metering would be constructed according to SCE standards.

A power management system would interface with SCE to coordinate power export/import quality and voltage regulation.

3.5.1.9.1 Generators and Motors

Turbine Generators

Generators would generate at medium voltage (13.8 kV). This power would be transformed via unit transformers to 230 kV for the electrical grid connection.

Generators are preliminarily rated 150 megavolt amperes (MVA) at 0.9 to 0.95 power factor to supply 130 MW gross and 125 MW net to the electrical grid at the point of interconnection. This allows maximum turndown (reduction in total overall output) of plant, whereby a single generator can operate while other generators are offline for maintenance.

Synchronous Motors for Compression Train

Full charging capacity requires eight synchronous motors running to supply the four air compressor trains. The power to the synchronous motors would be supplied via unit transformers.

The synchronous motors would normally run at unity or a slightly leading power factor to mitigate the VAR import requirements of induction motors within the auxiliary power system.

The synchronous motors would be started using a variable frequency drive (VFD) soft start system. One soft start unit would be utilized for each of the four sets of motors (one two-motor set per compressor power train) if required.

3.5.1.9.2 Alternating Current Power—Transmission

Power would be generated by the four generators at 13.8 kV and transformed to 230 kV for the grid interconnection. 230/13.8 kV main transformers in each train support connection to the local 230 kV network at the SCE Whirlwind Substation. For motor operation, four additional 230/13.8 kV unit transformers provide back-feed power to the compressor motors. Surge arrestors at the point of interconnection would protect the system from disturbances in the 230 kV system caused by lightning strikes or other system disruptions.

The transformers would be set on concrete foundations, and the design would include a secondary oil containment reservoir to contain the transformer oil in the event of a leak or spill. There would be differential protection on transformers rated 5 MVA and greater. The 230/13.8 kV transformer would be connected to a single-circuit three-phase 230 kV line, which would be connected to the Whirlwind Substation via an

approximately 19-mile predominantly overhead gen-tie line. A detailed discussion of the electric transmission system is provided in **Section 4.3, Transmission System Engineering**.

3.5.1.10 Power Supply Systems

Alternating Current Power—Distribution to Auxiliaries

The distribution voltages for plant auxiliary systems and lighting would include: 4.16 kV, 480 V, and 208/120 V.

Auxiliary power supplies for instruments would be 24 volts direct current (VDC); however, in the even that increased power consumption is required, 120 volts alternating current (VAC) would be used.

Direct Current Power Supply System

Turbine/generator and compressor/motor auxiliaries would be supplied by 125 VDC.

Process control systems (PCS) would be supplied from 24 VDC power supply modules within system cabinets. Control power for the switchgear would be 12 VDC supplied from a dedicated direct current (DC) battery system.

The 125 VDC battery system would be independent of the 120 VAC uninterruptible power supply (UPS) battery system. All DC systems would have 8-hour battery duration.

The system would be designed to provide continuous rated power in the event of main power failure. The DC systems would be located on the emergency generator bus. The DC systems' health would be monitored by the distributed control systems (DCS).

Uninterruptible Power Supply (UPS) System

An independent UPS system would be dedicated to supply power to the following loads:

- Critical instruments, emergency lighting, and valves
- Control panel fans and other ancillaries
- DCS control racks, including programmable logic controllers (PLCs), flow computers, vibration monitoring system, etc.
- Telecommunications system
- Building cameras and security access system
- Smoke and building heat detector UPS systems include:
    - 20 kVA or less:
        - Input voltage: 208 volts (V)
        - Output voltage: 208 V

- Greater than 30 kVA:
  - Input voltage: 480 V
  - Output voltage: 480 V

The system would be designed to provide continuous rated power in the event of main power failure. The UPS would be located on the emergency generator bus. The UPS and emergency generators health would be monitored by the DCS.

Emergency Power

Three diesel-fired self-contained 4.16 kV generators, up to approximately 2.5 MW each, would supply emergency power for all critical loads via double sided 5 kV emergency switchgear. These units would meet United States Environmental Protection Agency (U.S. EPA) Tier 4 emissions standards and would normally operate only to facilitate maintenance and reliability testing for up to 50 hours per year. Only one unit would operate at a time to perform maintenance and reliability testing.

When needed for emergency power due to a loss of utility interconnection, the generators would activate and operate during the emergency period.

3.5.1.11 Water Supply and Use

The AVEK water agency currently owns and operates a 36-inch-diameter water supply line that is located adjacent to the WRESC site approximately 300 feet east of the WRESC site's boundary. AVEK would supply Willow Rock with the required water rates and quantities from a new dedicated tap into its water supply line at a location adjacent to the WRESC site. A permanent 6-inch-diameter buried water pipeline would be installed onsite to deliver water from the AVEK main supply pipeline to the surface reservoir.

These sources would also provide water for filling the storage tank used for fire protection and service water. The applicant's Appendix 2D, Water Balance Diagrams and Construction Water Use (ESHD 2024o), provides water balance diagrams showing annual average and high temperature ambient operating conditions.

During plant operation, the expected water consumption from AVEK would be less than 2,000 gallons per day, as shown in the water balance. As the cooling and thermal storage systems operate in a closed loop, losses are minimal, and make-up water demand would be small. The reservoir volume is balanced by controlling evaporation with the floating cover, the inflow of annual precipitation, and condensed water from compressed air.

When the plant is operating in charging mode and the compressors are filling the cavern with compressed air, water is produced at the exit of each compression stage. This is caused by compressed air becoming saturated during compression and moisture in the air condensing in each post-cooling stage. The condensate must be removed

from the system to avoid damage to the compressors and sent to the water reservoir and evaporative cooling system.

The water provided by AVEK during operations would mostly be used as a tap water source for offices, maintenance facilities, service water, fire system re-filling, and make-up water for cooling and thermal system water.

During construction and during the initial filling of the surface reservoir the WRESC would require approximately 1,400 acre-feet of water. Once the facility commences operation, it is expected to have an annualized surplus of approximately 3.6 acre-feet per year (on average) of non-potable recharge quality water to provide surface reservoir water make-up. Evaporative loss would be reduced by using a cover on the reservoir. Since there would be a seasonal variation associated with the production of water as well as evaporation losses, the reservoir would be designed with adequate freeboard to allow for seasonal fluctuations in water inventory.

3.5.1.11.1 Construction Water

An estimated 1,400 acre-feet of water (incorporating approximate 20 percent contingency) would be needed throughout the construction and startup period. Most of the water would be used for filling the hydrostatically compensating reservoir. Other uses include supporting construction of the cavern works (shaft drilling and cavern excavation), surface works (hydrotesting and general purpose washdown), and fire system testing. These are discussed briefly below. Refer to the applicant's Appendix 2D, Water Balance Diagrams and Construction Water Use (ESHD 2024o), for the estimated water consumption required during construction by month.

Cavern Works

Construction of the cavern is estimated to require an estimated 252 acre-feet of water over the construction period. Uses include site preparation, air and shaft drilling, and excavation of the cavern. Water remaining in the drilling pond(s) after shaft sinking would be filtered, water quality tested and then either sent to the reservoir, or, if necessary, based on test results, hauled offsite by an approved waste hauler.

Surface Works

The surface construction is expected to require approximately 47 acre-feet of water for several purposes over the 24-month period, including the following:

- General purpose (de-dusting roads, daily washdown, etc.)
- Tank and sphere hydrotest
- Piping and vessel hydrotest
- Fire system testing

Water used for hydrotesting would be reused for hydrotesting other systems, including the spheres, pipe circuits, and initial fill. A temporary pumping sub-system with screening and filtering capabilities would be utilized to re-use this water. After all testing, the volume of hydrotest water (losses at flange breaks, nozzle spray tests, etc.) would be screened and filtered to a suitable cleanliness level to supplement the initial fill volume of the cold thermal storage tanks and/or reservoir.

Surface workers are assumed to use 20 gallons of potable water per person per day during all stages of construction, including drinking and wash water.

Hydrostatically Compensating Surface Reservoir Fill

The roughly 600-acre-foot surface reservoir would require approximately 868 acre-feet of water for initial fill (accounting for evaporation losses during the filling period). The reservoir fill would require approximately 14 months, with additional monthly fill requirements. The required fill amount accounts for both precipitation and evaporation. After initial filling, the surface reservoir would be equipped with an interlocking shape floating cover estimated to be 90 percent effective in reducing evaporation. The estimated fill amount conservatively assumes no benefit from the cover.

3.5.1.11.2 Water and Wastewater Requirements

Demineralized water would be produced onsite and used as make-up water for the water-based thermal storage and closed-cooling medium loops.

The evaporative cooling water is used intermittently during hot temperatures when the closed-cooling loops cannot meet the cooling objectives of the turbomachinery. The water for the evaporative cooling is expected to be sourced from the produced water at the air compressors such that the evaporative cooling does not require sourcing of additional water.

3.5.1.11.3 Water Treatment

The AVEK supply water would be used for make-up to the plant water system, fire protection, and general needs such as equipment and surface washdown.

The thermal energy storage system and cooling system would be filled with demineralized water during commissioning. A temporary, portable demineralization system would be used to generate water for the first filling and commissioning. Make-up demineralized water would be produced during operations to cover minor losses in the system. The expected quality of demineralized water used for the first filling would have the following characteristics:

- Appearance: clear and colorless
- Odor: odorless
- Total dissolved solids maximum: < 1 part per million (ppm)

- Hardness: < 0.01 Deutsche Harte
- Oil and grease: none
- Conductivity at 25 degrees Celsius: < 0.5 micro Siemens per centimeter
- Chlorides: <0.5 ppm
- Iron: <0.005 ppm
- Copper: <0.01 ppm

3.5.1.11.4 Water Availability and Water Quality

AVEK would provide the required quantity and quality of water required by the project. GEM A-CAES LLC (GEM, the applicant) has filed an application for water service with AVEK and is in the process of securing a water service agreement. Projected water quality will be based on available testing data.

3.5.1.12 Waste Management

Waste management is the process whereby all wastes produced at Willow Rock would be properly collected, treated if necessary, and disposed of. Wastes include process wastewater, as well as nonhazardous waste (primarily excavated waste rock) and hazardous waste, both liquid and solid. Waste management is discussed in more detail in **Section 5.12, Solid Waste Management**.

3.5.1.12.1 Wastewater and Stormwater Collection, Treatment, and Disposal

Wastewater and Septic Waste

Most of the project wastewater would be reused in the system immediately after treating the water for reintroduction into the process. If required, between zero to 250,000 gallons per year of water could be hauled offsite to an appropriate treatment facility in compliance with all applicable laws, ordinances, regulations, and standards.

The septic waste from the administration/control building would be handled by one of the two methods described below:

- Sanitary waste from the administration/control building would be directed to a nearby underground septic storage tank, pumped out periodically by truck, and trucked offsite to an approved disposal facility.
- Alternatively, the sanitary sewer system would consist of a lateral septic system containing a lateral line from the structure to a septic tank. The waste would flow to the lateral system of pipes that allows the waste from the septic system to discharge via perforations in the lateral pipes.
- Most water created from operations of the facility will be reused in the system immediately. Management of residual volumes will minimize potential haulage offsite, including treating of the water for reintroduction to the process. If required,

any volume will be hauled offsite to an appropriate treatment facility in compliance with all applicable laws, ordinances, regulations, and standards.

Willow Rock would not have a practice of washing down any equipment with oily residues. Equipment that has oily residues would be cleaned with rags and sorbents, and appropriate cleaning solutions would be applied to the rags and sorbents.

After cleaning, the oily rags and sorbents would be properly stored, manifested, and disposed of by licensed disposal companies in the regulatory-required time frames.

Stormwater

Onsite stormwater flows generated within the WRESC site boundary would be routed to an unlined stormwater pond and would not be discharged outside the WRESC site. Plant area drains would be directed to oil-water separators. There would be at least one oil-water separator for the common plant areas, and one oil-water separator for each power block. Water from the oil-water separator sumps would be discharged to the waste drains sump and then to temporary holding tanks. The separated oil and water would be periodically pumped out of the oil-water separators by truck and disposed of offsite by a licensed hauler.

A summary of the approach for offsite perimeter stormwater drainage is described below for the “without berm” and “with berm” options.

Option 1 - Without Berm

Offsite flows would be diverted via proposed ditches along the north and west side of the WRESC site to route them to where they are currently flowing. The flows conveyed by the west ditch would discharge stormwater south and then to the ditch along Dawn Road. The flows conveyed by the north ditch would discharge stormwater to the east to the ditch along the Sierra Highway. These ditches would be sized to carry, at a minimum, the 100-year discharge calculated using TR55 Soil Conservation Service (SCS) Unit Hydrograph methodology.[3]

Onsite flows generated by the WRESC site would not be discharged outside the WRESC site boundary. All the WRESC site stormwater would be conveyed via sheet flow and system flow (catch basins, swales, and stormwater conveyance piping) to a proposed, unlined stormwater pond on the southeast corner of the WRESC site.

Option 2 - With Berm

Offsite flows would be diverted via proposed ditches along the north and west side of the architectural berm and route them to where they are currently flowing. The flows

3 The Soil Conservation Service (SCS) proposed a parametric Unit Hydrograph (UH) model. The model is based upon averages of UH derived from gaged rainfall and runoff for a large number of small agricultural watersheds throughout the US. SCS Technical Report 55 (1986) and the National Engineering Handbook (1971) describe the UH in detail.

conveyed by the west ditch would discharge stormwater south and then to the ditch along Dawn Road. The flows conveyed by the north ditch would discharge stormwater to the east to the ditch along the Sierra Highway. These ditches would be sized to carry at a minimum the 100-year discharge calculated using TR-55 SCS Unit Hydrograph methodology.

Rainwater that falls on the north and west sides of the architectural berm would flow to the proposed ditches along the north and west side of the architectural berm described above. Rainwater that falls on the south and east side of the architectural berm would be directed south and east via ditches on the north and west boundaries of the WRESC site and flow towards the Dawn Road and Sierra Highway ditches, respectively.

Onsite flows generated by the WRESC site would not be discharged outside the WRESC site. All the WRESC site stormwater would be conveyed via sheet flow and system flow (catch basins, swales, and stormwater conveyance piping) to a proposed, unlined stormwater pond on the southeast corner of the site.

Excavation Waste

The WRESC would produce excavated material associated with typical mining techniques to create the underground compressed air storage cavern. Excavation waste generally includes soil and rock. The cavern has an equivalent volume of excavated material of approximately 1.3 million cubic yards based on an expected swell by a factor of 1.4. The swell factor accommodates the volumetric expansion from solid rock at depth to crushed rock at the surface.

Based on preliminary engineering and environmental planning, the applicant is considering options for adaptive re-use of the cavern rock onsite within the project boundaries or hauled offsite to up to four independent third parties. To plan conservatively, the project analyses assume that cavern rock would be fully reused in four options: up to 100 percent reused onsite as an architectural berm, up to 100 percent hauled offsite to the Robertson's Ready Mix in Los Angeles County, up to 100 percent hauled offsite to the Holliday Rock facility in Kern County, and/or up to 100 percent hauled offsite to the Vulcan Materials Inc. processing facility in Los Angeles County. At the time of filing, commercial agreements are underway with the private off-takers, and design of an onsite architectural rock berm is being advanced through engineering.

Offsite third-party off-takers have expressed interest in potentially reusing the rock material for commercial purposes. Each potential off-taker will have the appropriate permits in place to import material from third parties.

In lieu of hauling the excavated rock offsite, another option is to re-use the material within the project boundaries as an architectural berm. The specific design of the feature is to be determined through final engineering.

3.5.1.12.2 Solid Nonhazardous Waste

The WRESC would produce nonhazardous waste related to construction, operation, and maintenance that is typical of power generation and energy storage operations. Surface construction wastes would generally include soil, scrap wood, excess concrete, empty containers, scrap metal, insulation, and sanitary waste. Cavern construction wastes would include some of the same materials, as well as explosives packaging.

Facility waste during operation would include nonhazardous waste, scrap metal and plastic, insulation material, defective or broken electrical materials, empty containers, and other solid wastes, including the typical refuse generated by workers. Solid waste would be trucked offsite for recycling or disposal.

3.5.1.12.3 Hazardous Wastes

Several methods would be used to properly manage and dispose of hazardous wastes generated by the project. Waste lubricating oil would be recovered and recycled by a waste oil recycling contractor. Spent lubrication oil filters would either be recycled or disposed of in a Class I landfill. Workers would be trained to handle hazardous wastes generated at the WRESC site. Chemical cleaning wastes would be temporarily stored onsite in portable tanks or containers and disposed of offsite by an appropriate contractor in accordance with applicable regulatory requirements.

3.5.1.13 Management of Hazardous Materials

A variety of chemicals, including oily rags, would be stored, handled, and used during the construction and operation of Willow Rock, following applicable LORS. Chemicals would be stored in appropriate chemical storage facilities. Bulk chemicals would be stored in storage tanks, and most other chemicals would be stored in returnable delivery containers. Chemical storage and chemical feed areas would be designed to contain leaks and spills. Containment areas and drain piping design would allow a full-tank capacity spill without overflowing the containment area. For multiple tanks located within the same containment area, the capacity of the largest single tank would determine the volume of the containment area and drain piping with an allowance for rainwater. Drain piping for reactive chemicals would be trapped and isolated from other drains to eliminate noxious or toxic vapors.

Safety showers and eyewashes would be provided adjacent to, or in the vicinity of, chemical use and storage areas. Plant personnel would use approved personal protective equipment during chemical spill containment and cleanup activities. Personnel would be properly trained in the handling of these chemicals and would be instructed in the procedures to follow in the event of a chemical spill or accidental release. Adequate supplies of emergency response equipment, including absorbent material, would be stored onsite for spill cleanup.

3.5.1.14 Fire Protection

The fire protection system would be designed to protect personnel and limit property loss and facility downtime in the event of a fire. The system would include an electric fire pump, a small jockey pump to keep the system under pressure, and a fire protection water network system consisting of hydrants or standpipes and portable fire extinguishers. Where required, automatic or fire sprinkler systems would be provided. A diesel-fired approximately 345 kW (460 horsepower) fire pump would be provided for emergency backup. The fire protection and piping network system would be designed to protect the facility, which would be designed under the following regulations:

- Federal, state, and local fire codes, and occupational health and safety regulations, in concert with the Authority Having Jurisdiction
- California Building Code, where applicable
- Applicable, mandatory National Fire Protection Association standards

The diesel-fired pump engine would meet U.S. EPA Tier 3 emission standards and normally only operate for maintenance and reliability testing for up to 50 hours per year.

Firefighting water would be stored in the service/fire water storage tank. The tank would have an internal service water pump suction standpipe so that the required water volume for a fire event is always available to the fire water pumps. The system can supply maximum water demand for any fire suppression requirements, as well as water for fire hydrants. The total capacity of the tank is estimated at 350,000 gallons, with 300,000 gallons reserved for fire water.

Separation criteria would be evaluated in a fire protection study during further engineering.

Portable and wheeled fire extinguishers would be provided at strategic locations around the facility. Their locations would be determined based on the guidelines of National Fire Protection Association 10 or relevant local requirements.

The following types of portable fire extinguishers can be used as appropriate for the type of risk:

- For areas where there are ordinary combustibles such as wood, cloth, paper, plastic, etc., extinguishers would be suitable for Class A fires. These can be in the form of water, foam, or dry powder.
- For areas where there are flammable liquids, oils, grease, paint etc., extinguishers would be suitable for Class B fires. These can be carbon dioxide (CO2) dry powder, or foam or any other suitable film forming foams.
- For areas where there is energized electrical equipment, extinguishers would be suitable for Class C fires. These would be CO2 or other suitable dry chemicals.

Portable fire extinguishers, where applicable, would be installed at a suitable distance above the floor for ease of deployment and to minimize the potential for corrosion. Fire extinguishers would be fixed to walls, columns, or structural supports as appropriate. Weatherproof storage cabinets would be provided for extinguishers located in open areas. Wheeled extinguishers located in external areas would be equipped with a weatherproof cover.

3.5.1.15 Plant Auxiliaries

The following systems would support, protect, and control the Willow Rock facility.

Process Systems

A 5 kV substation would be required in the process area to supply power to the area loads. The 230/5 kV transformers would be distributed at the WRESC site. Large motors in the process area (above 300 horsepower) would be fed from the 5 kV system with many of the motors on emergency power for operation during a power outage.

Smaller motors would be fed from the 480 V system, and some would be on emergency backup power.

Heating, Ventilation, and Air Conditioning Systems

All buildings would be equipped with suitable heating, ventilation, and air conditioning systems and critical systems would operate on emergency power as required.

Lighting

Indoor building lighting would be designed consistent with building code requirements to provide adequate indoor illumination with consideration for human factors. Exterior lighting would be hooded and downward facing to provide adequate space lighting while minimizing offsite glare.

The emergency lighting would be sufficient to illuminate the exit path from process areas and inside the buildings and would be supplied from a 120 V UPS located indoors. Exit signs would be self-illuminating. In outdoor areas, emergency light fixtures would be equipped with rechargeable battery packs with minimum 1-hour battery backup. These emergency lighting fixtures would not normally be switched on and would be identical to the fixtures used throughout the facility.

Process plant lighting and convenience outlets would be supplied from a 208 V/120 V, three-phase, four-wire, 60 hertz system.

Grounding

All systems would be grounded and bonded as per the National Electric Code and local municipal codes and standards.

All equipment containing flammable liquids or gases and liable to static discharge ignition would be grounded by having one or more anchor bolts connected to the reinforcing bar of the equipment foundation.

The grounding system design would be as per Institute for Electrical and Electronics Engineers (IEEE)-80 and IEEE-142 guidelines. A detailed step/touch potential, including ground potential rise calculation, would be performed. The substation grounding systems would be designed to limit the overall resistance to earth to safe step and touch voltage conditions.

Prior to detailed design execution, sufficient site soil data would be obtained for performing grounding studies and calculations.

All equipment would be connected to the ground through a minimum of two paths, except for small equipment that can be safely connected to a single source.

A dedicated, clean, instrument-grounding system would be provided to connect all PCSs, in addition to a standard equipment grounding system.

The instrumentation grounding system would be bonded to the electrical system ground below grade.

Cathodic Protection

The cathodic protection system would be designed to control corrosion of metallic piping when buried in the soil. Depending on the corrosion potential, type of soils on the WRESC Site, ease of isolation of buried pipe from the aboveground facilities, and proximity to ground grid and foundations, either a passive or impressed current cathodic protection would be provided where required.

Freeze Protection

Freeze protection for above- and below-grade piping and instrumentation lines would be evaluated and installed as necessary, based on the expected minimum ambient temperature at the facility. Given that the record minimum temperature near Willow Rock is 24 degrees Fahrenheit, freeze protection is not expected to be required for large piping but may be required for small piping and air tubing. Below-grade piping would be installed below freezing depth according to site's climate and soil data. Where necessary, the above-grade piping would be protected with an electrical heat tracing system and/or continuous circulation in rare instances of freezing temperatures. The foundation of aboveground pipe support would be rooted below the freezing depth.

3.5.1.16 Control Systems

Process Control System

The Process Control System (PCS) would provide all monitoring and control of the facility. The PCS configuration would be justified with the plant engineering contractor based on the facility complexity.

The facility would function automatically with minimum operator intervention. Emphasis would be given to automating routine actions so that the operator would have more time to analyze and identify short- and medium-term plant performance, efficiency, and imminent failures.

Adequate instrumentation would be installed to enable operations personnel to monitor facility performance from the central control room with minimum field intervention. Field operators would only assist in visual surveillance and would intervene only when critical equipment and systems warrant immediate attention. All field functions would require a permissive signal from the control system.

For stand-alone control packages within the facility where operator action would be entirely local, a package common alarm would be connected to the PCS to direct an operator to examine local indicators or panels to determine equipment status.

Operator Interface System

Under normal conditions, the facility would be operated from the central control room with operator displays with mouse and operator keyboards, radio, and telephone panels, monitors for internet protocol camera access.

The PCS operator workstations would provide the following functions at minimum:

- Presentation of process information to the operator
- Facilities to enable the operator to adjust and control the process
- Monitoring and control of packaged equipment
- Monitoring and control of utility systems
- Short-term logging of process conditions and operator actions
- Diagnostic of the PCS and its component parts
- Site security

Monitoring and Controls

The PCS would use solid-state equipment and a PLC or DCS to increase reliability and flexibility.

Electromechanical control relays would not be used, except when required for safety interlocks. The plant DCS would meet cyber-security standards as required by the California Independent System Operator.

If the control system involves electromechanical timing sequences or interlocks, auxiliary dry contacts would be provided for indication of steps or conditions. These contacts would be used to interface with the PCS to monitor the operational status.

All failure and alarm switches would be "fail safe"—i.e., an abnormal condition would cause a loss in output signal. Upon loss of power, control circuits and alarms would go to the "fail safe" condition. Solenoid valves and actuating relays would be normally energized and would de-energize upon protective action or alarm. All alarm contacts shall open to alarm. When contacts are controlled by a pneumatically loaded device, the device would be normally loaded and would vent to create the alarm or shutdown condition.

In general, interlock system circuits would be activated from separate primary instruments. Each interlock signal initiating a shutdown would also activate a separate pre-alarm point to indicate that an abnormal condition exists, and failure to take corrective action would result in a shutdown of the affected equipment. Pre-alarms may be actuated by a "normal" instrumentation system signal.

Communications between the PLC and human-machine interface, and PLC to PCS would be Ethernet transmission control protocol/internet protocol or ProfiNet.

Communications to motor control centers and VFDs would be Ethernet- or fiber-based. Communications to discrete field contacts would be automated with limit switch indications.

Wireless communication devices would be used for communication between control room and operators in the facility.

3.5.1.17 Service Air and Instrument Air

The service air system would supply compressed air to hose connections for general use at the WRESC. Service air headers would be routed to hose connections located at various points throughout the facility.

The instrument air system would provide dry, filtered air to pneumatic operators and devices. Air from the service air system would be dried, filtered, and pressure-regulated before delivery to the instrument air piping network. An instrument air header would be routed to locations within the facility equipment areas.

3.5.1.18 Interconnect to Electrical Grid

The facility would connect to the SCE electrical grid via a 230 kV overhead (predominantly) single-circuit gen-tie line that would run approximately 19 miles from

the SCE Whirlwind Substation to the WRESC site. The 230 kV line would terminate at a dead-end tower before the main power transformers, which would step down the voltage to 13.8 V and five kV, suitable for distribution within the WRESC. The grid connection would be capable of power import and export, rated to suit all operating scenarios. There are expected to be a small number of short underground gen-tie line segments to allow for crossing of a Los Angeles Department of Water and Power high-voltage transmission corridor and in other locations where the transmission corridor is congested with preexisting facilities. Open trenching or horizontal directional drilling would be used to complete these short underground segments.

3.6 Project Construction

3.6.1 Construction Schedule

The construction of the WRESC from site preparation and grading to full-scale operation and construction closure is expected to take roughly 60 months. Major milestones are listed in **Table 3-3**. The applicant would assess the prospect of initiating full-scale operations for a portion of the facility's energy capacity in advance of the target date shown below.

TABLE 3-3 MAJOR PROJECT MILESTONES

Target Project Milestones	Begin		Complete	
	Month Number	Calendar Date	Month Number	Calendar Date
Site Preparation & Mobilization	1	Dec-25	3	Feb-26
Grading	2	Jan-26	13	Dec-26
Reservoir Excavation	3	Feb-26	13	Dec-26
Shaft Drilling (Ventilation and Process Connections)	10	Sep-26	35	Oct-28
Access Shaft Excavation	11	Oct-26	23	Oct-27
Topside Equipment Installation	15	Feb-27	45	Aug-29
Transmission Line Construction	24	Nov-27	39	Feb-29
Cavern Construction (and Cavern Rock Crushing and Hauling)	24	Nov-27	47	Oct-29
Topside Equipment Commissioning	40	Mar-29	52	Mar-30
Subsurface Commissioning	47	Oct-29	52	Mar-30
Full Plant Commissioning	52	Mar-30	55	Jun-30
Startup	55	Jun-30	60	Oct-30
Construction Demobilization	59	Sep-30	60	Oct-30
Commercial Operation	60	Oct-30	61	Nov-30

Source: Hydrostor 2025

3.6.2 Construction Workforce

During construction, there would be an average and peak workforce of approximately 273 and 749 workers, respectively, including construction craft workers and

supervisory, support, and construction management personnel onsite if 100 percent of the waste rock is hauled offsite. The construction average and peak workforce would decrease slightly to 269 and 731, respectively, if all the excavated rock is re-used onsite in the form of an architectural berm.

Surface work would normally occur in eight-hour shifts, 5 days a week. Cavern work is planned as follows:

- Mobilization and site preparation (months one through three): five days a week, 10-hour shifts
- Grading, excavation, and shaft drilling (months two through 26): 12 hours/day, 10 days on, four days off
- Cavern construction (months 26 until completion): 24 hours/day, seven days/week, 12-hour shifts

During cavern construction, trucks would either haul excavated waste rock up to 24 hours per day from the WRESC site or re-use the material onsite. Excavated rock during construction may be temporarily stored for re-use if necessary.

Cavern construction would occur 24 hours per day, seven days per week. Additional hours may also be necessary for surface construction work to make up schedule deficiencies or to complete critical activities (e.g., pouring concrete at night during hot weather, and working around time-critical shutdowns and constraints).

3.6.3 Construction Laydown and Traffic

Construction laydown and parking would be located on property to the west and north of the WRESC site. The peak construction site workforce level is expected to last from month 25 through month 46 of the construction period, with the peak being months 26 and 27.

Table 3-4 provides an estimate of the average and peak construction traffic during the 60-month construction/commissioning period for Willow Rock based on the worst-case workforce (100 percent excavated rock hauled offsite).

TABLE 3-4 ESTIMATED WORST-CASE AVERAGE AND PEAK CONSTRUCTION TRAFFIC

Vehicle Type	Average Daily Trips	Peak Daily Trips
Construction Workers (one way, no carpooling assumed)	273	749
Deliveries	45	60
Total	318	809

Source: Hydrostor 2025

3.6.4 Temporary Construction Rock Crushing Facility

A temporary portable rock crushing facility would be located onsite for up to 10 hours per day, seven days per week for 22 months beginning approximately in month 25. The

rock crushing facility would be capable of processing up to 350 tons per hour and is expected to consist of a primary jaw crusher, a secondary cone crusher, screens, three conveyors, and two stackers. The facility would use a combination of water sprays and a baghouse to control fugitive dust and fine particulate matter emissions. The facility would be capable of operating from a locally provided power feed or using two 779-horsepower diesel-fired engine generators meeting U.S. EPA Tier 4 emission standards. The entire facility is expected to be certified under the California Air Resources Board Portable Equipment Registration Program.

The overall quantity of rock to be crushed would depend on whether an architectural berm would be constructed onsite or whether excavated rock would be hauled offsite. If an architectural berm is constructed, only 25 percent of the excavated rock is expected to be crushed to facilitate berm stability. If the excavated rock is hauled offsite, then up to 100 percent of the excavated rock is expected to be crushed to meet off-taker specifications.

3.6.5 Temporary Concrete Batch Plant

A temporary portable concrete batch plant is also expected to be located onsite to support construction of the shafts and, if necessary, initial cavern construction. The concrete batch plant is expected to operate onsite for approximately 12 to 15 months. Construction is expected to require up to 80 cubic yards per day of finished cement. The facility would be capable of operating from a locally provided power feed or using one 500-horsepower diesel-fired engine generator meeting U.S. EPA Tier 4 emission standards. The entire facility is expected to be certified under the California Air Resources Board Portable Equipment Registration Program.

3.7 Willow Rock Facility Operation

The WRESC would be operated and monitored continuously 24 hours per day, seven days per week by qualified and licensed onsite operations staff and would not be remotely operated (other than potential grid regulation-required operations such as generator transfer trips or special protection schemes).

There would be a total of approximately 40 full-time staff to operate the facility. The operations staff would include control room operators (24 hours per day, seven days per week) and roving operators in the field conducting general rounds at least twice per 12-hour shift.

Additional field checks would be done as needed for maintenance activity, upsets, or other general operations requirements.

3.7.1 Facility Safety Design

Willow Rock would be designed to maximize safe operation. Potential hazards that could affect the facility include earthquake, flood, and fire. Facility operators would be

trained in safe operation, maintenance, and emergency response procedures to minimize the risk of personal injury and damage to the facility.

3.7.2 Facility Availability and Quality Control

The WRESC would be designed to be available to operate at its full load at least 95 percent of the time.

Availability is the duration of time that the entire facility would be able to perform its intended task. It is calculated as a ratio expressed in percentage, where the numerator is the number of hours when the system as a whole either (1) is ready to either charge or discharge (during idle/standby periods), or (2) is charging or discharging, all divided by the total number of hours in the period.

Typically, both planned and unplanned outages are subtracted from the availability calculation numerator to calculate actual availability for a period. The availability calculation denominator can be the total amount of time in the day, week, month, or, most commonly, year during which availability is being calculated.

For further clarity, availability is not the same as a typical generating plant's capacity factor, which accounts for annual criteria such as the plant's actual energy MWh output (numerator) versus the plant's nameplate capability to produce MWh over a full year (denominator), and which is usually based on the general assumption that the relevant plant would always operate at baseload.

The WRESC is intended to be operated for approximately 50 years. Reliability and availability projections are based on this operating life. Operation and maintenance procedures would be consistent with industry standard practices to maintain the useful life of plant components.

3.7.2.1 Fuel Availability

The WRESC would not use fuel for the process. California ultra-low sulfur diesel (15 ppm sulfur by weight) would be used for the emergency backup generators and fire pump and is readily available in the marketplace.

3.7.2.2 Water Availability

Potable and process water would be provided by interconnection with the AVEK water distribution system. The availability of water to meet the requirements of the facility need is discussed in more detail in **Section 5.16, Water Resources**.

3.7.2.3 Redundancy of Critical Components

The following subsections identify equipment redundancy as it applies to project availability. Sparing of equipment must take into consideration the requirement to provide the targeted overall system availability of 95 percent. A Reliability, Availability,

and Maintainability (RAM) study would be performed during final engineering design to further refine this preliminary redundancy information.

3.7.2.4 Turbomachinery

As is typical in the industry, there is no redundancy in turbomachinery (spares), given the overall reliability of the component parts and the need to control capital expenditures. Routine minor inspection and maintenance would be performed between charge and discharge cycles during pre-planned outages. Major inspections and overhauls would require shutdowns for removal of the turbomachinery casings, rotors, and other major components.

3.7.2.5 Pumps

All types of pumps are considered susceptible to mechanical breakdown and generally have one installed spare. The decision not to install a spare would depend on the criticality of the service. In general, pumps would be spared in an N +1 arrangement as an early front-end engineering design assumption until either more accurate input is available or the RAM analysis has completed.

3.7.2.6 Heat Exchangers

Shell and tube (S&T) heat exchangers are less susceptible to mechanical breakdown, though appropriate protection would be provided to safeguard equipment against tube failures and cross contamination of fluids. S&T heat exchangers would not be spared; however, the parallel nature of the heat exchanger system would allow the plant to remain available when individual exchanger units are under service. Appropriate filtration would be included to prevent corrosion and increase reliability. Tube inspection and maintenance allowances would be made in the layout design and procurement.

3.7.2.7 Storage Tanks

Multiple spherical tanks are required due to size constraints on the technology at the required operating condition, effectively resulting in sparing. They are not spared beyond the minimum number of spherical tanks required to store the hot water. That is, the WRESC would still be able to operate with a spherical tank rendered unusable, but at a reduced charge/discharge duration.

The low-pressure (atmospheric) tank is not susceptible to mechanical breakdown and, as such, does not require frequent shutdowns for maintenance purposes.

Both types of tanks would be inspected and maintained during pre-planned outages, with major inspections coordinated with major work on the turbomachinery.

Critical sensors and transducers would have triple redundancy.

3.7.2.8 Project Quality Control

The project would implement a QC program that would ensure the highest level of oversight while meeting the desired project outcomes, as well as the appropriate license and social license for ongoing operations.

3.7.2.9 Quality Control Records

The following QC records would be maintained for review and reference:

- Project instructions manual
- Design calculations
- Project design manual
- Quality assurance audit reports
- Conformance to construction records drawings
- Procurement specifications (contract issue and change orders)
- Purchase orders and change orders
- Project correspondence
- Any other records as required by LORS

During construction, field QC activities would be performed during the last four stages of the project: receipt inspection, construction/installation, system/component testing, and plant operations. The construction contractor would be contractually responsible for performing the work in accordance with the quality requirements specified by contract.

The subcontractors' quality compliance would be surveyed through inspections, audits, and administration of independent testing contracts and ultimately verified by the CEC's Delegate Contract Building Official.

A plant operation and maintenance program, typical of a project this size, would be implemented at the Willow Rock site to control operation and maintenance quality. A specific program for this project would be defined and implemented prior to initial plant startup.

3.8 Facility Closure

Closure of the facility can be temporary or permanent. Temporary closure is defined as a shutdown for a period exceeding the time required for normal maintenance, with an intent to restart in the future. Permanent closure is defined as a cessation in operations with no intent to restart operations. For more information, see **Section 9**, **Compliance Condition and Compliance Monitoring Plan**.

3.8.1 Temporary Closure

For a temporary closure where there is no release of hazardous materials, the applicant would maintain security of the WRESC facilities and would notify the CEC and other responsible agencies as required by law. If the temporary closure includes damage to the Willow Rock facilities, and if there is a release or threatened release of regulated substances or other hazardous materials into the environment, procedures would be followed as set forth in an Emergency Management Plan in accordance with a Hazardous Materials Plan. Procedures would include methods to control releases, notification of applicable authorities and the public, emergency response, and training for facility personnel in responding to and controlling releases of hazardous materials. Once the immediate problem is solved and the regulated substance/hazardous material release is contained and cleaned up, temporary closure would proceed as described above for a closure where there is no release of hazardous materials.

3.8.2 Permanent Closure

When the facility is permanently closed, the closure procedure would follow a decommissioning plan that would be developed, as required under Condition of Certification **COM-16** Facility Closure Planning. Please see **Section 9, Compliance Conditions and Compliance Monitoring Plan** for more details related to decommissioning requirements. The following excerpted portions of **COM-16** are reproduced here for ease of the reader.

To ensure that a facility's eventual permanent closure and maintenance do not pose a threat to public health and safety and/or to environmental quality are protected during decommissioning, a decommissioning plan would be submitted to the CEC for approval prior to decommissioning. The plan would discuss the following:

- Conformance of the proposed decommissioning activities to all applicable LORS and local/regional plans
- Comprehensive scope of work, including but not limited to:
  a) Dismantling and demolition;
  b) Recycling and site clean-up;
  c) Impact mitigation and monitoring;
  d) Site remediation and/or restoration;
  e) Exterior maintenance, including paint, landscaping and fencing;
  f) Site security and lighting; and
  g) Any contingencies.
- Identification and assessment of all potential direct, indirect and cumulative impacts and proposal of mitigation measures to reduce significant adverse impacts to a less-

than significant level. Potential impacts to be considered shall include, but not limited to:

a) Traffic;

b) Noise and vibration;

c) Soil erosion;

d) Air quality degradation;

e) Soil waste;

f) Hazardous materials;

g) Waste water discharges; and

h) Contaminated soil;

In general, the preparation and implementation of the decommissioning plan would ensure the project is decommissioned in accordance with all applicable LORS and CEC conditions of certification. When necessary, the CEC may hold public workshops and/or public hearings as part of the decommissioning plan's approval procedure.

3.9 Comments and Responses on the Preliminary Staff Assessment

California Unions for Reliable Energy (CURE) (TN 264343)

TN 264343 Comment 1: CURE contends in their comment letter, beginning on page 12 under the header "Project Description and Piecemealing" that the information presented in the PSA is inadequate to establish a stable project description because; 1) the alignment of the gen-tie line in Figure 1-6 fails to show the most recent alignment established by the applicant, 2) the PSA fails to describe the construction access roadways required for the project, and 3) the PSA fails to adequately describe decommissioning activities associated with the project.

Response to TN 264343 Comment 1: CEC staff does not agree with the comment. The gen-tie alignment shown for purposes of staff environmental analysis (see Figure 1-6 of this Project Description section) incorporates 6 options for segment variations in either undergrounding or overhead configuration. These segments make up a relatively small fraction of the overall alignment of the gen-tie line. The alignment corridor analyzed by staff, incorporating all options, allowed staff's analysis to be all inclusive of the variations in final design. The project description of the gen-tie alignment is consistent throughout the staff environmental analysis. Final roadway design that will serve the selected gen-tie alignment during construction is subject to final design selection in the same fashion as the gen-tie itself, but staff's analysis of potential impacts takes this into account.

Staff is satisfied that, in accordance with CEQA Guidelines section 15124, the project description sufficiently describes and quantifies the gen-tie alignment constituting a stable project description; staff's environmental analysis has been performed on that project description in thorough fashion. The project description of the gen-tie alignment does include flexibility needed to respond to conditions, and events that could affect final design, which is permissible under CEQA, and the description provides information sufficient to evaluate and review the project's environmental impact. The staff environmental analysis does not split a large project into smaller ones resulting in piecemeal environmental review and does not fail to consider the environmental impact of the entire project. Careful review of public comments received on the Preliminary Staff Assessment did not identify any new significant impacts, and, therefore, does not require recirculation of the Preliminary Staff Assessment.

TN 264343 Comment 2: CURE notes the PSA provides inconsistent information on impacts associated with access roads that would be constructed for the Project's gen-tie line. For example, page 3-3 of the PSA states the Project includes "[a]n estimated up to 1.5 miles of unpaved temporary access road along the gen-tie line corridor as needed (approximately 3.7 acres)," whereas page 5.4-21 of the PSA states there would be up to 1.75 miles of new access roads causing approximately 4 acres of permanent impacts. Table 5.2-10 in the PSA indicates that new access roads would cause only 2.09 acres of impacts. As a result, it is critical that the PSA provide accurate information on the amount of road construction and widening needed to install and maintain the Project's gen-tie line.

Response to TN 264343 Comment 2: The project description as written was updated based on the applicant's updated project description submitted on February 5, 2025 (TN 261563) that includes "an estimated up to 1.5 miles of unpaved temporary access road along the gen-tie line corridor as needed (approximately 3.7 acres)," under Temporary Construction Facilities. **Section 5.4, Cultural and Tribal Cultural Resources**, has been edited with the updated project description. The project description updates did not change the impact analyses or mitigation. Staff notes that the total acreages may vary based on the proposed alignment and construction method; however, the acreage variation would not alter the significance conclusions in the PSA. In addition, to account for any differences between alignments Staff proposed COC **BIO-7** Condition 9 which requires the applicant to provide a final accounting of the before/after whole acreages and a determination of whether more or less habitat compensation is necessary would be determined.

TN 264343 Comment 3: The CURE letter, beginning on page 18, Item C, states the PSA fails to describe decommissioning activities for the project thereby failing to satisfy CEQA's requirement for a comprehensive project description.

Response to TN 264343 Comment 3: As stated in **Section 9, Compliance Conditions and Compliance Monitoring Plan**, response to comments, "CEQA Guidelines section 15145 does not require an agency to speculate, which is what would

be necessary to include the level of analytical detail suggested by the comment. Because the CEC retains jurisdiction over the project for its life, under the CEC's oversight, decommissioning is a separate process that requires CEC approval.

While decommissioning is outside the project certification, the FSA does include a robust discussion of decommissioning and includes Condition of Certification **COM-16** which details the decommissioning process, and the categories of information required in a decommissioning plan. See **Section 9, Compliance Conditions and Compliance Monitoring Plan** for more details related to decommissioning activities."

Center for Biological Diversity (CBD) (TN 264342)

TN 264342 Comment: The CBD letter, beginning on page 4, Item III. A. states similarly that the PSA fails to include the correct preferred transmission line route and accurately describe the gen-tie line alignment raising questions about the sufficiency of the project description.

Response to TN 264342 Comment: In similar fashion to the response to CURE, staff disagrees with the comment, based on the sufficiency of the project description. The applicant confirmed the transmission corridor has not moved and there are no changes to the preferred route that was analyzed in the Staff Assessment.

Applicant (TN 264316)

TN 264316 Comment: On page 1, Global Comments, the applicant states, "To comport with the terminology to be used by WRESC construction teams involved in these twice daily, subterranean activities, please replace the terms "blast" and "blasting" with "controlled detonations"; and please replace "Blasting Plan" with "Controlled Detonations Plan" throughout the PSA text and the Conditions of Certification."

Response to TN 264316 Comment: Staff agrees with the edit and has made edits throughout the Staff Assessment.

3.10 References

ESHD 2024i – Ellison Schneider Harris & Donlan LLP (TN 254806). Willow Rock Energy Storage Center SAFC, Volume 1, Part A, dated March 1, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-AFC-02

ESHD 2024o – Ellison Schneider Harris & Donlan LLP (TN 254812). Willow Rock Energy Storage Center SAFC Volume II-Appendix 1A-51F, dated March 4, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-AFC-02

WSP 2025g – Williams Sale Partnership (TN 261563). Willow Rock Updated SAFC Project Description - Section 2 Redline, dated February 5, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-AFC-02

WSP 2025h – Williams Sale Partnership (TN 261564). Willow Rock Updated SAFC Introduction - Section 1 Redline, dated February 5, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-AFC-02

Section 4

Engineering Evaluation

The purpose of this analysis is to ensure that the project would be built to applicable engineering codes, ensure public health and safety, and verify that applicable engineering LORS have been identified. This analysis also evaluates the applicant's proposed design criteria, describes the design review and construction inspection process, and establishes conditions of certification that would monitor and ensure compliance with engineering LORS and any other special design requirements. These conditions allow both the California Energy Commission (Energy Commission) compliance project manager (CPM) and the applicant to adopt a compliance monitoring program that will verify compliance with these LORS.

4.1 Facility Design

Testimony of Ardalan Raisi Sofi

4.1.1 Setting

Existing Conditions

Willow Rock Energy Storage Center (WRESC or project) proposes to construct and operate a clean energy storage facility. This facility would feature a 500-megawatt (MW) Advanced Compressed Air Energy Storage (A-CAES) system, which would have the capacity to provide up to 4,000 MW-hours of energy storage. The project would be in the Mojave-Rosamond region of eastern Kern County, which lies in seismic zone D (ESHD 2024i, Section 5.4.1.3). The project would utilize a subterranean cavern where air would be compressed and stored during off-peak times, then released and expanded through the turbines to generate electricity on demand (ESHD 2024i, Section 2.0). For more information on the site and related project descriptions, please see the Project Description section of this document.

The hydrostatic compensation reservoir meets the definition of a jurisdictional dam per California Water Code Sections 6002 and 6003. Since the reservoir is considered a dam the embankment design, specifications, and construction would be regulated by the Department of Water Resources' Department of Safety of Dams (DSOD). The Delegate Chief Building Official (DCBO) would have oversight responsibility of the entire project, but the California Energy Commission (CEC) would delegate design review and inspection of the reservoir embankment construction to the DSOD, with onsite consultation with the DCBO and ongoing guidance from the CPM. See **Section 5.16, Water Resources** for more information on the compensation reservoir embankment.

Cavern History/Stability Information

WRESC's cavern would not be the first large underground cavern built. One of the most notable examples of this is the 110 MW McIntosh CAES facility in Alabama, USA, which uses a cavern for air storage. The project was built in 1991 and began operations in 1992. It operated for about 30 years, until it was shut down in 2022 due to economic factors.

Another notable example of a large scale CAES facility with underground cavern is the 320 MW Huntorf ACAES facility in Germany. This facility began its operation in 1978 as the world's first commercial CAES system, and it remains in operation today.

As explained in **Section 4.1, Facility Reliability** and **Section 5.6, Geology, Paleontology, and Minerals**, geotechnical evaluation of the cavern found that the bedrock is expected to be seismically stable (ESHD 2024i). Literature evaluating the seismic stability of caverns supports the conclusion that deep underground openings are seismically stable, if the rupturing fault does not intersect the opening which is the case

for WRESC. The cavern and air and water shafts would be constructed following implementation of civil and structural design criteria provided in Table 4.1-1. Also, COC **GEO-2** (in **Section 5.6, Geology, Paleontology, and Minerals**) would ensure the vertical shafts and cavern are designed and constructed to withstand seismicity and that the construction of underground openings will follow engineering codes and professional standards (as listed in Appendix 2A) for construction of underground structures (ESHD 2024o).

Regulatory

Federal

Title 29 Code of Federal Regulations (CFR), Part 1910, Occupational Safety and Health standards. Title 29 of the CFR standard comprehensively addresses safety and health standards for general industry.

State

California Building Standards Code 2022 (or the latest edition in effect) (also known as Title 24, California Code of Regulations). The California Building Standards Code applies to the planning, design, operation, construction, use, and occupancy of power plants and their ancillary facilities.

Local

Kern County General Plan, 4. Safety Element (September 22, 2009). The element is intended to protect the community from any unreasonable risks associated with seismic and geologic hazards (Kern County 2009). Its provisions are included in the CBC.

4.1.2 Impacts

Facility design encompasses the civil, structural, mechanical, and electrical engineering design of the project. The purpose of this analysis is to:

- Verify that the laws, ordinances, regulations, and standards (LORS) that apply to the engineering design and construction of the project have been identified;
- Verify that the project's proposed design criteria and analysis methods have been described, to provide reasonable assurance that the project will be designed and constructed in accordance with all applicable engineering LORS, in a manner that also ensures the public health and safety;
- Determine whether special design features should be considered during final design to address conditions unique to the site which could influence public health and safety; and
- Describe the design review and construction inspection process and establish the conditions of certification (COC) used to monitor and ensure compliance with the engineering LORS, in addition to any special design requirements.

Subjects discussed in this analysis include:

- Identification of the engineering LORS that apply to facility design;
- Evaluation of the applicant's proposed design criteria, including identification of criteria essential to public health and safety;
- Proposed modifications and additions to the application for certification (AFC) necessary for compliance with applicable engineering LORS; and
- COC proposed by staff to ensure that the project will be designed and constructed to ensure public health and safety and comply with all applicable engineering LORS.

4.1.3 DCBO Process

When the CEC authorizes a project owner to proceed with detailed design and construction, the CEC selects a qualified third-party firm to act on its behalf as a DCBO. In this capacity, the selected DCBO performs its design review, plan check, and construction inspection duties in accordance with the California Building Standards Code (CBSC) and the Commission Final Decision for the facility. The DCBO selection process involves a request for qualification, including a statement of qualification from each engineering firm that applies for the CEC's solicitation, an interview process, and scoring criteria. The selected DCBO must be well qualified, with extensive experience in design review, plan check, inspection, and construction oversight of various types of power plants, energy storage systems and related facilities.

Before construction begins, the DCBO and its contractors/consultants, project owner, and construction contractor will hold a kickoff meeting to review the project scope and engineering LORS. During this meeting, the DCBO will outline their expectations, ensuring the project owner is fully informed of the CBSC and other engineering requirements necessary for successful construction, including Kern County General Plan's Safety Element and other relevant agencies' engineering requirements, as well as the COCs.

Throughout the construction and commissioning phases, the CEC Compliance Project Manager (CPM) will monitor the DCBO's activities to ensure they fulfill their responsibilities diligently. The project will only be permitted to begin operational activities once the DCBO, in collaboration with the CPM, issues the certificate of occupancy/completion. The responsibility for design of power plants and/or energy storage systems is retained by the responsible engineer(s). The duty of the DCBO is to review the engineering and construction submittals to determine that construction and industry LORS are met. The documents approved by DCBO would be used to confirm, through field inspection, that the field conditions reflect the design documentation. Any departures from approved design conditions will be reflected in the final or "as-built" construction documents, which the DCBO archives in accordance with COC **GEN-8** requirements.

The CPM would confirm and approve that the DCBO will review engineering and construction submittals, meet conditions outlined in the Facility Design COCs, retain qualified inspectors to perform special inspection services, and generally inspect all major structures, systems, and equipment to ensure that industry standards (LORS) and special project conditions (Facility Design COCs) are met. The CPM would arrange with the DCBO that an independent audit be performed in order to adequately sample that the foregoing requirements are met.

4.1.4 Applicable LORS and Project Conformance

Table 4.1-1 includes staff's determination of conformance with applicable local, state and federal LORS, including any proposed COCs, where applicable, to ensure the project would comply with LORS. As shown in this table, staff concludes that with implementation of specific COCs, the proposed project would be consistent with all applicable LORS including those applicable to the cavern structure as outlined in AFC Appendix 2A, Engineering Design Criteria (ESHD 2024o). The subsection below, "Staff Proposed Conditions of Certification," contains the full text of the referenced COCs. COC **GEO-2** includes relevant sections of the LORS within the LORS listed in **Table 4.1-1** below.

TABLE 4.1-1 COMPLIANCE WITH APPLICABLE LORS

Applicable LORS	Conformance and Basis For Determination
State	
California Building Standards Code 2022 (or the latest edition in effect) (also known as Title 24, California Code of Regulations)	**Yes.** With implementation of COCs **GEN-1** through **GEN-8**, **CIVIL-1** through **CIVIL-4**, **STRUC-1** through **STRUC-4**, **MECH-1**, **MECH-2**, and **ELEC-1**
Local	
Kern County's General Plan Safety Element	**Yes.** With implementation of COCs **CIVIL-1** and **CIVIL-4**, and **STRUC-1** through **STRUC-4**
General	
Air Moving and Conditioning Association (AMCA) Standards American Concrete Institute (ACI) Codes American Institute of Steel Construction (AISC) Codes American National Standards Institute (ANSI) Codes American Petroleum Institute (API) American Society of Civil Engineers (ASCE) Codes American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) Standards	**Yes.** With implementation of COCs **CIVIL-1** through **CIVIL-4**, **STRUC-1** through **STRUC-4**, **MECH-1**, **MECH-2**, and **ELEC-1**

TABLE 4.1-1 COMPLIANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
American Society of Mechanical Engineers (ASME) Codes	
American Society of Testing and Materials (ASTM) Codes	
American Water Works Association	
American Welding Society (AWS) Codes California Electrical Code	
Concrete Reinforcing Steel Institute (CRSI) Codes	
National Association of Corrosion Engineers (NACE) Standards	
National Electric Safety Code (NESC) Standards	
National Fire Protection Association (NFPA) Standards	
Division of Occupational Safety and Health (Cal OSHA regulations), Title 8 California Code of Regulations	
Steel Deck Institute (SDI) – Design Manual for Floor Decks and Roof Decks	
29 CFR Part 1926.800: Underground Construction (Tunneling)	
Manual EM 1110-1-1804 – Engineer Manual, Engineering and Design, Geotechnical	
Manual EM 1110-2-2901 – Tunnels and Shafts in Rock	
Manual EM 1110-1-3500 – Chemical Grouting Technology	
Mining Safety and Health Administration (MSHA):	
Specification CE-1305.02 – Guide Specification for Tunnel Grouting or Equivalent	
U. S. Army Corps of Engineers	

4.1.5 Comments and Responses on the Preliminary Staff Assessment

Applicant – TN 264316, pp. 1 – 3, pp. A-1 – A-2, part 1 of 3

The applicant proposed the following modifications to the staff assessment and conditions of certification:

- Replace the reference to **GEO-3** with **GEO-2**.
- Revise the **STRUC-2** verification language from "discovering" to "discovery and verification of."
- Change the voltage in **ELEC-1** to "13.8 kV."

Staff incorporated modifications to the staff assessment and the COCs **STRUC-2** and **ELEC-1**.

Applicant – TN 264316, pp. 1 – 3, pp. A-1 – A-2, part 2 of 3

The applicant commented on the feasibility of the 30-day notice to the CPM for facility repairs in the **GEN-1** verification language. Also, regarding **GEN-1**, the applicant requested clarification on who will determine what needs to be approved by the DCBO.

Staff acknowledges the comment; however, the comment does not relate to environmental issues. The staff assessment includes a section titled "4.1.3 DCBO Process" to provide clarification on the DCBO process.

Applicant – TN 264316, pp. 1 – 3, pp. A-1 – A-2, part 3 of 3

The applicant stated in a comment regarding **MECH-1** that typically the responsible mechanical engineer at each major equipment vendor will sign and stamp, not a single individual. Also, regarding **MECH-1**, the applicant proposed modified verification language from "30 days" to "15 days."

Staff acknowledges the comment; however, the comment does not relate to environmental issues. Furthermore, the COC **GEN-5** includes language stating that the project owner shall assign at least one mechanical engineer to the project.

4.1.6 Conclusions and Recommendations

The CEC staff concludes that the design and construction of the project would comply with the applicable LORS.

4.1.7 Proposed Conditions of Certification

The following proposed COCs include measures to ensure conformance with applicable engineering-related LORS.

GEN-1 The project owner shall design, construct, and inspect the project in accordance with the 2022 California Building Standards Code (CBSC), also known as Title 24, California Code of Regulations, which encompasses the California Building Code (CBC), California Building Standards Administrative Code, California Electrical Code, California Mechanical Code, California Plumbing Code, California Energy Code, California Fire Code, California Code for Building Conservation, California Reference Standards Code, and all other applicable engineering laws, ordinances, regulations, and standards (LORS) in effect at the time initial design plans are submitted to the Delegate Chief Building Official (DCBO) for review and approval (the CBSC in effect is the edition that has been adopted by the California Building Standards Commission and published at least 180 days previously). The project owner shall ensure that all the provisions of the above applicable codes are enforced during the construction, addition, alteration, moving (onsite), demolition, repair, or maintenance of the completed facility.

In the event that the initial engineering designs are submitted to the DCBO when the successor to the 2022 CBSC is in effect, the 2022 CBSC provisions shall be replaced with the applicable successor provisions. Where, in any specific case, different sections of the code specify different materials, methods of construction or other requirements, the most restrictive shall govern. Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall govern.

The project owner shall ensure that all contracts with contractors, subcontractors, and suppliers clearly specify that all work performed and materials supplied comply with the codes listed above.

Verification: Within 30 days following receipt of the certificate of occupancy (CofO), the project owner shall submit to the Compliance Project Manager (CPM) a statement of verification, signed and stamped by the responsible engineer(s), attesting that all designs, construction, installation, and inspection requirements of the applicable LORS and the California Energy Commission's (CEC's) decision have been met in the area of Facility Design. The project owner shall provide the CPM a copy of the CofO within 30 days of receipt from the DCBO.

Once the CofO has been issued, the project owner shall inform the CPM at least 30 days prior to any construction, addition, alteration, moving, demolition, repair, or maintenance to be performed on any portion(s) of the completed facility that requires DCBO approval for compliance with the above codes. The CPM will then determine if the DCBO needs to approve the work.

GEN-2 Before submitting the initial engineering designs for DCBO review, the project owner shall furnish the CPM and the DCBO with a schedule of facility design submittals, and master drawings and master specifications list. The master drawings and master specifications list shall contain a list of proposed submittal

packages of designs, calculations, and specifications for major structures, systems, and equipment. Major structures, systems, and equipment are structures and their associated components or equipment that are necessary for energy storage and/or power production, costly or time consuming to repair or replace, are used for the storage, containment, or handling of hazardous or toxic materials, or could become potential health and safety hazards if not constructed according to applicable engineering LORS. The schedule shall contain the date of each submittal to the DCBO. To facilitate audits by the CEC staff, the project owner shall provide specific packages to the CPM upon request.

Verification: At least 60 days (or a project owner and DCBO mutually agreed upon alternative time frame) prior to the start of rough grading, the project owner shall submit to the DCBO and to the CPM the schedule, and the master drawings and master specifications list of documents to be submitted to the DCBO, for review and approval. These documents shall be the pertinent design documents for the major structures, systems, and equipment defined above in COC **GEN-2**. Major structures, systems, and equipment shall be added to or deleted from the list only with CPM approval. The project owner shall provide schedule updates in the monthly compliance report (MCR).

GEN-3 The project owner shall make payments to the DCBO for design review, plan checks, construction inspections, and other applicable DCBO activities, based upon a reasonable fee schedule to be negotiated between the project owner and the DCBO. If the CEC delegates the DCBO function to a third party or local agency, the project owner, at the CEC's direction, shall make payments directly to the DCBO based upon a fee schedule negotiated between the CEC and the DCBO. These fees may be consistent with the fees listed in the 2022 CBC, adjusted for inflation and other appropriate adjustments; may be based on the value of the facilities reviewed; may be based on hourly rates; or may be otherwise agreed upon by the project owner and the DCBO.

Verification: The project owner shall send a copy of the DCBO's receipt of payment to the CPM in the next MCR indicating that applicable fees have been paid.

GEN-4 Prior to the start of rough grading, the project owner shall assign a California-registered architect, or a structural or civil engineer, as the resident engineer (RE) in charge of the project.

The RE may delegate responsibility for portions of the project to other registered engineers. Registered mechanical and electrical engineers may be delegated responsibility for mechanical and electrical portions of the project, respectively. A project may be divided into parts, provided that each part is clearly defined as a distinct unit. Separate assignments of general responsibility may be made for each designated part.

The RE shall:

1. Monitor progress of construction work requiring DCBO design review and inspection to ensure compliance with LORS;
2. Ensure that construction of all facilities subject to DCBO design review and inspection conforms in every material respect to applicable LORS, these COCs, approved plans, and specifications;
3. Prepare documents to initiate changes in approved drawings and specifications when either directed by the project owner or as required by the conditions of the project;
4. Be responsible for providing project inspectors and testing agencies with complete and up-to-date sets of stamped drawings, plans, specifications, and any other required documents;
5. Be responsible for the timely submittal of construction progress reports to the DCBO from the project inspectors, the contractor, and other engineers who have been delegated responsibility for portions of the project; and
6. Be responsible for notifying the DCBO of corrective action or the disposition of items noted on laboratory reports or other tests when they do not conform to approved plans and specifications.

The RE (or their delegate) must be located at the project site or be available at the project site within a reasonable time, during any hours in which construction takes place.

The RE shall have the authority to halt construction and to require changes or remedial work if the work does not meet requirements.

If the RE or the delegated engineers are reassigned or replaced, the project owner shall submit the name, qualifications, and registration number of the newly assigned engineer to the DCBO for review and approval. The project owner shall notify the CPM of the DCBO's approval of the new engineer.

Verification: At least 30 days (or a project owner and DCBO mutually agreed upon alternative time frame) prior to the start of rough grading, the project owner shall submit to the DCBO for review and approval, the resume and registration number of the RE and any other delegated engineers assigned to the project. The project owner shall notify the CPM of the DCBO's approvals of the RE and other delegated engineer(s) within five days of the approval.

If the RE or the delegated engineer(s) is subsequently reassigned or replaced, the project owner shall within five days submit the name, qualifications, and registration number of the newly assigned engineer to the DCBO for review and approval. The project owner shall notify the CPM of the DCBO's approval of the new engineer within five days of the approval.

GEN-5 Prior to the start of rough grading, the project owner shall assign at least one of each of the following California registered engineers to the project: a civil engineer; a soils, geotechnical, or civil engineer experienced and knowledgeable in the practice of soils engineering; and an engineering geologist. Prior to the start of construction, the project owner shall assign at least one of each of the following California registered engineers to the project: a design engineer who is either a structural engineer or a civil engineer fully competent and proficient in the design of project structures and equipment supports; a mechanical engineer; and an electrical engineer. (California Business and Professions Code sections 6704, 6730, 6731, and 6736 require state registration to practice as a civil engineer or structural engineer in California).

The tasks performed by the civil, mechanical, electrical, or design engineers may be divided between two or more engineers, as long as each engineer is responsible for a particular segment of the project (for example, proposed earthwork, civil structures, project structures, equipment support). No segment of the project shall have more than one responsible engineer. The transmission line may be the responsibility of a separate California registered electrical engineer.

The project owner shall submit to the DCBO for review and approval, the names, qualifications, and registration numbers of all responsible engineers assigned to the project.

If any one of the designated responsible engineers is subsequently reassigned or replaced, the project owner shall submit the name, qualifications and registration number of the newly assigned responsible engineer to the DCBO for review and approval. The project owner shall notify the CPM of the DCBO's approval of the new engineer.

A. The civil engineer shall:

1. Review the foundation investigations, geotechnical, or soils reports prepared by the soils engineer, the geotechnical engineer, or by a civil engineer experienced and knowledgeable in the practice of soils engineering;
2. Design (or be responsible for the design of), stamp, and sign all plans, calculations, and specifications for proposed site work, civil works, and related facilities requiring design review and inspection by the DCBO. These include, but may not be limited to grading, site preparation, excavation, compaction, construction of secondary containment, foundations, erosion and sedimentation control structures, drainage facilities, underground utilities, culverts, site access roads, and sanitary sewer systems; and
3. Provide consultation to the RE during the construction phase of the project and recommend changes in the design of the civil works facilities and changes to the construction procedures.

B. The soils engineer, geotechnical engineer, or civil engineer experienced and knowledgeable in the practice of soils engineering, shall:

1. Review all the engineering geology reports;
2. Prepare the foundation investigations, geotechnical, or soils reports containing field exploration reports, laboratory tests, and engineering analysis detailing the nature and extent of the soils that could be susceptible to liquefaction, rapid settlement, or collapse when saturated under load;
3. Be present, as required, during site grading and earthwork to provide consultation and monitor compliance with requirements set forth in the 2022 CBC (depending on the site conditions, this may be the responsibility of either the soils engineer, the engineering geologist, or both); and
4. Recommend field changes to the civil engineer and RE.

This engineer shall be authorized to halt earthwork and to require changes if site conditions are unsafe or do not conform to the predicted conditions used as the basis for design of earthwork or foundations.

C. The engineering geologist shall:

1. Review all the engineering geology reports and prepare a final soils grading report; and
2. Be present, as required, during site grading and earthwork to provide consultation and monitor compliance with the requirements set forth in the 2022 CBC (depending on the site conditions, this may be the responsibility of either the soils engineer, the engineering geologist, or both).

D. The design engineer shall:

1. Be directly responsible for the design of the proposed structures and equipment supports;
2. Provide consultation to the RE during design and construction of the project;
3. Monitor construction progress to ensure compliance with engineering LORS;
4. Evaluate and recommend necessary changes in design; and
5. Prepare and sign all major building plans, specifications, and calculations.

E. The mechanical engineer shall be responsible for, and sign and stamp a statement with, each mechanical submittal to the DCBO, stating that the proposed final design plans, specifications, and calculations conform to all of the mechanical engineering design requirements set forth in the CEC's decision.

F. The electrical engineer shall:

1. Be responsible for the electrical design of the project; and
2. Sign and stamp electrical design drawings, plans, specifications, and calculations.

Verification: At least 30 days (or a project owner and DCBO mutually agreed upon alternative time frame) prior to the start of rough grading, the project owner shall submit to the DCBO for review and approval, resumes and registration numbers of the responsible civil engineer, soils (geotechnical) engineer, and engineering geologist assigned to the project.

At least 30 days (or a project owner and DCBO mutually agreed upon alternative time frame) prior to the start of construction, the project owner shall submit to the DCBO for review and approval, resumes and registration numbers of the responsible design engineer, mechanical engineer, and electrical engineer assigned to the project.

The project owner shall notify the CPM of the DCBO's approvals of the responsible engineers within five days of the approval.

If any one of the designated responsible engineers is subsequently reassigned or replaced, the project owner shall within five days submit the name, qualifications, and registration number of the newly assigned engineer to the DCBO for review and approval. The project owner shall notify the CPM of the DCBO's approval of the new engineer within five days of the approval.

GEN-6 Prior to the start of an activity requiring special inspection, including prefabricated assemblies, the project owner shall assign to the project, qualified and certified special inspector(s) who shall be responsible for the special inspections required by the 2022 CBC.

A certified weld inspector, certified by the American Welding Society (AWS), and/or American Society of Mechanical Engineers (ASME) as applicable, shall inspect welding performed on-site requiring special inspection (including structural, piping, tanks and pressure vessels).

The special inspector shall:

1. Be a qualified person who shall demonstrate competence, to the satisfaction of the DCBO, for inspection of the particular type of construction requiring special or continuous inspection;
2. Inspect the work assigned for conformance with the approved design drawings and specifications;
3. Furnish inspection reports to the DCBO and RE. All discrepancies shall be brought to the immediate attention of the RE for correction, then, if uncorrected, to the DCBO and the CPM for corrective action; and

4. Submit a final signed report to the RE, DCBO, and CPM, stating whether the work requiring special inspection was, to the best of the inspector's knowledge, in conformance with the approved plans, specifications, and other provisions of the applicable edition of the CBC.

Verification: At least 15 days (or a project owner and DCBO mutually agreed upon alternative time frame) prior to the start of an activity requiring special inspection, the project owner shall submit to the DCBO for review and approval, with a copy to the CPM, the name(s) and qualifications of the certified weld inspector(s), or other certified special inspector(s) assigned to the project to perform one or more of the duties set forth above. The project owner shall also submit to the CPM a copy of the DCBO's approval of the qualifications of all special inspectors in the next MCR.

If the special inspector is subsequently reassigned or replaced, the project owner shall within five days submit the name and qualifications of the newly assigned special inspector to the DCBO for approval. The project owner shall notify the CPM of the DCBO's approval of the newly assigned inspector within five days of the approval.

GEN-7 If any discrepancy in design and/or construction is discovered in any engineering work that has undergone DCBO design review and approval, the project owner shall document the discrepancy and recommend required corrective actions. The discrepancy documentation shall be submitted to the DCBO for review and approval. The discrepancy documentation shall reference this condition of certification and, if appropriate, applicable sections of the CBC and/or other LORS.

Verification: The project owner shall transmit a copy of the DCBO's approval of any corrective action taken to resolve a discrepancy to the CPM in the next MCR. If any corrective action is disapproved, the project owner shall advise the CPM, within five days, of the reason for disapproval and the revised corrective action to obtain DCBO's approval.

GEN-8 The project owner shall obtain the DCBO's final approval of all completed work that has undergone DCBO design review and approval. The project owner shall request the DCBO to inspect the completed structure and review the submitted documents. The project owner shall notify the CPM after obtaining the DCBO's final approval. The project owner shall retain one set of approved engineering plans, specifications, and calculations (including all approved changes) at the project site, or at another accessible location, during the operating life of the project. Electronic copies of the approved plans, specifications, calculations, and marked-up as-built shall be provided to the DCBO for retention by the CPM.

Verification: Within 15 days of the completion of any work, the project owner shall submit to the DCBO, with a copy to the CPM in the next MCR, (a) a written notice that the completed work is ready for final inspection, and (b) a signed statement that the work conforms to the final approved plans. After storing the final approved engineering plans, specifications, and calculations described above, the project owner shall submit to the CPM a letter stating both that the above documents have been stored and the storage location of those documents.

Within 90 days of the completion of construction, the project owner shall provide to the DCBO three sets of electronic copies of the above documents at the project owner's expense. These are to be provided in the form of "read only" files (the latest version of Adobe .pdf available), with restricted (password-protected) printing privileges.

CIVIL-1 The project owner shall submit to the DCBO for review and approval the following:

1. Design of the proposed drainage structures and the grading plan;
2. An erosion and sedimentation control plan;
3. A construction storm water pollution prevention plan (SWPPP);
4. Related calculations and specifications, signed and stamped by the responsible civil engineer; and
5. Soils, geotechnical, or foundation investigations reports required by the 2022 CBC.

Verification: At least 15 days (or a project owner and DCBO mutually agreed upon alternative time frame) prior to the start of site grading the project owner shall submit the documents described above to the DCBO for design review and approval. In the next MCR following the DCBO's approval, the project owner shall submit a written statement certifying that the documents have been approved by the DCBO.

CIVIL-2 The resident engineer shall, if appropriate, stop all earthwork and construction in the affected areas when the responsible soils engineer, geotechnical engineer, or the civil engineer experienced and knowledgeable in the practice of soils engineering, identifies unforeseen adverse soil or geologic conditions. The project owner shall submit modified plans, specifications, and calculations to the DCBO based on these new conditions. The project owner shall obtain approval from the DCBO before resuming earthwork and construction in the affected area.

Verification: The project owner shall notify the CPM within 24 hours when earthwork and construction is stopped as a result of unforeseen adverse geologic/soil conditions. Within 24 hours of the DCBO's approval to resume earthwork and

construction in the affected areas, the project owner shall provide to the CPM a copy of the DCBO's approval.

CIVIL-3 The project owner shall perform inspections in accordance with the 2022 CBC. All site-grading operations, for which a grading permit is required, shall be subject to inspection by the DCBO.

If in the course of inspection it is discovered that the work is not being performed in accordance with the approved plans, the discrepancies shall be reported immediately to the resident engineer, the DCBO, and the CPM. The project owner shall prepare a written report, with copies to the DCBO and the CPM, detailing all discrepancies, non-compliance items, and the proposed corrective action.

Verification: Within five days of the discovery of any discrepancies, the resident engineer shall transmit to the DCBO and the CPM a non-conformance report (NCR), and the proposed corrective action for review and approval. Within five days of resolution of the NCR, the project owner shall submit the details of the corrective action to the DCBO and the CPM. A list of NCRs for the reporting month shall also be included in the following MCR.

CIVIL-4 After completion of finished grading and erosion and sedimentation control and drainage work, the project owner shall obtain the DCBO's approval of the final grading plans (including final changes) for the erosion and sedimentation control work. The civil engineer shall state that the work within their area of responsibility was done in accordance with the final approved plans.

Verification: Within 30 days (or a project owner and DCBO mutually agreed upon alternative time frame) of the completion of the erosion and sediment control mitigation and drainage work, the project owner shall submit to the DCBO, for review and approval, the final grading plans (including final changes) and the responsible civil engineer's signed statement that the installation of the facilities and all erosion control measures were completed in accordance with the final approved combined grading plans, and that the facilities are adequate for their intended purposes. The project owner shall submit a copy of the DCBO's approval to the CPM in the next MCR.

STRUC-1 Prior to the start of any increment of construction, the project owner shall submit plans, calculations, and other supporting documentation to the DCBO for design review and acceptance for all project structures, systems, and equipment identified in the DCBO-approved master drawing and master specifications list. The design plans and calculations shall include the lateral force procedures and details as well as vertical calculations.

Construction of any structure or component shall not begin until the DCBO has approved the lateral force procedures to be employed in designing that structure or component. The project owner shall:

1. Obtain approval from the DCBO of lateral force procedures proposed for project structures;
2. Obtain approval from the DCBO for the final design plans, specifications, calculations, soils reports, and applicable quality control procedures. If there are conflicting requirements, the more stringent shall govern (for example, highest loads, or lowest allowable stresses shall govern). All plans, calculations, and specifications for foundations that support structures shall be filed concurrently with the structure plans, calculations, and specifications;
3. Submit to the DCBO the required number of copies of the structural plans, specifications, calculations, and other required documents of the designated major structures prior to the start of on-site fabrication and installation of each structure, equipment support, or foundation;
4. Ensure that the final plans, calculations, and specifications clearly reflect the inclusion of approved criteria, assumptions, and methods used to develop the design. The final designs, plans, calculations, and specifications shall be signed and stamped by the responsible design engineer; and
5. Submit to the DCBO the responsible design engineer's signed statement that the final design plans conform to applicable LORS.

Verification: At least 30 days (or a project owner and DCBO mutually agreed upon alternative time frame) prior to the start of any increment of construction of any structure or component listed in the DCBO-approved master drawing and master specifications list, the project owner shall submit to the DCBO the above final design plans, specifications and calculations, with a copy of the transmittal letter to the CPM.

The project owner shall submit to the CPM, in the next MCR, a copy of a statement from the DCBO that the proposed structural plans, specifications, and calculations have been approved and comply with the requirements set forth in applicable engineering LORS.

STRUC-2 The project owner shall submit to the DCBO the required number of sets of the following documents related to work that has undergone DCBO design review and approval:

1. Concrete cylinder strength test reports (including date of testing, date sample taken, design concrete strength, tested cylinder strength, age of test, type and size of sample, location and quantity of concrete placement from which sample was taken, and mix design designation and parameters);
2. Concrete pour sign-off sheets;

3. Bolt torque inspection reports (including location of test, date, bolt size, and recorded torques);
4. Field weld inspection reports (including type of weld, location of weld, inspection of non-destructive testing (NDT) procedure and results, welder qualifications, certifications, qualified procedure description or number (ref: AWS); and
5. Reports covering other structural activities requiring special inspections shall be in accordance with the 2022 CBC.

Verification: If a discrepancy is discovered in any of the above documents, the project owner shall, within five days, prepare and submit an NCR describing the nature of the discrepancies and the proposed corrective action to the DCBO, with a copy of the transmittal letter to the CPM. The NCR shall reference the condition(s) of certification and the applicable CBC chapter and section. Within five days of resolution of the NCR, the project owner shall submit a copy of the corrective action to the DCBO and the CPM.

The project owner shall transmit a copy of the DCBO's approval or disapproval of the corrective action to the CPM within 15 days. If disapproved, the project owner shall advise the CPM, within five days, of the reason for disapproval, and the revised corrective action to obtain DCBO's approval.

STRUC-3 The project owner shall submit to the DCBO design changes to the final plans required by the 2022 CBC, including the revised drawings, specifications, calculations, and a complete description of, and supporting rationale for, the proposed changes, and shall give to the DCBO prior notice of the intended filing.

Verification: On a schedule suitable to the DCBO, the project owner shall notify the DCBO of the intended filing of design changes, and shall submit the required number of sets of revised drawings and the required number of copies of the other above- mentioned documents to the DCBO, with a copy of the transmittal letter to the CPM. The project owner shall notify the CPM, via the MCR, when the DCBO has approved the revised plans.

STRUC-4 Tanks and vessels (if any) containing quantities of toxic or hazardous materials exceeding amounts specified in the 2022 CBC shall, at a minimum, be designed to comply with the requirements of that chapter.

Verification: At least 30 days (or a project owner and DCBO mutually agreed upon alternative time frame) prior to the start of installation of the tanks or vessels containing the above specified quantities of toxic or hazardous materials, the project owner shall submit to the DCBO for design review and approval final design plans, specifications, and calculations, including a copy of the signed and stamped engineer's certification.

The project owner shall send copies of the DCBO approvals of plan checks to the CPM in the MCR following receipt of such approvals. The project owner shall also transmit a copy of the DCBO's inspection approvals to the CPM in the MCR following completion of any inspection.

MECH-1 The project owner shall submit, for DCBO design review and approval, the proposed final design, specifications, and calculations for the project's mechanical-related components listed in the DCBO-approved master drawing and master specifications list. The submittal shall also include the applicable Quality Assurance/Quality Control procedures. Upon completion of construction of any such component, the project owner shall request the DCBO's inspection approval of that construction.

The responsible mechanical engineer shall stamp and sign all plans, drawings, and calculations for the major project's mechanical-related components, subject to DCBO design review and approval, and submit a signed statement to the DCBO when the proposed components have been designed, fabricated, and installed in accordance with all of the applicable LORS, which may include, but are not limited to:

- ASME Boiler and Pressure Vessel Code and Interpretation: Section V, Article 7: Nondestructive Examination; Section VIII, Division 1, Part UG-28: Rules for Construction of Unfired Pressure Vessels; and
- Title 24, California Code of Regulations, Part 2 (California Building Code).

The DCBO may deputize inspectors to carry out the functions of the CEC's code enforcement mandate.

Verification: At least 30 days (or a project owner and DCBO mutually agreed upon alternative time frame) prior to the start of any increment of major mechanical-related components' construction listed in the DCBO-approved master drawing and master specifications list, the project owner shall submit to the DCBO for design review and approval the final plans, specifications, and calculations, including a copy of the signed and stamped statement from the responsible mechanical engineer certifying compliance with applicable LORS, and shall send the CPM a copy of the transmittal letter in the next MCR.

The project owner shall transmit to the CPM, in the MCR following completion of any inspection, a copy of the transmittal letter conveying the DCBO's inspection approvals.

MECH-2 The project owner shall submit to the DCBO for design review and approval the design plans, specifications, calculations, and quality control procedures for any heating, ventilating, air conditioning (HVAC) or refrigeration system.

Packaged HVAC systems, where used, shall be identified with the appropriate manufacturer's data sheets.

The project owner shall design and install all HVAC and refrigeration systems within buildings and related structures in accordance with the CBC and other applicable codes. Upon completion of any increment of construction, the project owner shall request the DCBO's inspection and approval of that construction. The final plans, specifications and calculations shall include approved criteria, assumptions, and methods used to develop the design. In addition, the responsible mechanical engineer shall sign and stamp all plans, drawings and calculations and submit a signed statement to the DCBO that the proposed final design plans, specifications and calculations conform with the applicable LORS.

Verification: At least 30 days (or a project owner and DCBO mutually agreed upon alternative time frame) prior to the start of construction of any HVAC or refrigeration system, the project owner shall submit to the DCBO the required HVAC and refrigeration calculations, plans, and specifications, including a copy of the signed and stamped statement from the responsible mechanical engineer certifying compliance with the CBC and other applicable codes, with a copy of the transmittal letter to the CPM.

ELEC-1 Prior to the start of any increment of electrical construction for all electrical equipment and systems 110 Volts (V) or higher (see a representative list, below) the project owner shall submit, for DCBO design review and approval, the proposed final design, specifications, and calculations. Upon approval, the above listed plans, together with design changes and design change notices, shall remain on the site or at another accessible location for the operating life of the project. The project owner shall request that the DCBO inspect the installation to ensure compliance with the requirements of applicable LORS.

A. Final design plans shall include:

1. one-line diagram for the 13.8 kilovolts (kV), 4.16 kV and 480 V systems;
2. system grounding drawings;
3. lightning protection system; and
4. hazard area classification plan.

B. Final calculations must establish:

1. short-circuit ratings of facility equipment;
2. ampacity of feeder cables;
3. voltage drop in feeder cables;
4. system grounding requirements;

5. coordination study calculations for fuses, circuit breakers and protective relay settings for the 13.8 kV, 4.16 kV and 110/480 V systems;
6. system grounding requirements;
7. lighting energy calculations; and
8. 110-Volt system design calculations and submittals showing feeder sizing, transformer and panel load confirmation, fixture schedules and layout plans.

C. The following activities shall be reported to the CPM in the MCR:

1. Receipt or delay of major electrical equipment;
2. Testing or energizing of major electrical equipment; and
3. A signed statement by the registered electrical engineer certifying that the proposed final design plans and specifications conform to requirements set forth in the CEC decision.

Verification: At least 30 days (or a project owner and DCBO mutually agreed upon alternative time frame) prior to the start of each increment of electrical construction, the project owner shall submit to the DCBO for design review and approval the above listed documents.

The project owner shall include in this submittal a copy of the signed and stamped statement from the responsible electrical engineer attesting compliance with the applicable LORS and shall send the CPM a copy of the transmittal letter in the next MCR.

4.1.8 References

ESHD 2024i – Ellison Schneider Harris & Donlan LLP (TN 254806). Willow Rock Energy Storage Center SAFC, Volume 1, Part A, dated March 1, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-AFC-02

ESHD 2024o – Ellison Schneider Harris & Donlan LLP (TN 254812). Willow Rock Energy Storage Center SAFC Volume II-Appendix 1A-51F, dated March 4, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-AFC-02

4.2 Facility Reliability

Testimony of Kenneth Salyphone

4.2.1 Setting

Existing Conditions

The proposed Willow Rock Energy Storage Center (WRESC or project) would include four trains of compressors and air-powered turbine generators with a net generating capacity of up to 500 megawatts (MW) for up to 8 hours (4,000 MWh). The project would also include an air storage cavern excavated from granite rock. In addition, three 2.5-MW diesel fuel-fired generators (genset) would be utilized for emergency backup generation and one 345-kilowatt genset for the fire pump.

Regulatory

This section addresses Public Resources Code section 25520 which requires that applications for certification contain facility reliability information and Public Resources Code section 25523(h) which requires the written decision to contain a discussion on the electricity reliability benefits of the project. These two sections are made applicable to the evaluation of the project through Public Resources Code sections 25545.2 and 25545.8. See **Section 4.3, Transmission System Engineering,** for discussion regarding the project's impacts and benefits on the reliability of the electricity network the project would serve.

4.2.2 Impacts

The project must be built in accordance with industry standards for reliable power generation. Power plant systems must be able to operate for extended periods without shutting down for maintenance or repairs and must achieve an availability factor similar to the existing power plant facilities in the California electricity grid system. To achieve this, this reliability analysis of the project's power plant (electrical generating) systems, encompasses the following benchmarks and ensures that the project would not degrade the overall reliability of the electric system it serves.

- equipment availability;
- facility maintainability and maintenance program; and
- facility reliability in relation to natural hazards.

Staff uses the above benchmarks as appropriate industry norms to evaluate the project's reliability and determine if its availability factor is achievable.

Equipment Availability

Equipment availability would be ensured by adoption of appropriate quality assurance/ quality control (QA/QC) programs during the design, procurement, construction, and

operation of the plant and by providing for adequate maintenance and repair of project equipment and systems. An operation and maintenance protocol would be implemented in accordance with the maintenance requirements prescribed by the project's equipment manufacturers.

Emergency Backup Generator

A power generating facility must be capable of receiving ancillary power during electrical outages. The project would include four diesel-fired backup gensets to support the operation and maintenance buildings and critical auxiliary loads when power from the electrical grid is unavailable. These gensets include three 2.5-MW Kohler KD2500-4 gensets and a 345-kW Cummins CFP15EVS-F10 genset.

Facility Maintainability and Maintenance Program

Equipment manufacturers provide maintenance recommendations for their products, and power plant owners develop their plant's maintenance program based on those recommendations. Such a program encompasses both preventive and predictive maintenance techniques. The project would develop its maintenance program in the same way. Moreover, the project would implement a Process Control System (PCS) to monitor and control the facility (ESHD 2024i). This system would ensure the project's operational performance, efficiency and reliability.

Facility Reliability in Relation to Natural Hazards

Natural forces can threaten the reliable operation of a power plant. Seismic shaking (earthquakes) could present credible threats to the project's reliable operation.

Seismic Shaking

Seismic events affect many regions in California, including the project site. The American Society of Civil Engineers' (ASCE) Hazard Tool identifies Kern County as being seismic design category D. Under this category, buildings and structures would experience severe and destructive ground shaking. The project site would be located approximately 15 miles southeast of the Garlock Fault and approximately 20 miles northeast of the San Andreas Fault; see **Section 5.6, Geology, Paleontology, and Minerals**. The faults are considered active; however, the possibility of surface rupture at the project site is considered less-than-significant because no known active or potentially active faults intersect the project site (CDOC 2015; USGS 2017).

A geotechnical evaluation of the cavern found that the bedrock is expected to be seismically stable (ESHD 2024i). Literature evaluating the seismic stability of caverns supports the conclusion that deep underground openings are seismically stable, if the rupturing fault does not intersect the opening; see **Section 5.6, Geology, Paleontology, and Minerals**. The cavern and air and water shafts would be constructed following implementation of civil and structural design criteria provided in

AFC Appendix 2A (ESHD 2024o) and **Section 4.1, Facility Design** conditions of certification.

The project would be designed and constructed to meet the latest applicable engineering codes. Compliance with the latest seismic design requirements represents an upgrade in performance during seismic shaking, compared to older facilities, since these requirements have been continually upgraded and made more stringent. Because the project would be built to the latest seismic design requirements, it would be expected to perform better than the older existing power plants in California's electricity grid system and withstand strong ground shaking.

CEC staff proposes conditions of certification (COCs) to ensure the project complies with these requirements; see COCs in **Section 4.1, Facility Design**. These COCs would include standard engineering design requirements for mitigation of strong seismic shaking, liquefaction, and potential excessive settlement due to dynamic compaction. CEC staff anticipates the COCs in **Section 4.1, Facility Design** would adequately mitigate potentially significant impacts associated with the project's functional reliability due to seismic shaking.

Landslides and Seiches

Landslides would not affect the project site. The topography of the project site and its surroundings are relatively flat. The project site is not located near a body of water and would not be affected by seiches. Therefore, landslides and seiches would have no impact on the project site.

Floodplains

A floodplain—designated as Zone A (blue shaded) as defined by the Federal Emergency Management Agency (FEMA)—is east of the WRESC Site and Sierra Highway (Figure 5.15-4). Zone A generally indicates a 1 percent chance of flooding in any given year, also known as the 100-year floodplain. To avoid potential flood-related impacts to the extent feasible, the 100-year floodplain levels of inundation would be considered during the design of project facilities, including the site grading and drainage plans. However, no other development is expected within the floodplain area. Should the final design contain elements that encroach on the floodplain, a floodplain permit would be obtained from Kern County to mitigate potential impacts. The floodplain permit application would include any necessary supporting studies (ESHD 2024i).

Subsidence

The project is located in an area that has experienced land subsidence (a gradual lowering of surface elevation). Subsidence results, primarily, from over-pumping ground water. Subsidence monitoring would be managed by the Department of Water Resource

approved Groundwater Sustainability Agencies (GSA). Subsidence monitoring would be conducted continuously, bi-annually, and annually.

CEC staff has proposed COCs to ensure the project complies with Kern County's Mult-Jurisdictional Hazard Mitigation Plan for subsidence. See **Section 5.6, Geology, Paleontology, and Minerals** for further discussion. Therefore, subsidence would have a less than significant impact on reliability.

Comparison with Existing Facilities

The equivalent availability factor (availability factor) of WRESC is considered the amount of time the plant is able to store and produce electricity annually, minus the time period for which planned and unplanned outages would occur. The project's expected availability factor would be 95 percent. This availability factor is higher than most other existing power plant facilities. According to the North American Electric Reliability Corporation (NERC), the average availability factor for all fossil-fueled, hydroelectric, pump storage, geothermal, and nuclear-fueled power plants in North America in 2022 was approximately 80 percent (NERC 2022).

4.2.3 Applicable LORS and Project Conformance

No federal, state, or local regulations related to facility reliability apply to the project.

4.2.4 Comments and Responses on the Preliminary Staff Assessment

The applicant provided the following global comments to the staff assessment (TN 264316, pp. 1 – 3):

- Remove multiple references to "forthcoming PSA."
- Consider that there are two fire pumps, one primary all-electric and one secondary diesel-fired 345-kilowatt (kW) (460 horsepower) emergency fire pump

Staff incorporated the proposed modifications listed above into the staff assessment. Staff also corrected the reference to the "Kern County's Multi-Jurisdictional Hazard Mitigation Plan."

4.2.5 Conclusions and Recommendations

Staff concludes that the project would be built to operate in a manner consistent with industry norms for reliable operation and would be expected to demonstrate a high availability factor. No conditions of certification are proposed for power plant reliability.

4.2.6 Proposed Conditions of Certification

There are no proposed conditions of certification for facility reliability.

4.2.7 References

CDOC 2015 – California Department of Conservation. California Geological Survey (CGS). Fault Activity Map of California. 2015. Accessed on: December 26, 2024. Accessed online at: https://maps.conservation.ca.gov/cgs/fam

ESHD 2024i – Ellison Schneider Harris & Donlan LLP (TN 254806). Willow Rock Energy Storage Center SAFC, Volume 1, Part A, dated March 1, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-AFC-02

ESHD 2024o – Ellison Schneider Harris & Donlan LLP (TN 254812). Willow Rock Energy Storage Center SAFC Volume II-Appendix 1A-51F, dated March 4, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-AFC-02

NERC 2022 – North American Electric Reliability Corporation (NERC). Generating Unit Statistical Brochures. Accessed on June 19, 2025. Available online at: https://www.nerc.com/pa/RAPA/gads/Pages/Reports.aspx

USGS 2017 – United States Geological Survey. Quaternary fault and fold database for the United States. In cooperation with California Department of Conservation (CDOC), California Geological Survey (CGS). Accessed December 18, 2024. Accessed online at: https://www.usgs.gov/natural-hazards/earthquake-hazards/faults.

4.3 Transmission System Engineering

Testimony of Laiping Ng and Mark Hesters

4.3.1 Setting

The applicant has proposed to interconnect the 520-megawatt (MW) gross (500 MW net output), and 4160 MW-hour (MWh) gross (4000 MWh net) Willow Rock Energy Storage Center (WRESC) to the Southern California Edison's (SCE's) Whirlwind Substation with a proposed commercial operation by approximately February 2030.

The WRESC would be using Hydrostor's advanced compressed air energy storge (A-CAES) technology. The WRESC facility consists of eight electric-motor-driven air compressors configured in four trains, four 130-MW air-powered turbine generators, onsite 230 kV substation, an underground compressed air storage cavern, and miscellaneous aboveground support facilities.

Existing Conditions

The project would be located in unincorporated Kern County, approximately 4 miles north of Rosamond, California. WRESC would be connected to the SCE Whirlwind Substation.

Regulatory

Federal/Regional

- The North American Electric Reliability Council's (NERC) Reliability Standards for the bulk electric transmission systems of North America provide national policies, standards, principles and guides to assure the adequacy and security of the electric transmission system. NERC is the Electric Reliability Organization (ERO) for North America, subject to oversight by the Federal Energy Regulatory Commission (FERC). The NERC planning standards provide for system performance levels for both normal and contingency conditions. With regard to power flow and stability simulations, while these standards are similar to NERC and Western Electricity Coordinating Council (WECC) planning standards, certain aspects of the NERC/WECC standards are either more stringent or more specific than the NERC standards for transmission system contingency performance. The NERC's planning standards apply not only to interconnected system operation but to individual service areas as well (NERC 2024 and ongoing).
- NERC/WECC Planning Standards: The WECC Planning Standards are integrated with the NERC Reliability Standards to provide the system performance standards used to assess the reliability of the interconnected system. The first priority of the standards is the uninterrupted continuity of service and the second priority is the preservation of interconnected operation. Analysis of the WECC system is based to a large degree upon Section I.A of the standards, *NERC and WECC Planning Standards with Table I*

and WECC Disturbance-Performance Table and on Section I.D, *NERC and WECC Standards for Voltage Support and Reactive Power.* These standards require that the results of power flow and stability simulations verify defined performance levels including: allowable variations in thermal loading, voltage and frequency, and the loss of load that could occur on systems during various disturbances (WECC 2014 and ongoing).

State

- California Public Utilities Commission (CPUC) General Order 95 (GO-95*), Rules for Overhead Electric Line Construction,* sets forth uniform requirements for the construction of overhead lines. Compliance with this order ensures both adequate service and the safety of both the public and the people who build, maintain, and operate overhead electric lines.
- CPUC General Order 128 (GO-128), *Rules for Construction of Underground Electric Supply and Communications Systems*, sets forth uniform requirements and minimum standards for underground supply systems to ensure adequate service and the safety of both the public and the people who build, maintain, and operate underground electric lines.
- California Independent System Operator (California ISO) Planning Standards also provide standards and guidelines that assure the adequacy, security and reliability during the planning process of the California ISO's electric transmission facilities. The California ISO Planning Standards incorporate both NERC and WECC Planning Standards. With regard to power flow and stability simulations, the California ISO's Planning Standards are similar to those of the NERC and WECC and to the NERC Planning Standards for transmission system contingency performance. However, the California ISO's standards also provide additional requirements that are not found in the NERC, WECC, or NERC planning standards. The California ISO standards apply to all participating transmission owners that interconnect to both the California ISO-controlled transmission grid and to neighboring grids not operated by the California ISO (California ISO 2023a).
- California ISO and Federal Energy Regulatory Commission (FERC) electric tariffs provide guidelines for the construction of all transmission additions and upgrades (projects) within the California ISO-controlled grid. The California ISO also determines the "need" for the proposed project where it will promote economic efficiency and maintain system reliability. The California ISO also determines the cost responsibility of the proposed project and provides operational review for all facilities that are to be connected to the California ISO grid (California ISO 2024a).

General

- National Electric Safety Code, 2023, provides electrical, mechanical, civil, and structural requirements for overhead electric line construction and operation.

Cumulative

The transmission system engineering analysis focuses on whether a proposed project would meet required codes and standards. At all times, the transmission grid must remain in compliance with reliability standards, whether one project or many projects interconnect. Potential cumulative impacts on the transmission network are identified through the California ISO and utility generator interconnection process. In cases where a significant number of proposed generation projects could affect a particular portion of the transmission grid, the interconnecting utility or the California ISO can study the cluster of projects to identify the most efficient means to interconnect all of them.

4.3.2 Impacts

This analysis evaluates whether the proposed project's interconnection conforms to all LORS required for safe and reliable electric power transmission. Additionally, under CEQA, the Energy Commission (CEC) must conduct an environmental review of the "whole of the action," which may include facilities not licensed by the CEC (Title 14, California Code of Regulations, section 15378).

For the interconnection of either a proposed generating unit or transmission facility to the grid, the interconnecting utility (SCE in this case) is responsible for ensuring the grid's reliability. To ensure grid reliability, SCE determines the transmission system impacts of the proposed project and any mitigation measures needed to ensure system conformance with utility reliability criteria, NERC planning standards, WECC reliability criteria, and the California ISO reliability criteria for potential impacts to their system. California ISO Queue Cluster 13 Phase I (Phase I Study Report), Phase II Interconnection Study Reports (Phase II Study Report), and Generator Reassessment Report from the California ISO (Reassessment Report) are used to determine the impacts of the proposed project on the transmission grid. CEC staff relies on these studies and any review conducted by the SCE to determine the project's effect on the transmission grid and to identify whether downstream impacts or indirect project impacts would require additional equipment or strategies to bring the transmission network into compliance with applicable reliability standards.

The Interconnection Study Report analyze the grid both with and without the proposed project, under conditions specified in the planning standards and reliability criteria. The standards and criteria define the assumptions used in the study and establish the thresholds through which grid reliability is determined. The studies must analyze the impact of the project for the proposed first year of operation, and are thus based upon a forecast of loads, generation, and transmission. Generation and transmission forecasts are established by an interconnection queue. The studies are focused on thermal overloads, voltage deviations, system stability (excessive oscillations in generators and transmission system, voltage collapse, loss of loads, or cascading outages), and short circuit duties. The Generator Reassessment Reports evaluate the impacts on Network Upgrades previously identified in earlier interconnection studies due to modifications that have occurred.

If these studies show that the interconnection of the project could cause the grid to be out of compliance with reliability standards, then the study will identify mitigation alternatives or ways in which the grid could be brought into compliance with reliability standards. If the mitigation identified by the California ISO or interconnecting utility includes transmission modifications or additions that require CEQA review, these additions could be considered part of the "whole of the action," in conjunction with the proposed power plant. The CEC must then analyze the environmental impacts of these modifications or additions.

Switchyards and Interconnection Facilities

The WRESC electrical power would be generated using four triple pressure condensing turbine/generator trains with four air-powered turbine generators. Power would be stepped up to 230 kV by generator step-up (13.8/230 kV) transformers rated at 105/140/175 MVA.

The project would include a 230 kV substation and power distribution center and an approximately 19-mile-long, 230 kV single-circuit double-bundle conductor overhead generator tie-line (gen-tie) and underground line segments.

The gen-tie line would be supported by 60 to 140 feet high steel poles with a span of approximately 200 to 800 feet. The underground segment would cross the Los Angeles Department of Water and Power (LADWP) high voltage transmission corridor and in other locations where transmission corridor is congested with existing facilities. The underground line segment would be constructed with an underground cable which runs through a continuous underground duct bank.

The project substation is shown in Figure 1-1 of the WRESC Supplemental Application for Certification. For each train, low sides of the three winding 13.8-230 kV transformer rated at 105/140/175 MVA would tie into the 13.8 kV buses via a dedicated 4000 Ampere (A) breaker. High side of each train transformer would connect with the high side of the generator 13.8/230 kV step-up transformer rated at 105/140/175 MVA via a common bus. The 13.8 kV generator rated at 152.9 MVA with power factor of 0.85 would be connected to the generator step-up transformer via a disconnect switch and a breaker through a 7000 A, 13.8 kV isolated phase bus duct. The same common bus would tie into the substation via each train's motor operated 230 kV disconnect switch and a breaker rated at 2000 A.

A 230 kV generator tie-line would connect to the project's common tubular bus bar where the project's four trains connect to the SCE Whirlwind Substation via approximately 19-mile-long gen-tie line. The Whirlwind Substation would need to install a new 230 kV switchrack position to terminate the new gen-tie line. Power would be delivered to the SCE transmission system from the Whirlwind Substation (ESHD 2024i: TN 254806, WSP 2024aa: TN 259675).

4.3.2.1 Methodology and Thresholds of Significance

The Phase II Study Report (California ISO 2021b: TN 247171) was performed in November 2021 by California ISO at the project owner's request. The Reassessment Report (California ISO 2022 TN: 256825) was performed in July 2022. The Phase II Study Report identify the transmission system impacts from the proposed WRESC project in SCE's Queue Cluster 13 and determined mitigation measures needed to ensure system conformance with utility reliability criteria, NERC planning standards, WECC reliability criteria, and the California ISO reliability criteria for potential impacts to their system. The interconnection of the generator might impact the utility system and result in incompliance with regulatory reliability requirements. The mitigation measures to ensure this compliance can vary from as little as adjusting the operation of the generator to new transmission lines. The Reassessment Report evaluated the impacts on Network Upgrades previously identified in earlier interconnection studies due to several modifications that have occurred. The Reassessment Report results may drive the need for modifications to scope and/or cost allocation to the generating facility.

Detailed study assumptions are described in the Phase II Interconnection Study Report. The Power Flow study assessed the project's impact on the thermal loading of the transmission lines and equipment. The Transient Stability study and the Post-Transient Voltages Stability study were conducted to determine whether the proposed project would create any instability in the system following certain selected outages. The Short Circuit study was conducted with all the transmission upgrades projects and the Proposed project. The Short Circuit study is to determine if the interconnection could overstress the existing substation facilities.

Thermal and voltage performance of the system was evaluated for base cases under normal (P0), single element outage (P1, P2), and selected multiple element outages (P3-P7).

Normal overloads are those that exceed 100 percent of normal facility rating under Category P0 normal conditions (no contingency). Normal overloads are identified in deliverability assessment and reliability study power flow analyses in accordance with Reliability Standard TPL-001-5. It is required that loading of all transmission system facilities be within their normal ratings under the Category P0 conditions.

Emergency overloads are those that exceed 100 percent of emergency ratings under Category P1 to P7 contingency conditions. Emergency overloads are identified in the deliverability assessment and reliability study power flow analyses in accordance with Reliability Standards TPL-001-5. It is required that loading of all transmission system facilities be within their emergency ratings under the Category P1 to P7 contingency conditions.

All buses within the California ISO Controlled Grid that cannot meet the requirement in Table 4.3-1 will be further investigated. Exceptions to this voltage standard granted by

the California ISO will be observed in the Phase II Study (California ISO 2021c: TN 247183).

TABLE 4.3-1 VOLTAGE CRITERIA

(Bus voltages are relative to the nominal bus voltages of the system under study)

Voltage Level*	Normal Conditions** (P0)		Contingency Conditions (P1~P7)		Voltage Deviation***
	V_{min} (P.U.)	V_{max} (P.U.)	V_{min} (P.U.)	V_{min} (P.U.)	P1 and P3
≤ 200 kV	0.95	1.05	0.90	1.1	≤8%
200 – 500 kV	0.95	1.05	0.90	1.1	≤8%
≥ 500 kV	1.0	1.05	0.90	1.1	≤8%

*Real-time operating system voltages in this area range from 520-535 kV for 500 kV systems and 225-240 kV for 220 kV systems.
&&All 500 kV and 220/230 kV buses that cannot meet the requirements specified in Table C.1 based on equipment limitations or operating procedures have filed for exemptions that can be found in Table 2-5 of the California ISO Planning Standards. The general Vmin and Vmax in this table apply to buses that do not have equipment limitations or operating procedures that are specified otherwise.
*** This voltage deviation criterion is for load buses only.

What follows, excerpted from these study reports, constitute the methodology used and identifies thresholds whereby the SCE determines if the proposed project impacts the reliability of their network and if transmission upgrades are required. The study is designed to determine financial responsibility for transmission upgrades required for the mitigation of reliability impacts.

The Queue Cluster 13 Phase II Interconnection Study Report, nine generation projects, including the WRESC, totaling over 2215 MW were seeking interconnection into the Northern area of the SCE transmission system.

The power flow study cases were developed from the California ISO transmission expansion base cases series representing the Year of 2025 load forecast both On-Peak and Off-Peak conditions. The base cases included all California ISO approved transmission projects in the area that are not yet fully constructed and placed into service, earlier queued Serial Group and cluster generation projects with associated Network Upgrades regardless of in-service date and Remedial Action Schemes (RAS).

Due to project schedule delays, California ISO and SCE performed a Generator Reassessment Report to the Cluster 13 Phase II Interconnection Study Report Dated July 29, 2022. The Reassessment did not identify any scope modification related to power flow or deliverability that impact the proposed project (Reassessment report page 5).

The Phase II Interconnection Study consists of two major assessments: Power Flow Reliability Assessment and Deliverability Assessment.

Power Flow Reliability Assessment

The Power Flow Reliability Assessment included both discharging and charging analysis. The discharging analysis included:

- Steady State Power Flow Analyses
- Power Factor Evaluation
- Transient Stability Evaluation
- Post-Transient Stability Analyses
- Short Circuit Duty Analyses

Deliverability Assessment

The Deliverability Assessment consists of On-Peak Deliverability Assessment and Off-Peak Deliverability Assessments to identify network upgrades required for the proposed project. No Delivery Network Upgrades would be required for the WRESC (California ISO 2021b: TN 247171).

4.3.2.2 Direct and Indirect Impacts

A: Reliability Assessment

Discharging Analysis

Steady State Power Flow Study Results

The Steady State analysis showed that the interconnection queue cluster including the proposed project would overload the following transmission facilities:

Thermal Overloads Under Normal Conditions (N-0):

- Whirlwind 500/220 kV No.1 and No.3 and No.4 AA Transformer Bank.

Under Single Contingency with Congestion Management Conditions (N-1):

Single Contingency with Congestion Management

- Whirlwind 500/220 kV No.1 AA Transformer Bank under the loss of the Whirlwind 500/220 kV No.3 or No. 4 AA Transformer Bank.
- Whirlwind 500/220 kV No.3 AA Transformer Bank under the loss of the Whirlwind 500/220 kV No.1 or No. 4AA Transformer Bank.
- Whirlwind 500/220 kV No.4 AA Transformer Bank under the loss of the Whirlwind 500/220 kV No.1 or No. 3AA Transformer Bank.

Under Multiple Contingency with Congestion Management Conditions (N-2):

- Antelope-Vincent No.1 500 kV Transmission Line under loss of Antelope-Vincent No.2 and Vincent-Whirlwind 500 kV Transmission Lines.

- Antelope-Vincent No.2 500 kV Transmission Line under loss of Antelope-Vincent No.1 and Vincent-Whirlwind 500 kV Transmission Lines.
- Antelope-Whirlwind 500 kV Transmission Line under loss of Whirlwind-Vincent and Whirlwind-Midway 500 kV Transmission Lines.
- Mesa-Vincent 500 kV Transmission Line under loss of Lugo-Vincent No.1 and No.2 500 kV Transmission Lines

Required Mitigation

To bring the SCE system into compliance with reliability standards after the interconnection of the project, the following transmission upgrades are required.

a. Participate in the proposed Tehachapi Centralized Remedial Action Schemes (CRAS) to trip generation under the following outages:
    - Under loss of Antelope-Vincent No.2 and Vincent-Whirlwind 500 kV Transmission Lines.
    - Under loss of Antelope-Vincent No.1 and Vincent-Whirlwind 500 kV Transmission Lines.
    - Under loss of Whirlwind-Vincent and Whirlwind-Midway 500 kV Transmission Lines.
b. Participate in the proposed Whirlwind CRAS to trip generation under the following outages:
    - Under the loss of the Whirlwind 500/220 kV No.1 AA Transformer Bank.
    - Under the loss of the Whirlwind 500/220 kV No.3 AA Transformer Bank.
    - Under the loss of the Whirlwind 500/220 kV No.4 AA Transformer Bank.
c. Participate in the proposed New South of Vincent CRAS to trip generation under the following outages:
    - Under the loss of the Lugo-Vincent No.1 and No.2 500 kV Transmission Lines.

Power Factor Evaluation Results

The proposed generator for WRESC is designed to operate within a range of 0.85 lagging to 0.95 leading. The WRESC would be required to operate between a power factor of 0.9 lagging and 0.95 leading at generator terminals in accordance with the California ISO power factor requirements.

Transient Stability Results

The Generating Facility Performance and the System Performance analysis indicated that the projects would not cause transmission instabilities.

Post-Transient Stability Results

With all the transmission upgrades, use of the identified RAS/CRAS, and assuming all the proposed projects meet the power factor requirements, the post-transient study are acceptable.

Short Circuit Study Results and Mitigations

Short Circuit studies were conducted to determine the degree to which the addition of the projects in SCE's queue, including the proposed WRESC project, and all necessary transmission upgrades increases fault duties at SCE's substations, adjacent utility substations, and other 230 kV and 500 kV busses within the study area.

- The study indicated the WRESC would contribute to short circuit duty issues and be responsible for funding its share of the following short circuit duty mitigation.Pardee Substation short circuit duty mitigation as identified and included in the executed Large Generator Interconnection Agreement (LGIA).

The following are Conditionally Assigned Network Upgrades (CANUs) which are not currently the cost responsibility of the WRESC but could become the responsibility of the project at a later date with WRESC funding its share of the Network Upgrade:

- Midway Substation 500 kV circuit breakers CB 712, CB 722, CB 822 (California ISO 2022: TN 256825).
- The Vincent 500 kV Substation short circuit duty upgrade would still be needed, however the Vincent 500 kV SCD mitigation was recently identified in SCE's 2021 Annual Transmission Reliability Assessment and as such, conditionally assigned Network upgrade are no longer applicable to WRESC (California ISO 2022: TN 256825).

Charging Analysis:

The Phase II Study Report indicated that there would not be adverse impact to the transmission system with the addition of the proposed project.

B: Deliverability Assessment

No Delivery Network Upgrades would be required for the WRESC (California ISO 2021b: TN 247171).

4.3.2.3 Cumulative Impacts

The Phase II Study Report and the Reassessment Report modeled nine generation projects, including the WRESC, totaling over 2215 MW. Both Reports identified the transmission cumulative impacts to the SCE transmission system.

4.3.3 Applicable LORS and Project Conformance

Table 4.3-1 contains CEC staff's determination of conformance with applicable general, local, state and federal/regional LORS, including any proposed Conditions of

Certification (COC) to ensure the project would comply with LORS. As shown in this table, staff concludes that with implementation of specific COCs, the proposed project would be consistent with all applicable LORS. The subsection at the end of this section, "Proposed Conditions of Certification," contains the full text of the referenced COCs.

TABLE 4.3-1 CONFORMANCE WITH APPLICABLE LORS

Applicable LORS	Conformance and Basis For Determination
Federal/Regional	
Federal Energy Regulatory Commission (FERC) /North American Electric Reliability Council (NERC)	**Yes.** The proposed interconnection facilities would comply with Federal/Regional regulations. COCs TSE-5 would require the submittal of any updates to the LGIA at least 30 days prior to the start of construction of transmission facilities.
NERC/WECC Planning Standards: The Western Electricity Coordinating Council (WECC) Planning Standards	**Yes.** The proposed interconnection facilities would comply with Federal/Regional regulations. COC TSE-5 would require the submittal of any updates to the LGIA at least 30 days prior to the start of construction of transmission facilities.
State	
California Public Utilities Commission (CPUC) General Order 95 (GO-95)	**Yes.** The proposed overhead collector lines and gen-tie line would comply with CPUC GO-95. Compliance with COC TSE-4 requires power plant switchyard, outlet line, and termination compliance with GO-95.
CPUC General Order 128 (GO-128)	**Yes.** The proposed underground collector lines would comply with CPUC GO-128. Compliance with COC TSE-4 requires power plant switchyard, outlet line, and termination compliance with GO-128.
California ISO Planning	**Yes.** The proposed interconnection of the project would comply with California ISO planning standards. Conditions of Certification (COC) TSE-5 would require the submittal of any updates to the LGIA at least 30 days prior to the start of construction of transmission facilities.
General	
National Electric Safety Code 2023 (NESC)	**Yes.** The proposed overhead collector lines, underground collector lines, and gen-tie line would comply with NESC. Compliance with COC TSE-4 requires power plant switchyard, outlet line, and termination compliance with NESC.

4.3.4 Comments and Responses on the Preliminary Staff Assessment

Public comments on the Transmission System Engineering Preliminary Staff Assessment (PSA) were provided by the applicant via WSP USA Inc. (TN 264316). All suggested edits were incorporated into the Final Staff Assessment (FSA).

4.3.5 Conclusions and Recommendations

As discussed above, with implementation of the proposed TSE COCs, the project would be reliably and safely interconnected to the transmission grid. CEC staff recommends adopting the COCs as detailed in subsection "4.3.6 Proposed Conditions of Certification" below.

4.3.6 Proposed Conditions of Certification

The following proposed COCs include measures to ensure project conformance with applicable LORS and that the WRESC is reliably and safely interconnected to the SCE transmission grid.

TSE-1 The project owner shall furnish to the Compliance Project Manager (CPM) and to the Delegate Chief Building Official (DCBO) a schedule of transmission facility design submittals, a Master Drawing List, a Master Specifications List, and a Major Equipment and Structure List. The schedule shall contain a description and list of proposed submittal packages for design, calculations, and specifications for major structures and equipment. To facilitate audits by CEC staff, the project owner shall provide designated packages to the CPM when requested.

Verification: Prior to the start of construction of the transmission lines, gen-tie lines, or related structures and facilities, the project owner shall submit the schedule, a Master Drawing List, and a Master Specifications List to the DCBO and to the CPM. The schedule shall contain a description and list of proposed submittal packages for design, calculations, and specifications for major structures and equipment (see a list of major equipment in **Table 1**: Major Equipment List below). Additions and deletions shall be made to the table only with CPM and DCBO approval. The project owner shall provide schedule updates in the Monthly Compliance Report.

TABLE 1 MAJOR EQUIPMENT LIST
Breakers
Step-up transformer
Switchyard
Busses
Surge arrestors
Disconnects
Take-off facilities
Electrical control building
Switchyard control building
Transmission pole/tower
Grounding system

TSE-2 Before the start of construction, the project owner shall assign to the project an electrical engineer and at least one of each of the following:

a. a civil engineer;

b. a geotechnical engineer or a civil engineer experienced and knowledgeable in the practice of soils engineering;

c. a design engineer who is either a structural engineer or a civil engineer and fully competent and proficient in the design of power plant structures and equipment supports; or

d. a mechanical engineer (Business and Professions Code Sections 6704 et seq. require state registration to practice as either a civil engineer or a structural engineer in California).

The tasks performed by the civil, geotechnical, mechanical, electrical, or design engineers may be divided between two or more engineers as long as each engineer is responsible for a particular segment of the project, e.g., proposed earthwork, civil structures, power plant structures, or equipment support. No segment of the project shall have more than one responsible engineer. The transmission line may be the responsibility of a separate California registered electrical engineer. The civil, geotechnical, or civil and design engineer, assigned as required by Facility Design COC **GEN-5**, may be responsible for design and review of the TSE facilities.

The project owner shall submit to the DCBO, for review and approval, the names, qualifications, and registration numbers of all engineers assigned to the project. If any one of the designated engineers is subsequently reassigned or replaced, the project owner shall submit the name, qualifications, and registration number of the newly assigned engineer to the DCBO for review and approval. The project owner shall notify the CPM of the DCBO's approval of the new engineer. This engineer shall be authorized to halt earth work and require changes; if site conditions are unsafe or do not conform with the predicted conditions used as the basis for design of earth work or foundations.

The electrical engineer shall:

1. be responsible for the electrical design of the power plant switchyard, outlet, and termination facilities; and

2. sign and stamp electrical design drawings, plans, specifications, and calculations.

Verification: Prior to the start of rough grading, the project owner shall submit to the DCBO for review and approval, the names, qualifications, and registration numbers of all the responsible engineers assigned to the project. The project owner shall notify the CPM of the DCBO's approvals of the engineers within five days of the approval.

If the designated responsible engineer is subsequently reassigned or replaced, the project owner has five days in which to submit the name, qualifications, and

registration number of the newly assigned engineer to the DCBO for review and approval. The project owner shall notify the CPM of the DCBO's approval of the new engineer within five days of the approval.

TSE-3 If any discrepancy in design and/or construction is discovered in any engineering work that has undergone DCBO design review and approval, the project owner shall document the discrepancy and recommend corrective action. The discrepancy documentation shall become a controlled document and shall be submitted to the DCBO for review and approval and refer to this condition of certification.

Verification: The project owner shall submit a copy of the DCBO's approval or disapproval of any corrective action taken to resolve a discrepancy to the CPM within 15 days of receipt. If disapproved, the project owner shall advise the CPM, within five days, the reason for the disapproval, along with the revised corrective action required to obtain the DCBO's approval.

TSE-4 For the power plant switchyard, outlet line and termination, the project owner shall not begin any construction until plans for that increment of construction have been approved by the DCBO. These plans, together with design changes and design change notices, shall remain on the site for one year after completion of construction. The project owner shall request that the DCBO inspect the installation to ensure compliance with the requirements of applicable LORS. The following activities shall be reported in the monthly compliance report:

a. receipt or delay of major electrical equipment (Table 1 of TSE-1);

b. testing or energization of major electrical equipment; and

c. the number of electrical drawings approved, submitted for approval, and still to be submitted.

Verification: Prior to the start of each increment of construction, the project owner shall submit to the DCBO for review and approval the final design plans, specifications and calculations for equipment and systems of the power plant switchyard, and outlet line and termination, including a copy of the signed and stamped statement from the responsible electrical engineer verifying compliance with all applicable LORS, and send the CPM a copy of the transmittal letter in the next monthly compliance report.

TSE-5 The project owner shall ensure that the design, construction, and operation of the proposed transmission lines, generator tie-lines, or related structures and facilities will conform to all applicable LORS, and the requirements listed below. The project owner shall submit the required number of copies of the design drawings and calculations, as determined by the DCBO. Once approved, the project owner shall inform the CPM and DCBO of any anticipated changes to the design and shall submit a detailed description of the proposed change and

complete engineering, environmental, and economic rationale for the change to the CPM and DCBO for review and approval.

a. The power plant outlet line shall meet or exceed the electrical, mechanical, civil, and structural requirements of CPUC General Order 95 or National Electric Safety Code (NESC); Title 8 of the California Code of Regulations (Title 8); Articles 35, 36 and 37 of the High Voltage Electric Safety Orders, National Electric Code (NEC) and related industry standards.

b. Breakers and busses in the power plant switchyard and other switchyards, where applicable, shall be sized to comply with a short-circuit analysis.

c. Outlet line crossings and line parallels with transmission and distribution facilities shall be coordinated with the transmission line owner and comply with the owner's standards.

d. The project conductors shall be sized to accommodate the full output of the project.

e. Termination facilities shall comply with applicable SCE interconnection standards.

f. The project owner shall provide to the CPM:

   i. The Special Protection System sequencing and timing if applicable,

   ii. A letter stating that the mitigation measures or projects selected by the transmission owners for each reliability criteria violation, for which the project is responsible, are acceptable, if applicable,

   iii. Any updates to the executed LGIA signed by the SCE and the project owner.

   iv. Approval from LADWP indicating that the WRESC gen-tie line underground section can be built in the LADWP transmission corridor.

Verification: Prior to the start of construction or start of modification of transmission lines, gen-tie lines, or related structures and facilities, the project owner shall submit to the DCBO for approval:

a. Design drawings, specifications, and calculations conforming with CPUC General Order 95 or National Electric Safety Code (NESC); Title 8 of the California Code of Regulations (Title 8); Articles 35, 36 and 37 of the *High Voltage Electric Safety Orders*, National Electric Code (NEC) and related industry standards, for the poles/towers, foundations, anchor bolts, conductors, grounding systems, and major switchyard equipment.

b. For each element of the transmission facilities identified above, the submittal package to the DCBO shall contain the design criteria, a discussion of the calculation method(s), a sample calculation based on "worst case conditions"[1] and a statement signed and sealed by the registered engineer in responsible charge, or other acceptable alternative verification, that the transmission

element(s) will conform with CPUC General Order 95 or National Electric Safety Code (NESC); Title 8 of the California Code of Regulations (Title 8); Articles 35, 36 and 37 of the *High Voltage Electric Safety Orders*, California ISO standards, National Electric Code (NEC), and related industry standards.

c. Electrical one-line diagrams signed and sealed by the registered professional electrical engineer in charge, a route map, and an engineering description of the equipment and configurations covered by requirements COC **TSE-5** a) through f).

d. Generator Special Facilities Agreement shall be provided concurrently to the CPM and DCBO. Substitution of equipment and substation configurations shall be identified and justified by the project owner for DCBO and CPM approval.

e. Any changes or updates to the executed LGIA signed by the SCE and the project owner.

f. Prior to the start of construction of any project modification requiring approval of the SCE, provide the interconnection approval to the CPM. Interconnectional approval for modification of existing facilities can be in the form of an approved Material Modification or approval of the proposed changes to project and the existing interconnection facilities. Within 15 days after cessation of construction the project owner shall provide a statement to the CPM from the registered engineer in responsible charge (signed and sealed) that the switchyard and transmission facilities conform to the above listed requirements.

g. A signed letter from LADWP indicated that the construction of the underground WRESC gen-tie line in the LADWP transmission corridor is acceptable.

TSE-6 The project owner shall be responsible for the inspection of the transmission lines, generator tie-lines, or related structures and facilities during and after project construction, and any subsequent CPM and DCBO approved changes thereto, to ensure conformance with CPUC GO-95 or NESC, Title 8, CCR, Articles 35, 36 and 37 of the, "High Voltage Electric Safety Orders", applicable interconnection standards, NEC and related industry standards. In case of non-conformance, the project owner shall inform the CPM and DCBO in writing, within 10 days of discovering such non-conformance and describe the corrective actions to be taken.

Verification: Within 90 days after first synchronization of the project, the project owner shall transmit to the CPM and DCBO:

a. "As built" engineering description(s) and one-line drawings of the electrical portion of the facilities signed and sealed by the registered electrical engineer in responsible charge. A statement attesting to conformance with CPUC GO-95 or NESC, Title 8, California Code of Regulations, Articles 35, 36 and 37 of

the “High Voltage Electric Safety Orders”, and applicable interconnection standards, NEC, related industry standards.

b. An “as built” engineering description of the mechanical, structural, and civil portion of the transmission lines, generator tie-lines, or related structures and facilities signed and sealed by the registered engineer in responsible charge or acceptable alternative verification. “As built” drawings of the electrical, mechanical, structural, and civil portion of the transmission facilities shall be maintained at the power plant and made available, if requested, for CPM audit as set forth in the “Compliance Monitoring Plan”.

4.3.7 References

California ISO 2023a – California ISO Grid Planning Standards, February 2, 2023, ongoing.

California ISO 2024a – California ISO, Fifth Replacement FERC Electric Tariff, January 1, 2024, ongoing.

California ISO 2021a – California ISO (TN 247170). Queue Cluster 13 Phase II – Attachment 1, filed on October 13, 2022. *Confidential Report on File.*

California ISO 2021b – California ISO (TN 247171). Appendix A-Q1782 Queue Cluster 13 Phase II, filed on October 13, 2022. *Confidential Report on File.*

California ISO 2021c – California ISO (TN 247183). Queue Cluster 13 Phase II Interconnection Study Report, SCE Northern Area Report, filed on October 13, 2022. *Confidential Report on File.*

California ISO 2022 – California ISO (TN 256825). 2022 Generator Reassessment Report for Q1782 Gem Energy Storage, filed on May 2, 2024. *Confidential Report on File.*

California Public Utilities Commission (CPUC) General Order 95 (GO-95), Rules for Overhead Electric Line Construction, revised January 15, 2020, ongoing.

California Public Utilities Commission (CPUC) General Order 128 (GO-128), Rules for Construction of Underground Electric Supply and Communications Systems, revised January 2006, ongoing.

ESHD 2024i – Ellison Schneider Harris & Donlan LLP (TN 254806). Willow Rock Energy Storage Center SAFC, Volume 1, Part A, dated March 1, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-AFC-02

NERC (North American Electric Reliability Council) 2024 Reliability Standards for the Bulk Electric Systems of North America, Updated January 1, 2024 and ongoing.

WECC (Western Electricity Coordinating Council) ongoing, WECC Regional Reliability Standards, ongoing.

WSP 2024aa – Williams Sale Partnership (TN 259675). Willow Rock Data Request Set 3 Response, dated October 23, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-AFC-02

WSP 2024cc – Williams Sale Partnership (TN 260808). Willow Rock Data Request Set 5 Response, dated December 23, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-AFC-02

4.3.8 Definition of Terms

ACSR — Aluminum conductor steel-reinforced

Ampacity — Current-carrying capacity, expressed in amperes, of a conductor at specified ambient conditions, at which damage to the conductor is nonexistent or deemed acceptable based on economic, safety, and reliability considerations

Ampere — The unit of current flowing in a conductor

Bus — Conductors that serve as a common connection for two or more circuits

Conductor — The part of the transmission line (the wire) that carries the current.

Congestion Management

A scheduling protocol that ensures dispatched generation and transmission loading (imports) will not violate criteria

Double Contingency

Also known as emergency or N-2 condition, occurs when a forced outage of two system elements occurs -- usually (but not exclusively) caused by one single event. Examples of an N-2 contingency include loss of two transmission circuits on single tower line or loss of two elements connected by a common circuit breaker due to the failure of that common breaker

Emergency Overload

See Single Contingency condition. This is also called an N-1.

Kcmil or KCM

Thousand circular mil. A unit of the conductor's cross sectional area; when divided by 1,273, the area in square inches is obtained.

Kilovolt (kV)

A unit of potential difference, or voltage, between two conductors of a circuit, or between a conductor and the ground

Loop — An electrical cul de sac. A transmission configuration that interrupts an existing circuit, diverts it to another connection, and returns it back to the interrupted circuit, thus forming a loop or cul de sac

Megavar — One megavolt ampere reactive

Megavars — Mega-volt-ampere-reactive. One million volt-ampere-reactive. Reactive power is generally associated with the reactive nature of motor loads that must be fed by generation units in the system

Megavolt Ampere (MVA)

A unit of apparent power, equals the product of the line voltage in kilovolts, current in amperes, the square root of 3, divided by 1,000

Megawatt (MW)

A unit of power equivalent to 1,341 horsepower

N-0 Condition

See Normal Operation/Normal Overload, below

Normal Operation/ Normal Overload (N-0)

When all customers receive the power they are entitled to without interruption and at steady voltage, and no element of the transmission system is loaded beyond its continuous rating

N-1 Condition

See Single Contingency, below

N-2 Condition

See Double Contingency, above

Outlet — Transmission facilities (circuit, transformer, circuit breaker, etc.) linking generation facilities with the main grid

Power Flow Analysis

A power flow analysis is a forward-looking computer simulation of essentially all generation and transmission system facilities that identifies overloaded circuits, transformers, and other equipment and system voltage levels

Reactive Power

Reactive power is generally associated with the reactive nature of motor loads that must be fed by generation units in the system. An adequate

supply of reactive power is required to maintain voltage levels in the system

Remedial Action Scheme

A remedial action scheme is an automatic control provision that, as one example, will trip a selected generating unit when a circuit overloads

Single Contingency

Also known as emergency or N-1 condition, occurs when one major transmission element (circuit, transformer, circuit breaker, etc.) or one generator is out of service

Special Protection Scheme/System

Detects a transmission outage (either a single or credible multiple contingency) or an overloaded transmission facility and then trips or runs back generation output to avoid potential overloaded facilities or other criteria violations

Switchyard

A power plant switchyard is an integral part of a power plant that is used as an outlet for one or more electric generators

Thermal Rating See ampacity

TSE Transmission System Engineering

4.4 Worker Safety and Fire Protection

Testimony of Alvin J. Greenberg

4.4.1 Setting

Existing Conditions

The Willow Rock Energy Storage Center (WRESC, or Willow Rock) would be on approximately 88.6 acres of private land immediately north of Dawn Road and between State Route (SR) 14 and Sierra Highway within unincorporated, southeastern Kern County, California. The WRESC would use Hydrostor, Inc.'s (Hydrostor's) proprietary, advanced compressed air energy storage (A-CAES) technology. Energy stored at the WRESC would be delivered to Southern California Edison's (SCE) Whirlwind Substation southwest of the WRESC at the intersection of 170th Street W and Rosamond Boulevard, via a new approximately 19-mile 230-kilovolt (kV) generation-tie (gen-tie) line. The WRESC would be capable of operating on a 24-hour basis, 365 days a year with an approximate 50-year lifespan.

The project site would be served by the Kern County Fire Department (KCFD). The project would be served first by Station 15, staffed by permanently employed fire fighters, in the community of Rosamond (~4.4 miles South at 3219 35th St W) with a response time of 8 minutes. The KCFD has stated that if the project were to be approved and built, the current firefighter staffing at the stations that would respond to a fire or EMS need at the WRESC are up to current standards and requests only that KCFD staff participate in facility familiarization visits to site prior to event. However, hazardous materials spill response would at first be covered by stations 15, 14, and 12 at only the first responder level until the Hazmat Unit from Fire Station 65 responds from Bakersfield in 90 minutes. Rescue is discussed below.

The California Department of Forestry and Fire Protection (CAL FIRE) has not assigned a Fire Hazard Severity Zone (FHSZ) rating for the area encompassing the WRESC and the gen-tie line (ESHD 2024h). The WRESC site does not fall within a State Responsibility Area (SRA). For further information please refer to **Section 5.7, Hazards, Hazardous Materials, and Wildfire**.

Regulatory

Worker safety and fire protection are regulated through laws, ordinances, regulations, and standards (LORS), at the federal, state, and local levels. Workers at an energy facility operate equipment and handle hazardous materials and may face hazards that can result in accidents and serious injury. Protective measures are employed to eliminate or reduce these hazards or to minimize the risk through special training, protective equipment, and procedural controls.

Federal

Occupational Safety and Health Act. The Department of Labor, Occupational Safety and Health Administration (OSHA) has adopted regulations (Title 29, Code of Federal Regulations, Section 1910.95) designed to protect workers. Employers are required to monitor worker exposure to listed hazardous substances and notify workers of exposure. The regulations specify requirements for employee training, availability of safety equipment, accident-prevention programs, and hazardous substance exposure warnings. These sections contain requirements to protect worker health and safety in the general industry and construction industry. These regulations also address requirements to protect workers in emergency situations. They are designed primarily to protect worker health but also contain requirements that affect general workplace safety. The California regulations contained in Title 8 (California equivalent of 29 CFR) are generally more stringent than those contained in Title 29. The administering agencies for the above authority are Federal and State OSHA and Cal OSHA, respectively. As required by 29 CFR 1910, an employer must have an Emergency Action Plan whenever an OSHA standard in Part 1910 requires one. The Emergency Action Plan must be in writing, kept in the workplace, and available to employees for review, unless there are 10 or fewer employees. The Emergency Action Plan must contain procedures for reporting, procedures for emergency evacuation, procedures for employees who remain for critical plant operations, procedures to account for employees following evacuation, procedures if rescue and medical duties are required, and identified persons who can provide more information to employees. Additionally, 29 CFR subpart S, sections 800 and 803 address underground construction and working in compressed air environments.

National Institute of Occupational Safety and Health (NIOSH). NIOSH was established by the Occupational Safety and Health Act of 1970. NIOSH studies worker health and safety and develops safe work practices, testing protocols, and makes recommendations to OSHA to continually improve workplace practices.

Mine Safety and Health Administration (MSHA). The U.S. Department of Labor's MSHA works to prevent death, illness, and injury from mining and promote safe and healthful workplaces for U.S. miners. MSHA carries out the provisions of the Federal Mine Safety and Health Act of 1977 (Mine Act) as amended by the Mine Improvement and New Emergency Response (MINER) Act of 2006. The agency develops and enforces safety and health rules for all U.S. mines regardless of size, number of employees, commodity mined, or method of extraction. MSHA also provides technical, educational and other types of assistance to mine operators. MSHA works cooperatively with industry, labor, and other federal and state agencies to improve safety and health conditions for all miners in the United States. Regulations applicable to this project can be found in the section discussing safety and health standards at underground metal and nonmetal mines (CFR-2024).

Bureau of Alcohol Tobacco Firearms and Explosives (ATF). ATF is a law enforcement agency in the United States' Department of Justice that protects the communities from violent criminals, criminal organizations, the illegal use and trafficking of firearms, the illegal use and storage of explosives, acts of arson and bombings, acts of terrorism, and the illegal diversion of alcohol and tobacco products. ATF partners with communities, industries, law enforcement, and public safety agencies to safeguard the public we serve through information sharing, training, research, and use of technology.

Federal Aviation Administration (FAA). The Federal Aviation Administration regulates aviation in the United States including structures that might intrude into air space including standards for marking and lighting of potential obstructions.

State

California Occupational Safety and Health Administration (Cal OSHA). Cal OSHA is the primary agency responsible for worker safety related to the handling and use of chemicals in the workplace. Cal OSHA standards are generally more stringent than federal regulations. Employers are required to monitor worker exposure to listed hazardous substances and notify workers of exposure (Cal. Code Regs., tit. 8, §§ 337-340). The regulations specify requirements for employee training, availability of safety equipment, accident-prevention programs, and hazardous substance exposure warnings. It also includes the Construction Safety Orders (CCR tit. 8, §§ 1500-1962) and the General Industry Safety Orders (Cal. Code Regs., tit. 8, §§ 3200-6184). California Code of Regulations, title 8, section 7083 requires that a mine rescue station is required if more than more than fifty employees work underground at any one time. Additionally, Cal. Code Regs., tit. 8, §§ 8403 – 8568 Tunnel Safety Orders including Cal Codes Regs., title 8, § 8495 addressing Hoisting Equipment and Systems and Cal. Code Regs., tit. 8, § 7091 of the Mine Safety Orders addressing radioactive [in this case radon] protection by following the radiation standards of the Mine Safety and Health Administration for Metal and Non-Metallic Underground Mines, published July 31, 1969, February 25, 1970, and December 8, 1970, will govern worker safety when excavating the underground cavern.

California Fire Code (CFC). California Health and Safety Code Sections 13145 and 13146 also require that every city, county, or city and county fire department or district providing fire protection services to enforce building standards adopted by the State Fire Marshal and other regulations of the State Fire Marshal.

California Health and Safety Code, Sections 25500-25541. The California Health and Safety Code, Sections 25500 through 25541 requires local governments to regulate local business storage of hazardous materials in excess of certain quantities. The law also requires that entities storing hazardous materials be prepared to respond to releases. Those using and storing hazardous materials are required to submit an HMBP to their local Certified Unified Program Agency (CUPA) and to report releases to their CUPA and the State Office of Emergency Services.

Hazardous Materials Business Plan. The designated CUPA for the project is the Kern County Public Health Environmental Health Division (Kern County Environmental Health). The Hazardous Materials Business Plan fulfills the requirements of the California Health and Safety Code, Sections 2550, et seq., and the related regulations of California Code of Regulations, title 19 sections 2620 et seq.

State Mining and Geology Board. The State Mining and Geology Board (SMGB) serves as a regulatory, policy, and appeals body representing the State's interests in the reclamation of mined lands, geology, geologic and seismologic hazards, and the conservation of mineral resources.

California Public Utilities Commission (CPUC). General Order 95: Rules For Overhead Electric Line Construction.

Porter-Cologne Water Quality Act. This state law provides a comprehensive water quality management system for the protection of California waters. The act designates the SWRCB as the ultimate authority over State water rights and water quality policy and also established nine RWQCBs to oversee water quality on a day-to-day basis at the local and regional level. The RWQCBs have the responsibility of granting NPDES permits and setting waste discharge requirements for stormwater runoff from construction sites.

Local

Kern County Code of Ordinances. The KCFD follows the 2024 California Fire Code (CFC) to implement local fire protection and emergency services. The CFC is based on the 2021 International Fire Code (IFC) with amendments that became effective July 2024.

Noise Control – Chapter 8.36. To regulate noise levels to protect public health, welfare, and safety and warn of the hazards of excessive noise.

Fire Code – Chapter 17.32. The County Code adopts the California Fire Code with specific revisions.

Electrical Code – Chapter 17.24. The County Code adopts the California Electrical Code with specific revisions.

Kern County General Plan. California Senate Bill 271 and Assembly Bill 2038 required that counties and cities adopt General Plan policies regarding natural hazards. The County of Kern's General Plan provides direction and resources intended to mitigate death, injuries, and environmental and economic damage. The Kern County General Plan contains several policies that are applicable to worker health and safety, including, but not limited to:

- Noise Element -- sections 3.1-3.2

- Safety Element -- sections 4.1-4.10. (4.6 Wildland and Urban Fire, 4.7 Kern County Emergency Plan, 4.9 Hazardous Materials)

Cumulative

Staff reviewed the potential for the construction and operation of project combined with existing industrial facilities and expected new energy facilities in the vicinity to result in impacts on the fire and emergency service capabilities, and in particular rescue, of the KCFD (see **Appendix A, Table A-1** of this Staff Assessment for the complete list, descriptions, and status of these projects). Staff identified 37 projects within 8.1 miles of the proposed project that could cause a cumulative impact to the KCFD regarding its ability to properly respond to fire, rescue, and EMS emergencies.

Of those projects, staff did not find a single below ground mining or excavation project that could impact on the KCFD's rescue services. All 37 projects, however, could pose an impact on fire and EMS services. Kern County Planning Department noted in a letter (KCPNRD 2024) that "*Kern County is the site of over 100 mining operations including the largest open pit Borates mine in California (Rio Tinto, US Borax), the last hard rock gold and silver mine (Golden Queen Soledad Mine,) as well as three of the largest aggregate and concrete operations in California."*

4.4.2 Impacts

Worker safety and fire protection are regulated through laws, ordinances, regulations, and standards (LORS), at the federal, state, and local levels. Workers at the proposed facility would operate equipment and handle hazardous materials and may face hazards that can result in accidents and serious injury. Protective measures are employed to eliminate or reduce these hazards or to minimize the risk through special training, protective equipment, and procedural controls.

The purpose of this Staff Assessment (SA) is to assess whether the worker safety and fire protection measures proposed by the applicant are adequate to:

- comply with applicable safety LORS;
- protect the workers during construction, commissioning, and operation of the facility;
- protect against fire; and
- provide adequate emergency response procedures.

Worker Safety

Industrial environments are potentially dangerous during construction, commissioning, operation, and decommissioning of facilities. Workers at the proposed project would be exposed to underground hazards such as silica dust, increased levels of radiation, loud noises, moving equipment, trenching/excavation accidents, electrical hazards, dust

hazards, use of explosives, and confined space incidents when excavating 1.3 million cubic yards of crushed rock extracted during construction of the cavern. The workers could experience falls, trips, burns, lacerations, being struck by objects, and numerous other potential injuries. Well-defined policies and procedures, training, and hazard recognition and control at the facility are important to minimize such hazards and protect workers. Compliance with applicable LORS would help ensure workers would be adequately protected from health and safety hazards.

A Construction Health and Safety Program and an Operations Health and Safety Program would be prepared by the applicant to minimize worker hazards during construction and operation. California Energy Commission (CEC) staff uses the phrase "Safety and Health Program" to refer to the measures that would be taken to ensure compliance with the applicable LORS during the construction and operational phases of the project.

Construction Safety and Health Program

The project encompasses construction and operation of an advanced compressed air energy storage system which incorporates an underground cavern, approximately 186 transmission poles, a step-up substation, a gen-tie line and a utility switchyard. Workers would be exposed to hazards including physical, chemical, biological and general construction hazards.

The Supplemental Project Description described the systems that would be on the surface area of the project site. Many of these would pose safety and health hazards to workers and include the following key facilities:

- eight electric-motor-driven air compressors configured in four trains
- four air-powered turbine generators
- heat extraction and recovery main process heat exchangers
- thermal storage system using water, including up to six, 87.5-foot-diameter by 100-foot-tall (maximum) hot-water spherical storage tanks and two 150-foot-diameter, 60-foot-tall cold-water storage tanks
- three air-cooled heat exchangers with evaporative mist system using excess internally produced process water
- a ~21.5-acre, 600-acre-foot capacity hydrostatically compensating surface reservoir with liner and interlocking shape floating cover
- aboveground piping pipe racks and filter houses
- underground compressed air storage cavern (approximately 900,000 cubic yards capacity)
- interconnecting conduits for movement of compressed air to and from the cavern

- potential permanent aboveground architectural berm for onsite re-use of excavated cavern rock
- onsite 230 kV substation with oil-filled transformers with 230/13.8 kV rating
- fire detection and fire monitoring systems
- firewater tank and fire suppression system
- one priary all-electric and one secondary diesel-fired 345-kilowatt (kW) (460 horsepower) emergency fire pump
- three diesel-fired up to 2.5 MW, 4.16 kV emergency backup power supply engines to maintain critical loads in the event of a loss of power
- a combined office, control room, and maintenance building

The greatest hazard to workers would be the excavation of the underground cavern. As the Supplemental Project Description states, “The cavern would be constructed by conventional mining methods including drilling and controlled detonation. The cavern layout will be designed to have a room and pillar or parallel gallery layout. The size and shape of excavated openings will depend on the strength of the host rock and will be finalized during detailed engineering” (ESHD 2024i).

Subsurface blasting would also occur and can be a particular dangerous operation for workers during construction if not handled properly. The Centers for Disease Control indicates that health hazards associated with blasting and the use of explosives include, but are not limited to, lung, ear, or eye trauma; concussion; limb fracture or amputation; burns; and asthma or other conditions caused by inhalation of dust, smoke, or toxic fumes. Explosives would be stored on the surface and used exclusively below the surface. The proposed project site is primarily underlain by quartz monzonite which covers the extent of the proposed WRESC (ESHD 2024i, section 5.4 Geological Hazards and Resources). Blasting would be required during excavation of the cavern (ESHD 2024h, section 5.17 Worker Health and Safety).

Cavern excavation would occur on a 24-hour-per-day, 7-day-per-week basis until complete. The following are the typical steps expected to occur:

1. Holes would be drilled into the working face.
2. Explosives would be loaded into these holes and are set off to break the rock into muck (broken rock).
3. Diesel-powered load-haul-dump vehicles would haul the muck to the production shaft, where it would be dumped into the loading elevator and brought to the surface.
4. Any loose hanging rock would be removed from the roof and side walls.
5. Machines would install ground support (typically rock bolts and wire mesh) for the newly exposed roof and sidewalls.

6. A new working face would be marked by surveyors and the cycle is repeated.

It is expected that twice-daily cavern controlled detonations lasting a few seconds would occur at the beginning of each shift. Shifts would be approximately 10 to 12 hours with no more than two a day. Therefore, controlled detonations would not be continuous throughout the day. It is also proposed that early in the cavern excavation process, workers would clear the underground area and remain aboveground during the detonation sequence. Once the cavern is large enough, personnel could remain underground during the detonation sequence. However, this practice would be reviewed/evaluated by the CEC Compliance Project Manager (CPM), Cal OSHA Mining and Tunneling Unit, the KCFD, and the CEC Delegate Chief Building Official (DCBO) before implementing. Additionally, a Controlled Detonations Plan is crucial for the safe excavation of the underground cavern when using explosives. Therefore, staff proposes Condition of Certification (COC) **WORKER SAFETY-5** which would require the preparation and implementation of a thorough and comprehensive plan before any explosives are used onsite.

Staff also conducted an assessment of two alternative cavern access construction methods as described in the Revised Project Description (WSP 2025g). Initial access to the cavern depth for construction equipment and crews would be accomplished by one of two methods:

- Method 1 - Construction of a large-diameter conventionally sunk shaft, or
- Method 2 - Construction of several rotary drilled (blind bore) shafts.

The applicant had not decided which method to use at the time of preparing this PSA. However, once one of these approaches is implemented, the clearing of the cavern would proceed in the same manner as described above. The only differences in approach between the two shaft drilling methods are:

- Method 1 would require controlled detonations from the top of the bedrock surface (approximately 50 to 100 feet bgs) until the cavern construction horizon (2,000 to 2,500 feet bgs) is reached.
- Method 2 would not require any detonations, and a temporary wastewater pond would be needed.

If method 2 is selected, five (5) shafts would be constructed; one for equipment and personnel access, two for rock hauling, and two for ventilation. To construct these shafts, a temporary wastewater “drill-pond” would be constructed at the surface. This lined pond would be large enough to hold up to approximately three times the shaft volume in water to support the boring operations. It would be lined and the liner would be removed or perforated when the pond is no longer needed and emptied of water, and surplus muck will be spread on top of the settled drill cuttings to completely backfill the pond excavation. The drilling water would be used for reservoir fill or disposed offsite by a licensed hauler. Since the water would contain dissolved and suspended

soils and rock dust that include toxic substances (e.g., hexavalent chromium), it could be determined to be a hazardous waste. The same holds true for all soils and rock removed by either method.

Additionally, a temporary rock crushing facility would be onsite for a significant period of time (up to two years). A rock crusher is a large, heavy, and complex machine that presents many safety hazards to workers where they could be crushed, cut, or fall. It also has the potential of emitting very large amounts of dust and therefore would use a combination of water sprays and a baghouse to control fugitive dust and fine particulate matter emissions.

The same holds true for the proposed temporary concrete batch plant which would operate onsite for up to 15 months. These batch plants present the usual worker safety and health hazards discussed above with the additional significant health risk of the generation of high amounts of dust during operations. This dust poses health risks to workers and nearby residents due to its composition which includes silica dust and hexavalent chromium. Control of exposure to wet concrete can result in skin irritation or even first-, second- or third-degree chemical burns. The concrete batch plant would require the implementation of dust control measures such as dust collectors, water sprays, and enclosing conveyor belts to minimize airborne particles.

Construction Safety Orders applicable to project construction discussed below are promulgated by Cal OSHA and are published at California Code of Regulations, Title 8, 1502, et seq. The Construction Safety and Health Program would include the following major programs:

- Construction Exposure Monitoring Program which shall include monitoring wastewater from the cavern initial access construction if Method 1 is chosen, and routine sampling of all excavated dust, soil, and rock removed from the cavern for the determination of hazardous wastes;
- Construction Injury and Illness Prevention Program (Cal. Code Regs., tit. 8, § 1509)
- Construction Fire Protection and Prevention Program (Cal. Code Regs., tit. 8, § 1920)
- Personal Protective Equipment Program (Cal. Code Regs., tit. 8, §§ 1514 to 1522)
- Construction Hazardous Materials Business Plan
- Construction Spill Prevention, Control, and Countermeasure Plan (In accordance with section 311 of the Clean Water Act)
- Construction Soil Management Plan (Cal. Code Regs. tit. 8, § 5192)
- Construction Emergency Action Program/Plan (Cal. Code Regs., tit. 8, § 3220)
- Controlled Detonations Plan for any explosives used during construction

- Cal. Code Regs. tit. 8, §§ 8403 to 8568 Tunnel Safety Orders (including § 7091 of the Mine Safety Orders addressing radioactive [in this case radon] protection by following the radiation standards of the Mine Safety and Health Administration for Metal and Non-Metallic Underground Mines, published July 31, 1969, February 25, 1970, and December 8, 1970.)
- Heat Illness Prevention Program (Cal. Code Regs., tit. 8, § 3395 and § 3396)
- Compressed Air Safety Orders (Cal. Code Regs., tit. 8, §§ 1200 to 1280)
- Silica Dust Safety Orders (Cal. Code Regs., tit.8, § 5204)
- Protection from Wildfire Smoke (Cal. Code Regs., tit. 8, § 5144.1)
- Control of Hazardous Energy (Lock Out/Tag Out) (Cal. Code Regs., tit. 8 § 3314)
- OSHA 26 CFR 1926.800 Underground Construction

Additional programs under General Industry Safety Orders (Cal Code Regs., tit. 8, §§ 3200 to 6184), Electrical Safety Orders (Cal Code Regs., tit. 8, §§ 2299 to 2974) include various safety and health programs.

The application adequately outlined the Construction Safety and Health Program for the project including safety protocols for a temporary portable rock crushing facility and a temporary concrete batch plant onsite during construction. Staff requested that the unique hazards posed to workers by the industrial rock crushing facility and the concrete plant be discussed and included in the applicant's worker safety analysis. The applicant responded with outlines of two safety protocols (WSP 2024aa, Attachment DR79-1 Rock Crusher Safety and Attachment DR80-1 Concrete Batch Plant Safety Protocols). However, outlining the appropriate elements of the plan does not ensure compliance with the program. Therefore, staff proposes COC **WORKER SAFETY-1** which would require the project owner to identify and provide the required elements and detailed plans of the Construction and Health Safety Program to the CPM for approval and to the KCFD for review and comment prior to the start of construction of the project.

Operations and Maintenance Safety and Health Program

Prior to the start of commissioning and operations at project, the Operations and Maintenance Safety and Health Program would be prepared. This operational safety program would include the following major programs and plans:

- Injury and Illness Prevention Program (Cal Code Regs., tit. 8, § 3203)
- Fire Protection and Prevention Program (Cal Code Regs., tit. 8, § 3221)
- Fire Protection System Impairment Program (2020 NFPA 850 Section 17.4.2 & Chapter 9 California Fire Code (CFC) Sections 901.7, 901.7.1-901.7.6)
- Emergency Action Plan (Cal Code Regs., tit. 8, § 3220)

- Personal Protective Equipment Program (Cal Code Regs., tit. 8, §§ 3401 to 3411)
- Hazardous Materials Business Plan
- Spill Prevention, Control, and Countermeasure Plan (SPCC Plan)

In addition, other requirements under General Industry Safety Orders (Cal Code Regs., tit. 8, §§ 3200 to 6184) and the Electrical Safety Orders (Cal Code Regs., tit. 8, §§2299 to 2974) would be applicable to this project. The use of herbicides to control vegetation growth at the WRESC would require adherence to California Code of Regulations, title 8 section 5155 and other relevant sections regarding worker exposure to toxic substances.

The application also adequately outlined the Operation Health and Safety Program for the project. However, outlining the appropriate elements of the plan does not ensure compliance with the program. Therefore, staff proposes COC **WORKER SAFETY-2** which would make it a requirement to identify and provide elements and detailed plans of the Operation Health and Safety Program to the CPM for approval and to the KCFD for review and comment prior to the start of construction of the project.

The measures in these plans would be derived from applicable sections of state and federal law. Both safety and health programs would comprise numerous more specific programs and would require the major items detailed in the following paragraphs.

An additional safety issue was raised by intervenor CURE (California Unions for Reliable Energy). In a data request and response (WSP 2025b) CURE asked whether there would be a risk of cavern seal failure for this project. Staff believes that if a cavern seal failure were to occur, it would occur only during operations and could possibly pose a safety hazard to workers on the surface because a catastrophic failure would result in a large amount of pressurized air suddenly escaping the cavern. The applicant responded that a risk was present but was mitigated by the project's engineering design which allows the pressure to remain constant by the hydrostatic column of water and the compensation reservoir. Since a cavern seal failure is most often caused by fatigue and repeated pressurization and de-pressurization, that risk would be mitigated.

Injury and Illness Prevention Program. The Injury and Illness Prevention Program (IIPP) is a key worker safety and health program that identifies the person(s) with authority and responsibility for implementing the program, ensures that employees utilize safe and healthy work practices, identifies and evaluates workplace hazards and corrects them, and implements an employee training program.

Staff proposes that the applicant submit a final IIPP to the CPM for review and approval to satisfy proposed COC **WORKER SAFETY-1** and COC **WORKER SAFETY-2**.

Fire Prevention Plan. California regulation requires an Operations Fire Prevention Plan (Cal. Code Regs., tit. 8, § 3221). This regulation applies to all fire prevention plans required in the State of California and the requirements are detailed below:

(a) Scope and Application. This section applies to all fire prevention plans. The fire prevention plan shall be in writing, except as provided in the last sentence of subsection (d)(2) of this section.

(b) Elements. The following elements, at a minimum, shall be included in the fire prevention plan:

(1) Potential fire hazards and their proper handling and storage procedures, potential ignition sources (such as welding, smoking and others) and their control procedures, and the type of fire protection equipment or systems which can control a fire involving them;

(2) Names or regular job titles of those responsible for maintenance of equipment and systems installed to prevent or control ignitions or fires; and

(3) Names or regular job titles of those responsible for the control of accumulation of flammable or combustible waste materials.

(c) Housekeeping. The employer shall control accumulations of flammable and combustible waste materials and residues so that they do not contribute to a fire emergency. The housekeeping procedures shall be included in the written fire prevention plan.

(d) Training.

(1) The employer shall apprise employees of the fire hazards of the materials and processes to which they are exposed.

(2) The employer shall review with each employee upon initial assignment those parts of the fire prevention plan which the employee must know to protect the employee in the event of an emergency. The written plan shall be kept in the workplace and made available for employee review. For those employers with 10 or fewer employees, the plan may be communicated orally to employees and the employer need not maintain a written plan.

(e) Maintenance. The employer shall regularly and properly maintain, according to established procedures, equipment and systems installed in the workplace to prevent accidental ignition of combustible materials.

As stated in the revised project description, water to the site for filling a storage tank used for fire protection operations will be supplied by the AVEK water agency via their 36-inch-diameter water main near the site boundary and a new buried 6-inch-diameter pipeline.

Staff proposes that the applicant submit a final Fire Prevention Plan to the CPM for review and approval and to the KCFD for review and comment to satisfy proposed COC **WORKER SAFETY-1** and COC **WORKER SAFETY-2.**

Fire Protection System Impairment Program. NFPA 850 and the most current CFC lay out a prescriptive method that the project owner must follow when the facility's installed fire protection system is impaired. The plan would accomplish the following:

- supervise the safe shutdown of fire protection systems;
- provide notifications to the proper authorities and representatives;
- control potential fire hazards during the impairments through the use of fire watches and/or evacuation of the area effected;
- outline a repair strategy and timeline to get the fire protection system operational; and,
- restore the fire protection system to service as soon as possible.

A Fire Protection System Impairment Program would ensure that the project owner follows the prescriptive measures laid out in NFPA 850 and the CFC (which references compliance with NFPA 25: Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems with California Amendments 2013). Therefore, staff proposes that the applicant submit a final Fire Protection System Impairment Program to the CPM for review and approval, and to the KCFD for review and comment, to satisfy proposed COC **WORKER SAFETY-2**.

Personal Protective Equipment Program. California regulations require Personal Protective Equipment (PPE) and first aid supplies whenever hazards are present that, due to process, environment, chemicals or mechanical irritants, can cause injury or impair bodily function as a result of absorption, inhalation, or physical contact (Cal. Code Regs., tit. 8, §§ 3380 to 3400).

All safety equipment must meet NIOSH or American National Standards Institute (ANSI) standards and would carry markings, numbers, or certificates of approval. Respirators must meet NIOSH, MSHA, and Cal OSHA standards. Each employee must be provided with the following information pertaining to, among other requirements, the use and maintenance of protective clothing, when to use the protective equipment, and when and how to replace the protective clothing and equipment.

The PPE Program ensures that employers comply with the applicable requirements for PPE and provides employees with the information and training necessary to protect them from potential workplace hazards.

CEC staff proposes that the applicant submit a final PPE Program to the CPM for review and approval to satisfy proposed COC **WORKER SAFETY-1** and COC **WORKER SAFETY-2**.

Emergency Action Plan. California regulations require an Emergency Action Plan (Cal. Code Regs., tit. 8, § 3220).

An Emergency Action Plan must be designed to accomplish the following:

- establish emergency escape procedures and emergency escape route for the facility;
- determine procedures to be followed by employees who remain to operate critical project operations before they evacuate;
- provide procedures to account for all employees and visitors after emergency evacuation of the project has been completed;
- specify rescue and medical duties for assigned employees;
- identify fire and emergency reporting procedures to regulatory agencies;
- develop alarm and communication system for the facility;
- establish a list of personnel to contact for information on the plan contents; and,
- determine and establish training and instruction requirements and programs.

CEC staff proposes that the applicant submit a final Emergency Action Plan to the CPM for review and approval and to the KCFD for review and comment to satisfy proposed COC **WORKER SAFETY-1** and COC **WORKER SAFETY-2**.

Hazardous Materials Business Plan. The California Hazardous Materials Release Response Plan and Inventory Law requires businesses that store or use hazardous materials to prepare a Hazardous Materials Business Plan (HMBP) and submit it to the CUPA. An HMBP includes details of a facility and business conducted at the site, an inventory of hazardous materials that are handled and stored on-site, an emergency response plan, and a safety and emergency response training program for new employees with an annual refresher course. Workers and first responders to any fire, rescue, or EMS emergency are thus aware of what hazardous materials are on the site and what precautions to take to avoid exposure.

CEC staff proposes that the applicant submit a final HMBP to the CPM for review and approval and to the KCFD for review and comment to satisfy proposed COCs **WORKER SAFETY-1** and **WORKER SAFETY-2**.

Spill Prevention, Control and Countermeasure Plan (SPCC Plan). The aboveground petroleum storage act (ASPA) program requires tank facilities storing greater than 1,320 gallons of petroleum (crude oil, motor oil, diesel fuel, gasoline) to

develop and implement the SPCC Plan requirements. A tank facility is any tank or tanks that are aboveground, including connected piping, that contain petroleum, has secondary containment, and it is used to hold petroleum products. The CUPA regulates businesses within its district. Workers and first responders to any fire, rescue, or EMS emergency are thus aware of what petroleum products are on the site and what precautions to take to avoid exposure due to the flammability, explosivity, and toxicity of these products. A SPPC Plan would limit the size of a spill and thus decrease risk to workers.

CEC staff proposes that the applicant submit a final SPCC Plan to the CPM for review and approval and to the KCFD for review and comment to satisfy proposed COCs **WORKER SAFETY-1** and **WORKER SAFETY-2**.

Additional LORS called *safe work practices* apply to the project. The construction and operations safety programs would address safe work practices. The components of these programs include, but are not limited to, the programs found in the subsection "Construction Safety and Health Program."

Safety & Health Program Monitoring

Protecting construction workers from hazards is among the greatest challenges in occupational safety and health. These hazards increase in complexity in the multi-employer worksites typical of large, complex, industrial-type projects such as the construction of a CAES system. The standard industry practice of hiring a Construction Safety Supervisor is used to ensure a safe and healthful environment for personnel. This industry standard practice has reduced and/or eliminated hazards evident in the audits staff conducted of projects under construction. The federal OSHA has also entered into strategic alliances with several professional and trade organizations to promote and recognize safety professionals trained as Construction Safety Supervisors, Construction Health and Safety Officers, and other professional designations. The goal of these partnerships is to encourage construction subcontractors in four areas:

- to improve their safety and health performance;
- to assist them in striving for the elimination of the four hazards (falls, electrical, caught in/between, and struck-by hazards), which account for the majority of fatalities and injuries in this industry and have been the focus of targeted OSHA inspections;
- to prevent serious accidents in the construction industry through implementation of enhanced safety and health programs and increased employee training; and,
- to recognize those subcontractors with exemplary safety and health programs.

To date, there are no OSHA or Cal OSHA requirements that an employer hire or provide for a Construction Safety Officer. OSHA and Cal OSHA regulations do, however, require that safety be provided by an employer and the term *Competent Person* is used in many OSHA and Cal OSHA standards, documents, and directives. A Competent Person

is usually defined by OSHA as an individual who, by way of training and/or experience, is knowledgeable of standards, is capable of identifying workplace hazards relating to the specific operations, is designated by the employer, and has authority to take appropriate action. Therefore, to meet the intent of the OSHA standard to provide for a safe workplace during construction, CEC staff proposes COC **WORKER SAFETY-3**, which would require the project owner to designate and provide a site Construction Safety Supervisor.

Accidents, fires, and worker deaths are known to have occurred in the past due to the failure to recognize and control safety hazards and the inability to adequately supervise compliance with occupational safety and health regulations. Safety problems have been documented by CEC compliance staff in safety audits conducted at several projects under construction. Commonly documented findings include, but are not limited to, such safety oversights as:

- lack of posted confined space warning placards/signs;
- confusing and/or inadequate electrical and machinery lockout/tagout permitting and procedures;
- confusing and/or inappropriate procedures for handing over lockout/tagout and confined space permits from the construction team to commissioning team and then to operations;
- dangerous placement of hydraulic elevated platforms under each other;
- inappropriate placement of fire extinguishers near hot work;
- dangerous placement of numerous power cords in standing water on the site, thus increasing the risk of electrocution;
- inappropriate and unsecure placement of above-ground natural gas pipelines inside the facility, but too close to the perimeter fence; and,
- lack of adequate employee- or contractor-written training programs addressing proper procedures to follow in the event of finding suspicious packages or objects either on or off site.

To reduce and/or eliminate these hazards, it is necessary for the CEC to have a professional Safety Monitor available to do on-site verification checks of ongoing compliance with Cal OSHA regulations and periodically audit safety compliance during construction, commissioning, and the hand-over to operational status. These requirements are outlined in COC **WORKER SAFETY-4**. A Safety Monitor, hired by the project owner, yet reporting to the DCBO and CPM, would ensure that safety procedures and practices are fully implemented at all projects certified by the CEC.

Health Hazards

Hexavalent Chromium. A potential health hazard is exposure to hexavalent chromium due to water which would be obtained the AVEK Water Agency (Antelope

Valley East Kern Water Agency). This water source would be the source of other on-site uses including dust suppression and the filling of the water tank used for fire control. Dust control is both necessary and required and would include the use of water to dampen the dry soil. However, staff is aware of other options such as the use of soil stabilizers and the use of dewatering wastes from drilling and excavation as suggested by the Lahontan Regional Water Quality Board (LRWQCB, Lahontan 2024). The applicant has stated that potable and process water would be provided by connection with the AVEK water distribution system and would be the source of other on-site uses including dust suppression. A review of the most recent water quality report on-line from AVEK shows that for the most part, the water quality is excellent. However, staff has a concern about the level of hexavalent chromium (Cr^{+6}) found in the water and because it would be applied repeatedly for dust control.

Hexavalent chromium was found at a level of 2.4 µ/l (micrograms Cr^{+6} per liter of water) in the most recent AVEK water quality report available on their website (AVEK 2023). This is the water that would be supplied to the pipeline for project use. The California State Water Resources Control Board (SWRCB) adopted a MCL (Maximum Contaminant Level) of 10 µ/l which became effective October 1, 2024 with varying compliance dates depending upon the population served (SWRCB 2024). Hexavalent chromium can occur naturally in groundwater as a result of weathering of chromium-containing minerals, and the conversion of generally insoluble trivalent chromium within minerals to the more soluble form hexavalent chromium. Hexavalent chromium is more soluble in water, particularly alkaline water (USGS 2023). Its natural background concentration in the western Mojave Desert of California has been estimated to be between non-detect to 60 µ/l (Ball 2004).

Hexavalent chromium is extremely toxic and can cause cancer, damage to the respiratory system, contact skin dermatitis, and damage to the stomach if ingested. It causes cancer in humans by both inhalation into the lungs and ingestion into the stomach (OEHHA 2016). It is considered a very potent human cancer-causing substance by numerous government scientific regulatory agencies including the World Health Organization (WHO), International Agency for Research on Cancer (IARC), the US EPA, and the Cal EPA Office of Environmental Health Hazard Assessment (OEHHA). It is also mobile in the soil (Morrison 2015) and can be expected in the future to migrate downward into the groundwater on this site.

When this water is used for dust control, a build-up of contaminants either dissolved or suspended in the groundwater could build-up to harmful amounts after being repeatedly applied several times a day for multiple years to the ground for dust control during hot weather. Evaporation of the water could leave a residue of hexavalent chromium and other contaminants on the dirt roads which could then be picked up by the wind or vehicles as dust. This contaminated dust could then be inhaled or ingested by workers over time and lead to worker injury or illness. Another route of worker

exposure could be via repeated ingestion of significant amounts of the water from drinking fountains or dermal (skin) problems if used for showering.

To ensure that the water used for dust control is not heavily contaminated with hexavalent chromium or other hazardous substances in the AVEK water supply, and that no buildup in soils on the site's dirt roads occurs, staff proposes COC **WORKER SAFETY-6** which would require the project owner to conduct laboratory analyses of the water proposed for use for dust control and drinking and analysis of surface soils on the dirt roads on the site.

In addition to water being a potential source of worker exposure to hexavalent chromium, the dust, soil, and rock generated by the construction of the cavern has the potential to generate hazardous waste containing hexavalent chromium and perhaps other metals naturally occurring below ground surface. CEC staff has included in proposed COC **WORKER SAFETY-1** a requirement for routine sampling and analysis of excavation spoils removed from the cavern as per a sampling and analysis plan prepared by the project owner and approved by the CPM.

Valley Fever. Coccidioidomycosis or "Valley Fever" (VF) is caused by inhaling the spores of the fungus Coccidioides immitis, which are released from the soil during soil disturbance (e.g., during construction activities) or wind erosion. Counties in California with the recent highest rate of infection include Fresno, Kern, Kings, Madera, and Tulare (California Department of Public Health 2024). The disease usually affects the lungs and can have potentially severe consequences, especially in at-risk individuals. Construction workers are often the most exposed population due to ground disturbing activities like trenching or excavating at construction sites. Treatment usually includes rest and antifungal medications. No effective vaccine currently exists for VF. Worker exposures to VF are regulated by Cal OSHA in the following Cal OSHA sections (California Occupational Safety and Health Administration 2024):

Applicable regulations for VF protection and exposure can be found in the California Code of Regulations, Title 8, sections:

- Section 342 (Reporting Work-Connected Fatalities and Serious Injuries)
- Section 3203 (Injury and Illness Prevention)
- Section 5141 (Control of Harmful Exposures)
- Section 5144 (Respiratory Protection)
- Section 14300 (Employer Records-Log 300)
- California Labor Code section 6709

To further minimize potential exposure of workers and the public to coccidioidomycosis during soil excavation and grading, extensive wetting of the soil prior to and during construction activities should be employed and dust masks should be worn at certain times during these activities. Proposed COC **WORKER SAFETY-7** would require the

project owner to develop and implement a Valley Fever Prevention and Response Plan that includes, among other requirements, that the dust control measures found in proposed COCs **AQ-SC3** and **AQ-SC4** be supplemented with additional requirements, and that any worker who could be exposed to dust from soil disturbances in several named counties with high incidence of VF is trained before that work begins and annually thereafter.

Worker safety and health and fire protection issues associated with the two different initial access methods would be addressed by proposed COCs, and in particular, **WORKER SAFETY-1, 3, 4,** and **7**.

Fire Hazards

During construction and operation of the project, there is the potential for both small fires and major structural fires. Electrical sparks and shorts, combustion of hydraulic fluid, mineral oil, insulating fluid, or flammable liquids and fuels, controlled detonations, and over-heated equipment, could cause small fires or larger ones at the WRESC site. The specific fire hazards for each project component are discussed in more detail below.

Surface Facilities

The applicant has proposed a water supply connection to an existing Antelope Valley East Kern Water Agency's supply pipeline for among other uses, fire suppression. The applicant has also stated that the WRESC would be equipped with fire detection and monitoring systems, fire suppression systems for equipment and buildings, one electric jockey fire pump with one back-up diesel-fired 460 horsepower emergency fire pump, various types of portable fire extinguishers. Additionally, there would be an onsite water tank of 330,000 gallons of which 300,000 gallons would be dedicated for firefighting. A Draft Emergency Action Plan (TN295675 ATTACHMENT DR75-1) provided by the applicant includes a plan to fight fires in the underground cavern during construction (section 2.7 Fire Underground) and staff is proposing that a more thorough plan be prepared and submitted to staff. The applicant has also proposed implementing safety protocols for the temporary onsite rock crusher and cement batch plant.

There would be numerous industrial facilities constructed and operated at the surface (ESHD 2024i). Many could pose worker safety and health hazards along with fire hazards. Safety issues with compressed air-powered turbines include pressure issues, contamination, and high-pressure accidents. The first significant safety concern is a fire/chemical explosion within the equipment. This is because all the elements necessary for fire or explosion are contained simultaneously in the CAES system: oxygen from the air, fuel from the lubricating system or diathermic oil, and heat from the compression process (Zhang, et al 2023). An additional risk is posed by the stored energy within the compressed air system of pipes, tubes, the cavern, compressors, pressure vessels, heat exchangers, and the turbines. Another is posed by high temperature compressed air. Although the application did not specify which systems at

the surface facility would be equipped with fire detection and suppression systems (TN 254805 SAFC § 5.17.2.4 Fire Protection), it did state that fire sprinkler systems would be installed in specific locations in the turbomachinery hall, buildings, and other areas within the facility as required by the CFC. Safety issues with industrial heat exchangers involve the risk of leakage due to corrosion, erosion, or improper design, which can lead to the release of hazardous fluids, potential fires or explosions, and exposure to hot or toxic substances, especially during maintenance. Staff concludes that fire detection and suppression systems are required by the CFC for the entire surface facility and therefore will be required in the Fire Prevention Plans of proposed COCs **WORKER SAFETY-1** and **2**.

O&M Facilities

Fire detection and suppression elements for the Operation and Maintenance building (O&M) which would accommodate staff members and storage areas would be consistent with the applicable provisions of the CFC. Besides being equipped with portable fire extinguishers, the O&M building would be equipped with smoke detectors and sprinkler systems.

Fires and explosions of flammable welding gases or liquids are rare. Compliance with applicable LORS would be adequate to ensure protection from fire hazards related to the individual structures. The project owner plans to undertake fire prevention practices during construction and operations and prepare a project-specific Fire Prevention Plan. Access to the site for fire and other emergency vehicles shall be available at two separate locations via site personnel or locked gates. Emergency departments such as the KCFD, the Kern County Sheriff's Office (KCSO), and the California Highway Patrol (CHP) shall be given access to the locked gates via keys or any other means as described in both the construction and operations fire prevention plans described in COCs **WORKER SAFETY-1** and **2**.

Underground Cavern Construction

The complexity of an underground cavern excavation requires extreme caution and adherence to all applicable safety and health standards described in this section. The applicant presented an outline of a fire protection plan in Data Request Response Set 3 (WSP 2024aa), Attachment DR75-1**,** Draft Emergency Action Plan. Although the section 2.7 of this appendix addressing fire underground was brief, it was adequate to demonstrate that the applicant would address this serious issue. A fire prevention plan in mining should focus on identifying and mitigating potential ignition sources, controlling combustible materials, and implementing proper ventilation systems. Additionally, the plan should focus on utilizing fire detection and suppression equipment, and providing thorough employee training on fire safety procedures, particularly in areas with flammable gases like methane. The plan should also consider the unique hazards present in the mine environment.

Key components of an underground fire prevention plan would include:

1. Pre-planning and hazard identification:
    - Identify potential ignition sources: This includes machinery sparks, hot work operations, electrical equipment, friction from conveyor belts, and static electricity.
    - Assess combustible materials: Analyze the presence of flammable materials like wood, grease, and oil, including their storage and handling practices.
    - Evaluate gas levels: Monitor for flammable gases like methane and carbon monoxide, particularly in high-risk areas.
    - Analyze ventilation systems: Assess the effectiveness of ventilation to dilute flammable gases and remove heat.
    - Elevator or hoist safety issues.
2. Ventilation control:
    - Maintain adequate airflow in working areas to dilute flammable gases and heavy equipment exhaust.
    - Use positive pressure ventilation systems where necessary.
    - Regularly monitor ventilation systems and air quality.
3. Combustible material management:
    - Store combustible materials in designated areas, away from heat sources, both on the surface and within the cavern.
    - Implement proper housekeeping practices to remove dust and debris.
    - Use non-combustible materials where possible.
    - Regularly inspect and maintain electrical equipment.
    - Use explosion-proof electrical fixtures in hazardous areas.
    - Implement proper grounding practices.
    - Establish strict hot work permits for activities like welding and cutting.
    - Provide proper fire protection measures during hot work operations.
    - Regularly service machinery to prevent overheating and sparks.
    - Inspect conveyor belts for damage and potential friction points.
4. Fire Detection and Alarm Systems:
    - Install smoke detectors at strategic locations and that trigger alarms.
    - Install gas detection systems to monitor flammable gas levels and trigger alarms.
5. Fire suppression systems:

- Utilize appropriate fire suppression systems like water sprinklers, CO2 systems, or foam systems in designated areas.

6. Emergency Response Plan:
   - Develop clear evacuation plans, routes, assembly points, and refuge chambers for workers.
   - Provide comprehensive fire training to all mine workers, including the proper use of fire extinguishers.
   - Designate trained emergency response teams to manage fire incidents.
   - Establish effective communication systems to initiate emergency alerts and coordinate response efforts.
7. Compliance with regulations:
   - Ensure the fire prevention plan adheres to all relevant mining safety regulations
8. Worker and Management Training:
   - Provide initial and annual refresher training of command and control procedures, fire response, evacuation, and reporting of emergencies to management and workers.
   - Provide training if a private fire brigade is established as per Cal. Code Regs., tit. 8, § 3411.
9. Regular inspections and maintenance:
   - Conduct routine inspections of fire detection and suppression systems, electrical equipment, ventilation systems, and elevators/hoists.

To provide strict safety and health procedures to protect workers underground, staff proposes COC **WORKER SAFETY-8**.

Worker safety and health and fire protection issues associated with the two different initial access methods would be addressed by proposed COCs **WORKER SAFETY-1, 3, 4, 5,** and **8**.

Gen-tie Line

The proposed 230 kV gen-tie interconnection would be designed, constructed, and maintained in accordance with applicable standards, including CPUC GO-95, which establishes clearances from other human-built and natural structures, as well as tree-trimming requirements to mitigate fire hazards. The gen-tie corridor and immediate area would be maintained in accordance with existing regulations and accepted industry practices that will include identification and abatement of fire hazards.

Construction and Operations

The project identified the NFPA Standard 850 as a basis for the fire protection design for the project. NFPA 850 requires the development of a Fire Protection Design Basis Document that identifies relevant hazards such as the presence of fuels, lubricating oils, flammable liquids, and electrical equipment. Additionally, staff has identified standard NFPA 122: Standard for Fire Prevention and Control in Metal/Nonmetal Mining and Metal Mineral Processing Facilities. This standard presents minimum requirements for safeguarding life and property against fire and related hazards associated with diesel-powered equipment and the storage and handling of flammable and combustible liquids at metal and nonmetal underground and surface mining and metal mineral processing plants. Staff strongly recommends that the project be built to the NFPA 850 and 122 standards. The Delegate Chief Building Official (DCBO) would be instructed to apply NFPA 850 and 122 during construction of the project because both NFPA 850 and 122 are written as a set of "recommended" practices rather than "required" ones. Staff is proposing COC **WORKER SAFETY-9** which would clarify for all stakeholders the responsibilities of the project owner as they relate to NFPA 850 and NFPA 122. COC **WORKER SAFETY-9** would require compliance of the project with NFPA 850 and NFPA 122, giving NFPA 850 and NFPA 122 the effectiveness and clear enforceability of a building code in its application to the project. In any situations where NFPA 850 and NFPA 122 and other state or local LORS have application, the more restrictive shall apply.

There are many inherent dangers of working underground that include (but not limited to) accidents, fires, toxic fumes, toxic substances, radiation, and cave-ins, and the dangers posed by the above-ground facilities that include high-pressure compressed air tanks, pipes, pressure vessels, electrical generators, and heat exchangers. For example, safety issues with industrial heat exchangers primarily involve the risk of leakage due to corrosion, erosion, or improper design, which can lead to the release of hazardous fluids, potential fires or explosions, and exposure to hot or toxic substances, especially during maintenance or when operating under extreme temperature and pressure conditions; other concerns include improper material selection, vibration, fouling, and inadequate monitoring systems. Safety concerns with compressed air electricity generation primarily revolve around the high pressure involved, which can lead to potential risks like explosions, projectile hazards from ruptured components, and the presence of contaminants like oil and water in the compressed air, which could cause fires if ignited in the system; proper maintenance and safety protocols are crucial to mitigate these risks. The presence of numerous high pressure tanks, pipes, and valves pose the threat of worker injuries or deaths due to the sudden release of energy during maintenance if not properly locked-out and tagged-out, and the stored energy properly released from the system. Given this multi-faceted complex project, the engineering, administrative, and training programs proposed by the applicant need to be augmented and staff has determined that an additional worker safety COC is required to decrease risks and increase safety at the surface facilities and provide a structure for underground fire control and rescue. A conversation with the Cal OSHA Mining and

Tunneling Unit also supported aspects of this additional COC. Staff proposes **WORKER SAFETY-11** which would require the project owner to ensure a coordinated approach to worker safety and fire detection and suppression above and below ground, develop, implement, and train for a command and control system, and hold a pre-construction and excavation conference with the CPM, Cal OSHA Mining and Tunneling Unit, the DCBO, and the DCBO Safety Monitor so that all safety professionals meet and confer in one room at the same time.

Fire, Rescue and Emergency Medical Services Response

In the past, staff conducted a statewide survey to determine the frequency of emergency medical services (EMS) response and offsite fire-fighter response for CEC projects in California. The purpose of the analysis was to determine what impact, if any, new CEC projects could have on local emergency services. Staff concludes that incidents at CEC projects that require fire or EMS response are infrequent and represent an insignificant impact on the local fire departments, except for those instances where a rural fire department has a staff of mostly volunteer or on-call fire fighters or minimal fire fighters and stations for the area covered, all of which is not is the case for KCFD, with the exception of underground rescue response. Underground rescue requires special equipment, training, and quicker response time due to the nature of restricted access, possible hazardous atmospheres, and difficulty in fighting fires below ground. The KCFD response time for a below ground rescue would be, at best 70 minutes, and could be much longer due to any blockage (snow, accidents, train derailment) of State Route 58.

Staff reviewed the information provided by the applicant to determine if the KCFD's available fire protection services and equipment would be adequate to protect workers, and to determine the project's impact on fire protection services in the area. The project would rely on both on-site fire protection systems and local fire protection services. The on-site fire protection systems provide the first line of defense for small fires. In the event of a major fire, fire support services, including trained firefighters and equipment for a sustained response, would be provided by the KCFD under all conditions. Staff has reviewed and assessed the information available and discussed emergency response capabilities with the KCFD. Information provided by the KCFD demonstrates that the entire east side of Kern County has the resources to respond to fire and EMS emergencies, As stated earlier in this assessment, the KCFD has stated that if the project were to be approved and built, the current firefighter staffing at the stations that would respond to a fire or EMS need at the WRESC are up to current standards and requests only that KCFD staff participate in facility familiarization visits to site prior to event. However, hazardous materials spill response would at first be covered by stations 15, 14, and 12 at only the first responder level until the Hazmat Unit from Fire Station 65 responds from Bakersfield in 90 minutes. Rescue is discussed below.

Regarding rescue, the KCFD lacks the resources to respond to rescue emergencies. This applies to rescue response to the existing towns, energy facilities, and the many abandoned and active mines in the area in an appropriate time. Lack of a KCFD east side area rescue station, crew, and engine has been identified by staff as needed by the KCFD. The existing KCFD rescue unit is in the western part of Kern County. AS stated by the US Centers for Disease Control, "*Fire has long been a concern for underground mine workers. A mine fire can occur at any time and can result in a partial or total evacuation of mine personnel and the loss of lives. Fires can grow rapidly. Time is the critical element. Prompt detection, timely and accurate warnings to those potentially affected, and a proficient response by underground miners can have a tremendous impact on the social and economic consequence of a small underground fire* (CDC 2005)." Staff believes that this also applies to mine rescue as well. As a result of staff's assessment, it was determined that mitigation was necessary and has proposed mitigation in COC **WORKER SAFETY-12**.

Staff has also determined that the potential for both work-related and non-work-related heart attacks exists at CEC licensed projects. In fact, staff's research on the frequency of EMS response to CEC projects shows that many of the responses for cardiac emergencies involved non-work-related incidents, including those involving visitors. Staff finds that the quickest medical intervention for cardiac emergencies can only be achieved with the use of an on-site automatic external defibrillator (AED). Therefore, staff concludes that it is appropriate for the project owner to maintain an AED on site to treat cardiac emergencies resulting from industrial accidents or other non-work-related causes. Staff proposes COC **WORKER SAFETY-10,** which would require that this portable AED be on site, all employees on site during operations be trained in its use, and that supervisory workers on site during construction and commissioning also be trained in its use.

Cumulative Impacts

Staff reviewed the potential for the construction and operation of project combined with existing industrial facilities and expected new energy facilities in the vicinity to result in impacts on the fire and emergency service capabilities of the KCFD (see **Appendix A, Table A-1** of this Staff Assessment for the complete list, descriptions, and status of these projects). Staff identified 37 projects within 8.1 miles of the proposed project that could cause a cumulative impact to the KCFD regarding its ability to properly respond to fire, rescue, and EMS emergencies.

In a letter from the Kern County Planning and Natural Resources Department (TN 259786), the County has determined that a direct and a cumulative impact on emergency response would be caused by the WRESC. Specifically, the County has "*identified the 3-4 years of hard rock excavation, related truck traffic, and construction of the inter-tie line along Rosamond Blvd as the primary impacts on health, safety, and quality of life to surrounding communities.*" The County further noted that *"Kern County is the site of over 100 mining operations including the largest open pit Borates mine in*

California (Rio Tinto, US Borax), the last hard rock gold and silver mine (Golden Queen Soledad Mine,) as well as three of the largest aggregate and concrete operations in California." Accordingly, the County has proposed four (4) Conditions of Certification for the CEC to consider which directly address impacts to worker safety, fire protection and rescue, and public safety and health.

The County requested the following mitigation measures:

KC #17: Provide funding for a fully equipped Urban Search and Rescue (USAR) Unit, including necessary equipment for use in Eastern Kern County, and staffing costs during the construction phase and agreements to pay for emergency response if the USAR is not delivered before construction begins. The applicant shall provide the following to address the unique emergency service issues on the project:

a. The applicant shall, within 180 days after approval of the project by the California Energy Commission, provide a lump sum of $1,900,000 ($1.9 million) to the Kern County Fire Department for the USAR.

b. Within 60 days of Kern County Fire taking delivery of the USAR, the first lump sum payment for the first year of staffing shall be made to the Kern County Fire Department in the amount of $2,400,000 ($2.4 million) and made annually until the final Certificate of Occupancy for operations is issued by Kern County or as authorized by the CEC.

c. If construction begins and the new USAR has not been delivered, then the applicant shall sign an agreement with the Kern County Fire Department agreeing to the reimbursement of costs for responding to incidents at the site. Such an agreement will terminate once the USAR is delivered, and the staffing annual payment is made.

CEC staff discussed these projects and the potential for a cumulative and direct impact with the KCFD. Staff has concluded based upon staff's experience and analysis of the issues that both a direct impact and a cumulative impact will be posed by the construction and operation of the WRESC and therefore proposes that the KCFD and the project owner enter into negotiations to provide mitigation as required in proposed COC **WORKER SAFETY-12**. Staff bases this determination on the following facts:

- The project will be the first compressed air power generating project in California that uses an excavated underground cavern for the holding of compressed air and water.
- Because workers will be entering the cavern during its excavation, prompt rescue of injured workers becomes an essential safety feature of this project.
- KCFD station 47 on western side of the County (west of Tehachapi Pass via State Route 58), although able to handle fire, rescue, or emergency medical response on the western side of the pass, is not able to provide such response in an appropriate time on the eastern side of the pass due to the extreme distance to the project site and the other mining activities. Response time for a rescue at the site is estimated

at 1 hour. Additionally, occasional weather and accidents result in temporary close of Route 58 thus adding more time for emergency response.

- The KCFD stations on the east side of the pass are presently understaffed and under-equipped to handle emergency rescue to the industrial projects on the east side of the county. KCFD has 14 Mutual Aid agreements which can provide fire response but not below surface rescue. A Los Angeles USAR unit at 3650 Bolz Ranch Rd, Palmdale might or might not be able to respond under mutual aid. The response time from this station is estimated by staff to be approximately 30 minutes.

4.4.3 Applicable LORS and Project Conformance

Table 4.4-1 contains staff's determination of conformance with applicable local, state and federal LORS, including any proposed conditions of certification, where applicable, to ensure the project would comply with LORS. As shown in this table, staff concludes that with implementation of specific conditions of certification, the proposed project would be consistent with all applicable LORS. The subsection at the end of this section, "Staff Proposed Conditions of Certification," contains the full text of the referenced conditions of certification.

TABLE 4.4-1 COMPLIANCE WITH APPLICABLE LORS

Applicable LORS	Conformance and Basis For Determination
Federal	
Title 29 U.S. Code (USC) section 651 et seq (Occupational Safety and Health Act of 1970)	**Yes. WORKER SAFETY-1** & **2** require that the project owner develop and implement occupational safety and health programs to prevent worker injuries during construction, commissioning, and operations. **WORKER SAFETY-3** & **4** requires the project owner to implement an additional layer of worker safety during construction.
Title 29 Code of Federal Regulation (CFR) sections 1910.1 to 1910.1500 (Occupational Safety and Health Administration Safety and Health Regulations) Title 29 1926 Subpart S - Underground Construction, Caissons, Cofferdams, and Compressed Air	**Yes. WORKER SAFETY-1** & **2** require that the project owner develop and implement occupational safety and health programs to prevent worker injuries during construction, commissioning, and operations. **WORKER SAFETY-3** & **4** requires the project owner to implement an additional layer of worker safety during construction. **WORKER SAFETY-5** requires the project owner to implement an additional layer of worker safety during controlled detonations operations.
Mine Safety and Health Administration (MSHA) CFR-2024, title 30, vol 1, chap I and specifically part 57 - safety and health standards, underground metal and nonmetal mines.	**Yes. WORKER SAFETY-1** and **WORKER SAFETY-5** specially requires compliance with all MSHA regulations and standards during excavation of the underground cavern.
Federal Aviation Administration. FAA Advisory Circular No. 70/7450-1G, "Obstruction Marking and Lighting"	**Yes. WORKER SAFETY-1** & **2** require adherence to this regulation for the Gen-tie line.

TABLE 4.4-1 COMPLIANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
Describes the FAA standards for marking and lighting of obstructions as identified by FAA Regulations Part 77.	
State	
Title 8, California Code of Regulations (Cal Code Regs.) all applicable sections (Cal OSHA regulations) including Cal Code Regs: Subchapter 4: Construction Safety Orders, tit. 8, § § 1920 – 1928 Fire Detection and Prevention; Title 8 California Code of Regulations section 8403 – 8568 Tunnel Safety Orders (including section 7091 of the Mine Safety Order addressing radioactive [in this case radon] protection by following the radiation standards of the Mine Safety and Health Administration for Metal and Non-Metallic Underground Mines, published July 31, 1969, February 25, 1970, and December 8, 1970.) Subchapter 5: Low and High Voltage Electrical Safety Orders; and specifically tit. 8, § Subchapter 7: General Industry Safety Orders; and specifically tit. 8, §: 3203 – Injury and Illness Prevention Program; 3314 Control of Hazardous Energy Lockout/Tagout; 3395 & 3396 Heat Illness Prevention Programs; 5141.1 Protection from Wildfire Smoke 5185 6150-6154 Fire Protection List of LORS for fire hazard protection for gen-tie interconnection and overall project: Cal Code Regs., tit. 14, §§ s 1250-1258, "Fire Prevention Standards for Electric Utilities" GO-95, CPUC, "Rules for Overhead Electric Line Construction," Section 35	**Yes.** Staff's assessment recognizes and lists many of the most important Cal OSHA worker safety and health programs, and **WORKER SAFETY-1, 2, 3, 4, 5, 6, 7, 8,** & **11** impose specific conditions to ensure compliance with Title 8, as well as Health & Safety Codes for Fire Protection as shown in **WORKER SAFETY-1, 2, 8, 9,** & **11**
California Labor Code section 6709: Worker Training On Valley Fever	**Yes. WORKER SAFETY-7** requires training on Valley Fever.
Local	
2022 California Fire Code adopted into Kern County Ordinance 17.32 including the July 2024 amendment	**Yes.** See discussion on the fire authority.
General	
National Fire Protection Association (NFPA) 850 and 122	**Yes. WORKER SAFETY-9** requires adherence to NFPA 850 and NFPA 122 industry standard.

4.4.4 Comments and Responses on the Preliminary Staff Assessment

Response to Comment from the Applicant (TN 264316)

TN 264316 Comment regarding page 4.4-8 – Please change all references to "blasting" and "explosions" to "controlled detonations". These are precisely controlled events.

Suggested revisions: "It is expected that twice-daily ~~cavern explosions~~ **controlled detonations** lasting a few seconds would occur at the beginning of each shift. ... Additionally, a ~~Blasting Plan~~ **Controlled Detonations Plan** is crucial for the safe excavation of the underground cavern when using explosives.

Staff Response: Staff accepted the proposed changes and revised the text.

TN 264316 Comment regarding page 4.4-21 - Underground Cavern Construction, item 1 - Since it is not a coal mine, we recommend removing the keyword "coal dust" from flammable materials. Please revise text as follows:
"... Assess combustible materials: Analyze the presence of flammable materials like wood, grease, **and** oil, ~~and coal dust,~~ including their storage and handling practice".

Staff Response: Staff accepted the proposed changes and revised the text.

TN 264316 Group 1 Comments:

TN 264316 Comment regarding page 4.4-29, COC **WORKER SAFETY-1**, paragraph 1. It is recommended to consolidate the Construction Emergency Action Plan and the Emergency Response Plan into a single, comprehensive Emergency Management Plan. It is recommended to integrate the Mining Safety and Health Plan with the Construction Injury and Illness Prevention Program (IIPP) to avoid overlap and ensure that all MSHA regulations are addressed cohesively within the safety framework. It is suggested that the requirements of the Concrete Batch Safety Plan and Construction PPE Program be combined with the IIPP to reduce confusion associated with the number of site plans. The intent of the IIPP is that it includes all site health and safety requirements and that employees are trained in the IIPP requirements. It is also suggested that the requirements found in **WORKER SAFETY-1** and **WORKER SAFETY-2** for a HMBP and SPCC Plan be removed because they exist in **HAZ-1**.

TN 264316 Comment regarding page 4.4-30, COC **WORKER SAFETY-1**, Verification – It is recommended to consolidate the construction Emergency Action Plan and Emergency Response Plan into a single, comprehensive Emergency Management Plan. Please revise text as the Project Owner cannot control the actions of a third party, such as the Kern County Fire Department (KCFD). For suggested revisions to conditions see Appendix A: Worker Safety and Fire Protection.

TN 264316 Comment regarding page 4.4-30, COC **WORKER SAFETY-2,** paragraph 1 – It is recommended to consolidate the Operations Emergency Action Plan and the Operations Emergency Response Plan into a single Operations Emergency Management Plan. Please revise text as **HAZ-1** covers the HMBP and SPCC. For suggested revisions to condition see Appendix A: Worker Safety and Fire Protection.

Staff Response to TN 264316 Group 1 Comments: Staff declines to revise and re-organize the SA as the applicant suggests. Although staff appreciates that the applicant has different methods of organizing and consolidating their plans and programs, staff has traditionally specified the programs listed in **WORKER SAFETY-1** and **WORKER SAFETY-2** for inclusion into their respective IIPPs. The CEC has many times in the past emphasized special safety programs in separate COCs and has tried to avoid loading these specialized safety programs into the IIPP. However, please note that where these plans are placed after review and approval is up to the project owner. Staff also is aware of the duplication of the requirements of a HMBP and SPCC Plan in both **Worker Safety and Fire Protection** and **Hazards** and has included this duplication intentionally here and in other staff assessments for other projects. Staff asks the applicant to understand that duplicative requirements often exist in different sections of a large complex Staff Assessment for purposes of emphasis and "stand-alone sections" where such Plans provide both hazard information and worker safety protections. Staff is not requiring that duplicate Plans be provided.

TN 264316 Comment regarding page 4.4-30, COC **WORKER SAFETY-1, Verification –** Please revise text as follows: "At least 90 days prior to the start of construction, the project owner shall submit to the CPM for review and approval a copy of the Project Construction and Safety and Health Program. At the same time, the project owner shall also provide to the CPM a copy of **letters requesting comments submitted to KCFD and KCSO. Written responses** from the KCFD **and KCSO**, if any, detailing resolved comments **shall be submitted to the CPM within 30 days of receipt by the Project Owner.** ~~on the Construction Fire Prevention Plan, the Emergency Action Plan, the HMBP, the Blasting Plan, and Emergency Response Plan, along with comments on the Blasting Plan from the KCSO."~~

Staff Response: Staff agrees with these suggested revisions.

TN 264316 Comment regarding page 4.4-31, COC **WORKER SAFETY-2**, paragraph 2 and verification - Please revise text as follows:

At least 30 days prior to the start of commissioning, the project **owner shall submit to the CPM for review and approval the** Operations and Maintenance Safety and Health Program. The project owner shall provide a copy to the CPM of letters **requesting comments submitted to KCFD and written responses, if** any, from the KCFD detailing the resolved comments on the Operations Fire Prevention Plan, Fire Protection System Impairment Program, and Emergency Action Plan.

Staff Response: Staff accepted the proposed changes and revised the text.

TN 264316 Comment regarding page 4.4-32, COC **WORKER SAFETY-5** - The notification radius should be reduced to 1 mile. Analysis provided by the Applicant indicates that vibrations will be imperceptible at a fraction of this distance. Please see Appendix A: Worker Safety and Fire Protection with recommended changes.

Staff Response: Proposed COC **WORKER SAFETY-5** includes the following language: "At least 30 days before initiation of ~~blasting~~ **controlled detonations**, the project owner shall notify, in writing, all residents or owners of dwellings or other structures within a 5-mile radius (or other distance as recommended by either the KCFD Chief or the Kern County Sheriff's Office (KCSO)….." Therefore, a mechanism exists within the COC for the project owner to discuss any revision of the distance with the Kern County Fire Department and Sheriff's Office. Staff does not see the need to change the distance now.

TN 264316 Comment regarding page 4.4-35, COC **WORKER SAFETY-6** – Please revise to allow for either the use of a state certified laboratory analysis **or provide copies of an equivalent analysis if available from AVEK**.

Staff Response: Staff agrees with this suggestion and revised **WORKER SAFETY-6** to read the following:

WORKER SAFETY-6 The project owner shall prepare and submit a Sampling and Analysis Plan (SAP) to conduct laboratory periodic testing of the water from the AVEK Water Agency to be used for dust control and surface soils from the dirt roads on the site, have a state certified laboratory conduct the analysis of hexavalent chromium **or provide copies of an equivalent analysis if available from AVEK**, and submit both the SAP and lab results to the CPM for review and approval prior to the use or ground application of water from those wells.

TN 264316 Comment regarding page 4.4-36, COC **WORKER SAFETY-8** – Please revise to coincide with underground construction activities, per comments in Appendix A.

Staff Response: Staff agrees to this suggestion and revised **WORKER SAFETY-8** to read the following:

"**Verification:** At least 90 days prior to the start of ~~site mobilization~~ **underground construction activities**, the project owner shall provide to the KCFD a copy of the plan for review and comment and to the CPM for review and approval."

TN 264316 Comment regarding page 4.4-37, COC **WORKER SAFETY-11** – Please revise to grant the CPM the flexibility to make certain changes based on site and project-specific conditions.

Staff Response: Staff supports all eight requirements as written and declines the applicant's request. If the project is approved, the project owner is always free to request any change or revisions to COCs as conditions change but must do so in the proper format following existing procedures.

Response to Comment from California Unions for Reliable Energy (CURE) (TN 264343)

Comment on pages 17 – 19 of CURE comments: CURE asserts that the PSA lacks substantial evidence to conclude Valley Fever impacts are less than significant. CURE also presents *Attachment A Comments On Willow Rock Energy Storage Center Project, Kern County, CA*, authored by Dr. Clark (18 pages).

Staff Response: Staff responds to Dr. Clark's report as a response to CURE's comments on Valley Fever. Staff appreciates the robust advocacy of CURE for workers on this project, especially in controlling worker exposure to the Valley Fever-causing fungus *C. immitis*. Staff agrees with the detailed presentation of the need for controls and mitigation. Staff is also aware of many of the references presented by Dr. Clark in his comments. Staff does not, however, agree with the following comments requesting changes to the many mitigation methods proposed by the applicant and staff.

On pages 52 and 53, the following comment from Dr. Clark is unsubstantiated, "These very small particles are not controlled by conventional construction dust control mitigation measures." A search of the reference listed shows no discussion or mention of dust control mitigation. However, the later-referenced report by Cummings 2010 (https://doi.org/10.1017/S0950268809990999 Published online by Cambridge University Press) states the following: "*Prevention and control of coccidioidomycosis, especially in large outdoor areas associated with episodic focal activity, are challenging. Focal Coccidioides growth or accumulation sites may be small and unevenly distributed within endemic areas [1, 10]. Environmental sampling contributes little towards assessing exposure risk, and exposure risks can be reduced but not eliminated by soil decontamination [10] or dust suppression [10, 12]."* The basis of this statement are two rather old references from 2000 and 1946 and these show that control is "challenging", with which staff agrees. The Cummings reference also supports staff's conclusion that sampling for the presence of *C. immitis* in soils is not effective. Instead, staff assumes it is present.

Staff strongly agrees with Dr. Clark that the references both staff and he cite strongly support staff's requirements for controlling airborne dust that possibly contain airborne cocci spores (arthroconidia). These citations include (among others) the following from governmental health agencies:

https://www.dir.ca.gov/dosh/valley-fever-home.html
https://www.kernpublichealth.com/healthy-community/illness-disease/valley-fever
https://www.cdc.gov/niosh/valley-fever/about/index.html

https://www.osha.gov/valley-fever/control-prevention
https://www.cdph.ca.gov/Programs/CID/DCDC/Pages/ValleyFeverPrevention.aspx

USGS 2000. *"Operational Guidelines (version 1.0) for Geological Fieldwork in Areas Endemic for Coccidioidomycosis (Valley Fever)."* Accessed at https://pubs.usgs.gov/of/2000/0348/pdf/of00-348.pdf

Additionally, Dr. Clark recommends *"sampling for and removal of impacted soils prior to starting construction is the best solution to Coccidioides immitis spores."*
Staff disagrees. As previously noted in the Cummings reference, soil testing for the presence of *C. immitis* is not currently recommended. *"Testing soil for Coccidioides is currently done only for scientific research. It is not typically used to predict disease spread. Coccidioides can be present in the soil without being released into the air. Disease spread occurs from breathing spores from Coccidioides from the air. Scientists sometimes test soil to understand more about its habitat and how weather or climate patterns may affect its growth. New tests are being developed to improve detection of Coccidioides in the environment for research."* (CDC 2024. Accessed at https://www.cdc.gov/valley-fever/areas/index.html) Additionally, in personal communications with CDC scientists in 2010, staff was advised that soil testing was not recommended due to the sporadic distribution of *C. immitis* in the soils. A negative result could be a false negative, having missed the fungus, while a positive result could be a false positive due to the test method or chance that a very small patch of the fungus was located. Staff takes the precautionary approach and assumes the fungus is present in endemic areas such as Kern County, therefore requiring protections without confirmation testing. Staff also notes that its Valley Fever Condition of Certification has been required for many power plant projects in the past at various locations in the state where *C. immitis* is endemic and has included the reporting of known cases of VF in the power plant construction and operations workforce to the CEC. Not one case has been reported to the CEC since that Condition went into effect.

Staff also finds that the Kern County Public Health Department (https://www.kernpublichealth.com/healthy-community/illness-disease/valley-fever) is well aware of the Valley Fever incidence rate in the County and it is best for them, along with and Cal OSHA and CDPH to recommend further medical surveillance above and beyond COC **WORKER SAFETY-7.**

With that said, staff does agree that adding some additional requirements in proposed COC **WORKER SAFETY-7** would enhance worker protections from exposure to *C. immitis*:

WORKER SAFETY-7 The project owner shall develop and implement a worker Valley Fever Prevention and Response Plan that includes an enhanced Dust Control Plan containing the requirements described in **AQ-SC3** and additionally requires:

1. The mandatory on-site use of earth moving and excavating equipment with environmental cabs (with AC and HEPA filters) and keeping the doors of the cab closed;

2. Mandatory site worker use of dust masks (NIOSH N-95 or better) **in areas where active trenching occurs,** even if dust **is not visually detected** ~~present~~;

3. Implementation of enhanced dust control methods **(increased frequency of watering to no less than three (3) times each day at locations where active trenching is conducted)**, use of dust suppression chemicals, etc. consistent with **AQ-SC3~~4~~**) immediately whenever visible dust comes from or onto the site;

4. Specific training on Valley Fever as per Labor Code Section 6109 which requires that employers of workers in high-incidence counties (Kern County is included) shall provide effective awareness training on Valley Fever to all employees before work begins and annually by that date thereafter;

5 Medical referral protocol; and

6 Reporting of medically-diagnosed cases to the California Department of Public Health, Cal OSHA, and the CPM.

Verification: At least 60 days prior to the commencement of site mobilization, the Valley Fever Prevention and Response Plan shall be provided to the CPM for review and approval.

4.4.5 Conclusions and Recommendations

CEC staff concludes that if the project owner provides a Project Construction Safety and Health Program and a Project Operations and Maintenance Safety and Health Program as required by COC **WORKER SAFETY-1** and **-2** and fulfills the requirements of COC **WORKER SAFETY-3** through **-11** the project would incorporate adequate levels of industrial safety and comply with applicable LORS.

CEC staff also concludes that the operation of project would present a significant direct and cumulative impact on the local fire department and has recommended mitigation. Implementation of proposed COC **WORKER SAFETY-12** would reduce these impacts to an insignificant level.

4.4.6 Proposed Conditions of Certification

The following proposed conditions of certification include measures to ensure conformance with applicable LORS. Staff makes these recommendations to supplement, expand, and clarify the applicant's proposed mitigation measures.

WORKER SAFETY-1 The project owner shall submit to the CPM a copy of the Project Construction Health and Safety Program containing the following:

- a Construction Personal Protective Equipment Program;

- a Construction Exposure Monitoring Program which shall include a Sampling and Analysis Plan for monitoring wastewater from the cavern initial access construction if Method 1 is chosen, and a Sampling and Analysis Plan for routine sampling of excavated dust, soil, and rock removed from the cavern for the determination of hazardous wastes;
- a Construction Injury and Illness Prevention Program;
- a Rock Crusher Safety Program that includes a dust and particulate emissions controls;
- a Concrete Batch Plan Safety Program;
- a Construction Emergency Action Plan;
- an Emergency Response Plan;
- a Hazardous Material Business Plan (HMBP);
- a Spill Prevention, Control and Countermeasure Plan (SPCC);
- a Mining Safety and Health Plan that demonstrates compliance with all applicable MSHA regulations for the construction of the underground cavern; and
- a Construction Fire Prevention Plan that includes thoroughly detailed Fire Detection and Suppression Plans for both surface and underground construction activities, Emergency Rescue Plans for both surface and underground construction, and methods of access for emergency responders through locked gates at the surface and into the underground cavern.

The Personal Protective Equipment Program, the Exposure Monitoring Program, the Injury and Illness Prevention Program, the Rock Crusher Safety Protocol, the Concrete Batch Plant Safety Protocol, and the SPCC shall be submitted to the CPM for review and approval concerning compliance of the program with all applicable safety orders. The Construction Emergency Action Plan, Construction Emergency Response Plan, the Controlled Detonations Plan, the HMBP, and the Fire Prevention Plan shall be submitted to the KCFD for review and comment prior to submittal to the CPM for approval. The Controlled Detonations Plan shall also be submitted to the Kern County Sherif's Office for review and comment.

Verification: At least 90 days prior to the start of construction, the project owner shall submit to the CPM for review and approval a copy of the Project Construction and Safety and Health Program. At the same time, the project owner shall also provide to the CPM a copy of letters requesting comments submitted to KCFD and KCSO. Written responses from the KCFD and KCSO, if any, detailing resolved comments shall be submitted to the CPM within 30 days of receipt by the Project Owner.

WORKER SAFETY-2 The project owner shall submit to the CPM a copy of the Project Operations and Maintenance Safety and Health Program containing the following items:

- an Operation Injury and Illness Prevention Plan;
- an Operations Emergency Action Plan that that fulfills the requirements of California Public Utilities Code 761.3 section (g);
- An Operations Emergency Response Plan;
- a Hazardous Materials Business Plan;
- a Spill Prevention, Control and Countermeasure Plan (SPCC);
- a Fire Prevention Plan (Cal Code Regs., tit. 8, § 3221) that includes methods of access for emergency responders through locked gates;
- a Fire Protection System Impairment Program; and
- a Personal Protective Equipment Program (Cal Code Regs., tit.8, §§ 3401—3411).

The Operation Injury and Illness Prevention Plan, Hazardous Materials Business Plan, the SPCC Plan, Emergency Action Plan, Emergency Response Plan, Fire Prevention Plan, Fire Protection System Impairment Program, and Personal Protective Equipment Program shall be submitted to the CPM for review and approval concerning compliance of the programs with all applicable safety orders. The Fire Prevention Plan, Fire Protection System Impairment Program, and the Emergency Action Plan shall also be submitted to the KCFD for review and comment.

Verification: At least 30 days prior to the start of commissioning, the project owner shall submit to the CPM for review and approval the Operations and Maintenance Safety and Health Program. The project owner shall provide a copy to the CPM of letters requesting comments submitted to KCFD and written responses, if any from the KCFD detailing the resolved comments on the Operations Fire Prevention Plan, Fire Protection System Impairment Program, and Emergency Action Plan.

WORKER SAFETY-3 The project owner shall provide a site Construction Safety Supervisor (CSS) who, by way of training and/or experience, is knowledgeable of compressed air energy projects, worker safety issues concerning underground mining, and relevant worker safety-related LORS. The CSS shall be capable of identifying workplace hazards relating to the construction activities; and has authority to take appropriate action to ensure compliance and mitigate hazards. The CSS shall:

- have overall authority for coordination and implementation of all occupational safety and health practices, policies, and programs;

- ensure that the safety program for the project complies with Cal OSHA and federal regulations related to A-CAES projects;
- ensure that all construction and commissioning workers and supervisors receive adequate safety training;
- conduct accident and safety-related incident investigations and provide emergency response reports for injuries, and inform the CPM of safety-related incidents; and,
- ensure that all the plans identified in COC **WORKER SAFETY-1** and **-2** are implemented.

Verification: At least 30 days prior to the start of site mobilization, the project owner shall submit to the CPM the name and contact information for the CSS. The contact information of any replacement CSS shall be submitted to the CPM within one business day.

The CSS shall submit in the Monthly Compliance Report (MCR) a monthly safety inspection report to include:

- a record of all employees trained for that month (all records shall be kept on site for the duration of the project);
- summary report of safety management actions and safety-related incidents that occurred during the month;
- report of any continuing or unresolved situations and incidents that may pose danger to life or health;
- report of any visits from Cal OSHA and/or any complaints from workers to Cal OSHA; and,
- report of accidents, injuries, and near misses that occurred during the month.

WORKER SAFETY-4 The project owner shall make payments to the DCBO for the services of a Safety Monitor based upon a reasonable fee schedule to be negotiated between the project owner and the DCBO. Those services shall be in addition to other work performed by the DCBO. The Safety Monitor shall be selected from an independent company not affiliated with the DCBO and report directly to the DCBO and would be responsible for verifying that the CSS, as required in COC **WORKER SAFETY-3**, implements all appropriate Cal OSHA and CEC safety requirements. The Safety Monitor shall conduct on-site (including linear facilities) safety inspections at intervals necessary to fulfill those responsibilities.

Verification: At least 60 days prior to the start of construction, the project owner shall provide proof of its agreement to fund the Safety Monitor services to the CPM for review and approval.

WORKER SAFETY-5 The project owner shall submit to the CPM a copy of the Project Construction Controlled Detonation Plan that contains a complete description of how explosives would be safely transported and used at the site, evacuation, security and fire prevention procedures, a blasting equipment list, and procedures for notification of nearby receptors. The Controlled Detonations Plan shall be prepared by a qualified, experienced, and licensed blasting contractor and in compliance with appropriate federal and state regulations addressing explosives and worker safety regulations, including: the Hazards Material Transportation Act (49 U.S.C. 5101 et seq. and 49 CFR Part 171-177); the Organized Crime Control Act of 1970, Title XI (Public Law 91-452); BATF regulations (27 CFR Part 555), the California Fire Code Chapter 56 – sections 5603, 5604, and 5607, and Cal/OSHA regulations Cal Code Regs., tit. 8, § § 1550- 1580 and 5236 -5252). The controlled detonations notification procedures included in the Controlled Detonations Plan shall include, but not be limited to:

- At least 30 days before initiation of controlled detonations, the project owner shall notify, in writing, all residents or owners of dwellings or other structures within a 5-mile radius (or other distance as recommended by either the KCFD Chief or the Kern County Sheriff's Office (KCSO) of proposed controlled detonations and describing how to request and submit a pre-controlled detonations survey. Notification shall include posting a written notice within the project site, in local newspapers, and on the Kern County public website describing proposed controlled detonations activities and how to obtain and submit a pre-controlled detonations survey.
- The project owner shall determine the condition of the dwelling or structure and shall document any pre-controlled detonations damage and other physical factors that could more likely than not be affected by the controlled detonations. Structures such as pipelines, cables, transmission lines, and cisterns, wells, and other water systems warrant special attention; however, the assessment of these structures may be limited to surface conditions and other readily available data.
- Prior to finalizing the Controlled Detonation Plan, the project owner shall consult with jurisdictional authorities tasked with protecting waters of the state and implement avoidance and minimization measures, as required by California Department of Fish and Wildlife (CDFW), United States Army Core of Engineers (USACE), and regional water quality (Section 401) regulatory permits prepared for the project. Such protective measures shall be included in the Controlled Detonations plan and/or incorporated by reference.
- The explosives and blasting safety procedures to be included in the ~~Blasting~~ Controlled Detonation Plan shall include, but not be limited to the following:
  a. using qualified, experienced, and licensed blasting contractors that shall perform controlled detonations using current and professionally accepted

methods, products, and procedures to maximize safety and minimize the potential for wildfire ignition during controlled detonations operations;

b. both the quantity and duration of on-site explosives storage shall be minimized;

c. explosive products shall be managed on-site so that they are either used in the borehole, returned to the delivery vehicle, or placed in secure containers for off-site disposal;

d. explosives shall be stored in an approved structure (magazine);

e. explosives storage facilities shall be bullet-resistant, weather-resistant, and fire resistant;

f. magazines sites shall be in remote (out-of-sight) areas with restricted access, kept cool, dry, and well ventilated, and will be properly labeled and signed;

g. controlled detonations are prohibited during extreme fire danger periods;

h. fire suppression personnel shall be posted at controlled detonation sites at all times;

i. refueling of vehicles carrying explosives shall not be allowed on the project site;

j. smoking shall be prohibited during the loading, transporting, unloading, and use of explosives;

k. vehicles carrying explosives shall not be parked or left unattended except in designated parking areas with approval of the KCFD Chief or State Fire Marshal;

l. ignition devices shall be prohibited within 50 feet of an explosives' storage area;

m. magazine sites shall be well ventilated and maintained so that they are clear of fuels and combustible materials;

n. magazines shall be protected from wildfires that could occur in the immediate area;

o. detonators shall be stored separately from other explosive materials;

p. the most stringent spacing between individual magazines will be determined according to the guidelines contained in the BATF publication or state or local explosive storage regulations;

q. all active controlled detonation zones shall have clear warning signs at key access points to ensure the public does not accidentally enter a controlled detonation zone;

r. the blasting contractor shall use a signaling system to alert all onsite workers of an impending blast;

s. following detonation, the blasting area shall be inspected for undetonated or misfired explosives;

t. appropriate practices shall be developed and implemented to prevent misfires;

u. the controlled detonation areas shall also be inspected for hazards such as falling rock and rockslides;

v. special attention shall be given to preventing potential hazards in the controlled detonation areas resulting from flying rock, destabilized walls, structures, presence of low flying aircraft, and dispersion of smoke and gases;

w. loaded explosives shall be detonated as soon as possible and shall not be left in the blast holes overnight, unless weather or other documented safety concerns reasonably dictate that detonation should be postponed; and

x. explosives shall be loaded to maintain good continuity in the column load to promote complete detonation. Industry accepted loading practices for priming, stemming, decking and column rise shall be attended to.

The Construction Controlled Detonations Plan shall be submitted to the KCFD and the Kern County Sheriff's Office (KCSO) for review and comment prior to submittal to the CPM for approval.

Verification: At least 90 days prior to the start of construction, the project owner shall submit to the CPM for review and approval a copy of the Project Construction Controlled Detonations Plan. At the same time, the project owner shall also provide to the CPM a copy of letters from the KCFD and the KCSO the Controlled Detonations Plan containing their comments on the Controlled Detonations Plan.

WORKER SAFETY-6 The project owner shall prepare and submit a Sampling and Analysis Plan (SAP) to conduct laboratory periodic testing of the water from the AVEK Water Agency to be used for dust control and surface soils from the dirt roads on the site, have a state certified laboratory conduct the analysis of hexavalent chromium, or provide copies of an equivalent analysis if available from AVEK, and submit both the SAP and lab results to the CPM for review and approval prior to the use or ground application of water from those wells.

Verification: At least 60 days prior to the starting of construction, the project owner shall submit the SAP to the CPM for review and approval. At least 30 days prior to the planned use of the AVEK supplied water, the project owner shall submit the laboratory findings to the CPM for review and approval of the use of the AVEK water for dust control and human consumption, and the surface soil tests shall be used to determine a baseline level of hexavalent chromium. At least

every six months, sampling and analysis shall be repeated and the results submitted to the CPM for review.

WORKER SAFETY-7 The project owner shall develop and implement a worker Valley Fever Prevention and Response Plan that includes an enhanced Dust Control Plan containing the requirements described in **AQ-SC3** and additionally requires:

1. The mandatory on-site use of earth moving and excavating equipment with environmental cabs (with AC and HEPA filters) and keeping the doors of the cab closed;
2. Mandatory site worker use of dust masks (NIOSH N-95 or better) in areas where active trenching occurs, even if dust is not visually detected;
3. Implementation of enhanced dust control methods (increased frequency of watering to no less than three (3) times each day at locations where active trenching is conducted), use of dust suppression chemicals, etc. consistent with **AQ-SC3**) immediately whenever visible dust comes from or onto the site;
4. Specific training on Valley Fever as per Labor Code Section 6109 which requires that employers of workers in high-incidence counties (Kern County is included) shall provide effective awareness training on Valley Fever to all employees before work begins and annually by that date thereafter;
5. Medical referral protocol; and
6. Reporting of medically-diagnosed cases to the California Department of Public Health, Cal OSHA, and the CPM.

Verification: At least 60 days prior to the commencement of site mobilization, the Valley Fever Prevention and Response Plan shall be provided to the CPM for review and approval.

WORKER SAFETY-8 The project owner shall prepare and implement a detailed comprehensive Construction Underground Fire Protection Plan which shall include the following sections:

1. Pre-planning and hazard identification
2. Ventilation control
3. Combustible material management
4. Fire detection and alarm systems
5. Fire suppression systems
6. Emergency Response Plan that includes evacuation procedures and refuge chambers
7. Compliance with regulations from Cal OSHA, MSHA, and NFPA 122.

8. Worker and Management Training
9. Regular inspections and maintenance

Verification: At least 90 days prior to the start of site mobilization, the project owner shall provide to the KCFD a copy of the plan for review and comment and to the CPM for review and approval.

WORKER SAFETY-9 The project owner shall adhere to all applicable provisions of the latest version of NFPA 850: Recommended Practice for Fire Protection for Electric Generating Plants and High Voltage Direct Current Converter Stations, and NFPA 122: Standard for Fire Prevention and Control in Metal/Nonmetal Mining and Metal Mineral Processing Facilities, as the minimum level of fire protection. The project owner shall interpret and adhere to all applicable NFPA 850 and NFPA 122 recommended provisions and actions stating "should" as "shall." In any situations where both NFPA 850, NFPA 122, and the state or local LORS have application, the more restrictive shall apply.

Verification: The project owner shall ensure that the project adheres to all applicable provisions of NFPA 850 and NFPA 122. At least 90 days prior to the start of construction of the fire protection system, the project owner shall provide all fire protection system specifications and drawings to the KCFD for review and comment, to the CPM for review and approval, and to the DCBO for plan check approval and construction inspection.

WORKER SAFETY-10 The project owner shall ensure that a portable AED is on site during construction, commissioning, and operations and shall implement a program to ensure that workers are properly trained in its use and that the equipment is properly maintained and functional. During construction and commissioning the following persons shall be trained in its use and shall be on site whenever the workers that they supervise are on site: the Construction Project Manager or delegate, the CSS or delegate, and all shift foremen. During operations, all project employees on site shall be trained in its use. The training program shall be submitted to the CPM for review and approval.

Verification: At least 30 days prior to the start of site mobilization, the project owner shall submit to the CPM proof that a portable AED is available to be made available on site as soon as physically possible along with a copy of the training and maintenance program for review and approval.

WORKER SAFETY-11 The project owner shall do the following at the project site:

1. Provide at least two gates into the facility wide enough for emergency access with both equipped with Knox Boxes for access by the KCFD, the CHP, and KCSO;

2. Install remote fire or heat sensors at sufficient locations to cover the entire facility (e.g., thermal infrared);
3. Provide fire water flow of at least 1,500 gallons per minute;
4. Install CCTV cameras with Pan, Tilt, Zoom (PTZ), and low-light capability that cover the entire area of the facility and which would have their own separate power supply;
5. Establish a Command and Control protocol for staff to perform emergency duties and responsibilities during the detection, initiation, and escalation of an on-site ground level or underground level fire or rescue operation;
6. Ensure that three certified professionals, one to conduct underground gas testing, one to serve as a safety inspector, and one Certified Industrial Hygienist (CIH) to conduct air sampling and analysis, are present onsite every day and visit the cavern at intervals as dictated by a plan reviewed and approved by the CPM;
7. Establish an annual joint training program with the KCFD that includes table-top exercises for fire and rescue operations;
8. Consult with the KCFD in preparing subsurface fire protection and rescue procedures; and
9. Hold a pre-construction and excavation conference with the CPM, Cal OSHA Mining and Tunneling Unit, the DCBO, and the DCBO Safety Monitor to review all safety plans for the cavern excavation and revise those plans as necessary.

Verification: At least 60 days prior to the starting of construction, the project owner shall provide all the information required above to the KCFD for review and comment, to the CPM for review and approval, and to the DCBO for plan check approval and construction inspection. The project owner shall also schedule, after consultation and agreement of all parties involved, the pre-cavern construction and excavation conference at least 60 days prior to the starting of cavern excavation and shall give the CPM at least 30 days written notice of the meeting. The project owner shall also provide a letter that the KCFD, CHP, and KCSO have been given access to the Knox boxes.

WORKER SAFETY-12 The project owner shall either:

a. Reach an agreement with the KCFD regarding funding to provide mitigation for direct and cumulative project-related impacts, or
b. If no agreement can be reached, provide funding for a fully equipped Urban Search and Rescue (USAR) Unit and building, including necessary equipment for use in Eastern Kern County, and staffing costs during the construction phase and agreements to pay for emergency response if the USAR is not delivered before construction begins, which shall consist of a lump sum of

$1,900,000 for the USAR, plus a lump sum payment in the amount of $2,400,000 for the first year of staffing and made annually until the final Certificate of Occupancy for operations is issued by Kern County or as authorized by the CEC, or if construction begins and the new USAR Unit has not been delivered, then the applicant shall sign an agreement with the KCFD to reimburse costs for responding to incidents at the WRESC site. Such an agreement will terminate once the USAR Unit is delivered, and the staffing annual payment is made.

Verification: At least 30 days prior to the start of site mobilization, the project owner shall provide to the CPM for review and approval either:

a. A copy of the agreement with the KCFD, or

b. Documentation that a letter of credit has been provided to the KCFD in the amounts listed above and that a letter of credit will be provided each year (plus yearly negotiated increases), in the amounts listed above, or an agreement to reimburse the KCFD for the costs for responding to incidents at the WRESC until the USAR Unit is completed and occupied.

4.4.7 References

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Section 5

Environmental Impact Assessment

Under the California Environmental Quality Act (CEQA), the environmental setting of a project is generally the physical environmental conditions in the vicinity of the project as they exist at the time the notice of preparation is published, or if no notice of preparation is published, at the time environmental analysis is commenced (CEQA Guidelines, § 15125(a)(1)). The environmental setting described in an EIR by the lead agency will normally constitute the baseline physical conditions by which the lead agency determines whether an impact is significant (CEQA Guidelines, § 15125(a)).

5.1 Air Quality

Testimony of Tao Jiang

5.1.1 Environmental Setting

Existing Conditions

The Willow Rock Energy Storage Center (WRESC, or Willow Rock) would be in Kern County approximately 0.22 miles east of the center of the Highway 14 interchange at Dawn Road. The WRESC Site lies approximately 3.5 miles north of Rosamond, California, within the Eastern Kern Air Pollution Control District (EKAPCD). The WRESC will be a nominal 520-megawatt (MW) gross (500 MW net) and 4,160 megawatt-hour (MWh) gross (4,000 MWh net) facility using Hydrostor, Inc.'s (Hydrostor's) proprietary, advanced compressed air energy storage (A-CAES) technology. The WRESC will be capable of operating on a 24-hour basis, 365 days a year with an approximately 50-year lifespan.

The Project Area encompasses the WRESC Site, the parcels within the Project Boundary, and the right-of-way associated with the WRESC's gen-tie line. The Project Boundary encompasses the WRESC Site and the parcels of land (an additional 133 acres of private land surrounding the WRESC) that will be allocated for potential temporary staging and laydown area (referred to herein as the Staging Area) during construction, or the construction of a permanent architectural berm constructed from the material excavated during cavern construction.

Criteria Pollutants

The United States Environmental Protection Agency (U.S. EPA) and the California Air Resources Board (CARB) have established ambient air quality standards (AAQS) for several pollutants based on their adverse health effects. The U.S. EPA has set National Ambient Air Quality Standard (NAAQS) for ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), particulate matter of 10 micrometers or less in diameter (PM10) and particulate matter of 2.5 micrometers and smaller in diameter (PM2.5), sulfur dioxide (SO_2), and lead (Pb). Primary standards were set to protect public health; secondary standards were set to protect public welfare against visibility impairment, damage to animals, crops, vegetation, and buildings. In addition, CARB has established California Ambient Air Quality Standard (CAAQS) for these pollutants, as well as for sulfate (SO_4), visibility reducing particles, hydrogen sulfide (H_2S), and vinyl chloride. CAAQS are generally stricter than NAAQS. The standards currently in effect in California and relevant to the project are shown in **Table 5.1-1**.

TABLE 5.1-1 NATIONAL AND CALIFORNIA AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Standards [a]	National Standards [b]	
			Primary	Secondary
O_3	1-hour	0.09 ppm (180 µg/m^3)	—	Same as Primary Standard
	8-hour	0.070 ppm (137 µg/m^3)	0.070 ppm (137 µg/m^3)	
PM10	24-hour	50 µg/m^3	150 µg/m^3	Same as Primary Standard
	Annual Mean	20 µg/m^3	—	
PM2.5	24-hour	—	35 µg/m^3	Same as Primary Standard
	Annual Mean	12 µg/m^3	9.0 µg/m^3 [c]	15.0 µg/m^3
CO	1-hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	—
	8-hour	9.0 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	—
NO_2	1-hour	0.18 ppm (339 µg/m^3)	100 ppb (188 µg/m^3) [d]	—
	Annual Mean	0.030 ppm (57 µg/m^3)	53 ppb (100 µg/m^3)	Same as Primary Standard
SO_2 [e]	1-hour	0.25 ppm (655 µg/m^3)	75 ppb (196 µg/m^3)	—
	3-hour	—	—	0.5 ppm (1,300 µg/m^3)
	24-hour	0.04 ppm (105 µg/m^3)	0.14 ppm (for certain areas) [e]	—
	Annual Mean	—	0.030 ppm (for certain areas) [e]	—
H_2S	1-hour	0.03 ppm (42 µg/m^3)	—	—

Notes: ppm=parts per million; ppb = parts per billion; µg/m^3 = micrograms per cubic meter; mg/m^3 = milligrams per cubic meter; "—" = no standard

[a] California standards for O_3, CO (except 8-hour Lake Tahoe), SO_2 (1 and 24 hour), NO_2, and particulate matter (PM10, PM2.5, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded.

[b] National standards (other than O_3, PM, NO_2 [see note d below], and those based on annual arithmetic mean) are not to be exceeded more than once a year. The 8-hour O_3 standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. The 24-hour PM10 standard of 150 µg/m^3 is not to be exceeded more than once per year on average over a 3-year period. The 24-hour PM2.5 standard is attained when the 3-year average of 98th percentile concentration is less than or equal to 35 µg/m^3.

[c] On March 6, 2024, the U.S. EPA published a final rule to strengthen the annual PM2.5 NAAQS from 12.0 µg/m^3 to 9.0 µg/m^3 (U.S. EPA 2024a). See detailed discussion in the text.

[d] To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb.

[e] On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The previous SO_2 standards (24-hour and annual) will additionally remain in effect in certain areas: (1) any area for which it is not yet 1 year since the effective date of designation under the current (2010) standards, and (2) any area for which an implementation plan providing for attainment of the current (2010) standard has not been submitted and approved and which is designated nonattainment under the previous SO_2 standards or is not meeting the requirements of a SIP call under the previous SO_2 standards

(40 CFR 50.4(3)). A SIP call is a U.S. EPA action requiring a state to resubmit all or part of its State Implementation Plan to demonstrate attainment of the required NAAQS.
Sources: CARB 2025a, U.S. EPA 2025a, U.S. EPA 2024a.

On March 6, 2024, the U.S. EPA published a final rule to strengthen the primary annual PM2.5 NAAQS from 12.0 µg/m^3 to 9.0 µg/m^3 (U.S. EPA 2024a). The final revisions to the primary annual PM2.5 NAAQS trigger a process under which States (and Tribes, if they choose) make recommendations to the Administrator regarding designations, identifying areas of the country that either meet or do not meet the new or revised PM2.5 NAAQS. Those areas that do not meet the revised PM2.5 NAAQS will need to develop plans that demonstrate how they will meet the standards. Until the U.S. EPA designates an area with respect to the proposed revised PM2.5 NAAQS, the New Source Review (NSR) provisions applicable under an area's designation for the 1997, 2006, and 2012 PM2.5 NAAQS would continue to apply (U.S. EPA 2024a). The State of California is currently working on recommendations which will be submitted no later than February 7, 2025. The initial designations followed with final designations are expected to be around the Spring of 2026. In addition, according to the U.S. EPA implementation guide for the revised annual PM2.5 NAAQS[1], at the effective date (60 days after publication in the Federal Register [i.e. May 6, 2024]) of the final rule, all applicants for permits to construct a new major source or major modification of an existing stationary source will need to conduct an air quality analysis that considers the revised PM2.5 NAAQS. The new standard was used for this analysis.

The air quality standards, shown in **Table 5.1-1**, are designed and established to be health protective. Air pollution can cause known health problems, especially for children, the elderly, and people with heart or lung problems. Healthy adults may experience symptoms during periods of intense exercise. Pollutants can also cause damage to vegetation, animals, and property. This analysis relies on the ambient air quality standards as health-based thresholds to help define what is considered a substantial pollutant concentration for the criteria air pollutants.

Attainment Status

Areas that meet the AAQS, based upon air monitoring measurements made by either the local air district or CARB, are classified as "attainment areas," and areas that have monitoring data that exceed AAQS are classified as "nonattainment areas" (Health and Saf. Code, § 39608). If there is not enough data available to determine whether the standard is exceeded in an area, the area is designated as "unclassified."

The project site would be in Kern County and under the jurisdiction of EKAPCD. **Table 5.1-2** summarizes attainment status for the relevant criteria pollutants for the project area in the EKAPCD with both NAAQS and CAAQS.

1 Available online at: https://www.epa.gov/system/files/documents/2024-02/pm-naaqs-implementation-fact-sheet.pdf

TABLE 5.1-2 ATTAINMENT STATUS FOR PROJECT AREA IN EKAPCD

Pollutant	State Designation	Federal Designation
Ozone 1-hour	**Nonattainment**	Attainment[a,b]
Ozone 8-hour [c]	**Nonattainment**	**Severe Nonattainment**
PM10	**Nonattainment**	Unclassifiable/Attainment
PM2.5	Unclassified	Unclassifiable/Attainment
CO	Unclassified	Unclassifiable/Attainment
NO_2	Attainment	Unclassified
SO_2	Attainment	Unclassified
Lead	Attainment	Unclassifiable/Attainment

Source: EKAPCD 2022.
Note: [a] 1-hour ozone NAAQS was revoked effective June 15, 2004.
[b] EKAPCD was in attainment for 1-hour ozone NAAQS at time of revocation; the proposed Attainment Maintenance designation's effective date was June 21, 2004, therefore it did not become effective.
[c] Attainment for 1997, 8-hour Ozone NAAQS (80 ppb), Severe Nonattainment for 2008 (75 ppb) and 2015 (70 ppb), Nonattainment for State 8-hour standard (70 ppb).

Existing Ambient Air Quality

Table 5.1-3 shows the air quality monitoring data near the project from 2019 to 2023, the most recent years for which data are available. Data in this table that are marked in **bold** indicate that the most-stringent current standard was exceeded during that period. The data are from the closest and most representative ambient air monitoring stations:

- O_3, PM10 and PM2.5 from the Kern Route 58 Business station,
- CO and NO_2 from the Lancaster Division Street station, and
- SO_2 from the Victorville Park Avenue station.

TABLE 5.1-3 AMBIENT AIR QUALITY MONITORING DATA

Pollutant	Averaging Time	2019	2020	2021	2022	2023
O_3 (ppm)	1-hour	-	0.079	**0.094**	**0.091**	0.05
	8-hour	-	**0.075**	**0.084**	**0.075**	0.046
PM10 (µg/m^3)	24-hour	-	**114.8**	**352.0**	**121.5**	39.6
	Annual	-	**32.7**	**29.9**	**25.2**	9.2
PM2.5 (µg/m^3)	24-hour (98th percentile)	-	**51.7**	27.1	10.2	12.0
	Annual	-	10.1	7.5	5.2	5.5
NO_2 (ppb)	1-hour (maximum)	49.8	51.5	46.1	43.6	-
	1-hour (98th percentile)	39.8	40	42.1	38.7	-
	Annual	8.17	8.35	8.26	8.1	-
CO (ppm)	1-hour	1.4	1.6	1.4	-	-
	8-hour	0.9	1.1	1.1	-	-
SO_2 (ppb)	1-hour (maximum)	4.3	3.6	3.4	-	-
	1-hour (99th percentile)	4	3	3	-	-
	24-hour	3.4	2.2	1.8	-	-
	Annual	1.74	1.01	0.90	-	-

Note: Concentrations in **bold** type are those that exceed the limiting ambient air quality standard.
Sources: CARB 2025b, U.S. EPA 2025b

The maximum concentration values listed in **Table 5.1-3** have not been screened to remove values that are designated as exceptional events. Violations that are the result of exceptional events, such as high winds, are normally excluded from consideration as AAQS violations (U.S. EPA 2007). For a conservative analysis, staff uses the background ambient air quality concentrations from the most recent 3-year period available to represent the baseline condition at the project site.

Health Effects of Criteria Pollutants

Below are descriptions of the health effects of criteria pollutants that are a concern in the regional study area. Health and Safety Code, section 39606 requires CARB to adopt ambient air quality standards at levels that adequately protect the health of the public, including infants and children, with an adequate margin of safety. Ambient air quality standards define clean air (CARB 2025c).

Ozone. Ozone is a respiratory irritant and an oxidant that increases susceptibility to respiratory infections and that can cause substantial damage to vegetation and other materials. Ozone is not emitted directly into the atmosphere but is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving reactive organic gases (ROG) and NOx, including NO_2. ROG and NOx are known as precursor compounds for ozone. Significant ozone production generally requires ozone precursors to be present in a stable atmosphere with strong sunlight.

Ozone can cause the muscles in the airways to constrict, trapping air in the alveoli, potentially leading to wheezing and shortness of breath. Ozone can make it more difficult to breathe deeply and vigorously; cause shortness of breath and pain when taking a deep breath; cause coughing and sore or scratchy throat; inflame and damage the airways; aggravate lung diseases, such as asthma, emphysema, and chronic bronchitis; increase the frequency of asthma attacks; make the lungs more susceptible to infection; continue to damage the lungs even when the symptoms have disappeared; and cause chronic obstructive pulmonary disease. Long-term exposure to ozone is linked to the aggravation of asthma and is likely to be one of many causes of asthma development. Long-term exposures to higher concentrations of ozone may also be linked to permanent lung damage, such as abnormal lung development in children. The inhalation of ozone causes inflammation and irritation of the tissues lining human airways, causing, and worsening, a variety of symptoms and exposure to ozone can reduce the volume of air that the lungs breathe in and cause shortness of breath.

People most at risk for adverse health effects from breathing air containing ozone include people with asthma, children, older adults, and people who are active outdoors, especially outdoor workers. Children are at greatest risk from exposure to ozone because their lungs are still developing and they are more likely to be active outdoors when ozone levels are high, which increases their exposure. Studies show that children

are no more or less likely to suffer harmful effects than adults; however, children and teens may be more susceptible to ozone and other pollutants because they spend nearly twice as much time outdoors and engage in vigorous activities compared to adults. Children breathe more rapidly than adults and inhale more pollution per pound of their body weight than adults and are less likely than adults to notice their own symptoms and avoid harmful exposures.

Particulate Matter. PM10 and PM2.5 represent size fractions of particulate matter that can be inhaled into air passages and the lungs and can cause adverse health effects. Very small particles of certain substances (e.g., sulfates and nitrates) can cause lung damage directly or can contain absorbed gases (e.g., chlorides or ammonium) that may be injurious to health. The health effects of particulate matter may include cardiovascular effects, such as cardiac arrhythmias and heart attacks, and respiratory effects, such as asthma attacks and bronchitis. Particulates can also reduce visibility.

Nitrogen Dioxide. Breathing air with a high concentration of NO_2 can irritate airways in the human respiratory system. Such exposures over short periods (as represented by the 1-hour standards) can aggravate respiratory diseases, particularly asthma, leading to respiratory symptoms (such as coughing, wheezing or difficulty breathing), hospital admissions, and visits to emergency rooms. Longer exposures to elevated concentrations of NO_2 (as represented by the annual standards) may contribute to the development of asthma and potentially increase susceptibility to respiratory infections. People with asthma, as well as children and the elderly, are generally at greater risk for the health effects of NO_2. NOx (includes NO_2 and NO) reacts with other chemicals in the air and sunlight to form both particulate matter and ozone.

Carbon Monoxide. CO is a pollutant that is a product of incomplete combustion and is mostly associated with motor vehicle traffic. High CO concentrations develop primarily during winter when periods of light winds combine with the formation of ground-level temperature inversions (typically from the evening through early morning). These conditions result in the reduced dispersion of vehicle emissions. Motor vehicles also exhibit increased CO emission rates at low air temperatures. When inhaled at high concentrations, CO combines with hemoglobin in the blood and reduces the oxygen-carrying capacity of the blood. This results in reduced oxygen reaching the brain, heart, and other body tissues. This condition is especially critical for people with cardiovascular diseases, chronic lung disease, or anemia.

Sulfur Dioxide. SO_2 is produced through the combustion of sulfur or sulfur-containing fuels, such as coal. SO_2 is also a precursor to the formation of atmospheric sulfate and particulate matter (PM10 and PM2.5) and contributes to potential atmospheric sulfuric acid formation that could precipitate downwind as acid rain.

Lead. Lead has a range of adverse neurotoxin health effects and previously was predominately released into the atmosphere primarily via the combustion of leaded gasoline. The phase-out of leaded gasoline has resulted in decreasing levels of atmospheric lead.

Hydrogen Sulfide. Exposure to low concentrations of H_2S may cause irritation to the eyes, nose, or throat. It may also cause difficulty in breathing for some asthmatics. Respiratory distress or arrest has been observed in people exposed to very high concentrations of H_2S. Exposure to low concentrations of H_2S may cause headaches, poor memory, tiredness, and balance problems. Brief exposures to high concentrations of H_2S can cause loss of consciousness. In most cases, the person appears to regain consciousness without any other effects. However, in some individuals, there may be permanent or long-term effects such as headaches, poor attention span, poor memory, and poor motor function.

Sensitive Receptors

Sensitive receptors, such as infants, the aged, and people with specific illnesses or diseases, are the subpopulations which are more sensitive to the effects of toxic substance exposure.

Schools, both public and private, day care facilities, convalescent homes, and hospitals are of particular concern. Although residences and worker receptors are not technically defined as “sensitive receptors” by California Office of Environmental Health Hazard Assessment (OEHHA), they were conservatively analyzed as sensitive receptors in applicant’s analysis. Table 5.9-1 of the application (ESHD 2024h) and Appendix 5.9A (ESHD 2024j) list the nearest sensitive receptors within 5 miles of the WRESC Site. **Section 5.10, Public Health** includes a more detailed description of the sensitive receptors near the project.

Regulatory

Federal, state, and regional agencies share responsibility for managing and regulating air quality in the proposed project area.

Federal

Federal Clean Air Act. The federal Clean Air Act (CAA) (42 U.S.C., § 7401 et seq.) establishes the statutory framework for regulation of air quality in the United States. Under the CAA, the U.S. EPA oversees the implementation of federal programs for permitting new and modified stationary sources, controlling toxic air contaminants (TACs), and reducing emissions from motor vehicles and other mobile sources.

Title I (Air Pollution Prevention and Control) of CAA requires the establishment of NAAQS, air quality designations, and plan requirements for nonattainment areas. States are required to submit a SIP to the U.S. EPA for areas in nonattainment with NAAQS. The SIP must demonstrate how state and local regulatory agencies will institute rules, regulations, and other programs to attain NAAQS. Once approved by the U.S. EPA and published in the Federal Register, the local air district rules contained in the SIP are federally enforceable.

The Prevention of Significant Deterioration (PSD) program is a federal program for federal attainment areas. The purpose of the federal PSD program is to ensure that

attainment areas remain in attainment of NAAQS based upon a proposed facility's annual PTE. If the annual emissions of a proposed project are less than prescribed amounts, a PSD review is not required. The project is not expected to be subject to PSD.

Title 40 Code of Federal Regulations Subchapter C – Air Programs. Title 40 of the Code of Federal Regulations (CFR) Part 51, Requirements for Preparation, Adoption, and Submittal of Implementation Plans, establishes the requirements for Nonattainment New Source Review (NSR). The NSR program requires new and modified stationary sources to obtain air permits and requires Best Available Control Technology (BACT) and emissions offsets. Permitting and enforcement for NSR is delegated to EKAPCD.

40 CFR Part 52, Approval and Promulgation of Implementation Plans, including 40 CFR Part 52.21, Prevention of Significant Deterioration (PSD) of air quality, requires major sources or major modifications to major sources to obtain permits for attainment pollutants. The purpose of the federal PSD program is to ensure that attainment areas remain in attainment of NAAQS based upon a proposed facility's annual emissions. The proposed project would be a new source that is not listed in a specific emission source rule thus the PSD trigger levels are 250 tons per year for NOx, VOC, SO_2, PM2.5 and CO. Because proposed project emissions would be less than prescribed amounts, the project would not be subject to PSD.

Title 40 Code of Federal Regulations Part 60 Standards of Performance for New Stationary Sources

New Source Performance Standard (NSPS) Subpart IIII—Standards of Performance for Stationary Compression Ignition Internal Combustion Engines. Clean Air Act section 111 (42 U.S.C., § 7411) authorizes the U.S. EPA to develop technology-based standards for specific categories of sources. Manufacturers of emergency stationary internal combustion engines (ICE) using diesel fuel must certify that new engines comply with these emission standards (40 C.F.R., § 60.4205). Under NSPS Subpart IIII, owners and operators of emergency engines must limit operation to a maximum of 100 hours per year for maintenance and testing, which allows for some use, if necessary, to protect grid reliability; there is no time limit on the use of an emergency stationary ICE in emergency situations (40 C.F.R., § 60.4211(f)). The project's four diesel engines proposed that would drive emergency generators and the fire pump would be subject to and must comply with the requirements in NSPS Subpart IIII.

National Emission Standards for Hazardous Air Pollutants (NESHAP) Subpart ZZZZ—National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines. The CAA, section 112 (42 U.S.C., § 7412) addresses emissions of hazardous air pollutants (HAPs). The CAA defines HAPs as a variety of substances that pose serious health risks. Direct exposure to HAPs has been shown to cause cancer, reproductive effects or birth defects, damage to the brain and nervous system, and respiratory disorders. Categories of sources that cause HAP emissions are controlled through separate standards under CAA Section

112: National Emission Standards for Hazardous Air Pollutants (NESHAP). These standards are specifically designed to reduce the potency, persistence, or potential bioaccumulation of HAPs. New sources that emit more than 10 tpy of any specified HAP or more than 25 tpy of any combination of HAPs are required to apply Maximum Achievable Control Technology.

NESHAP Subpart ZZZZ applies to the four diesel engines proposed, however, because NSPS Subpart IIII also applies to the engines, the units would comply with NESHAP Subpart ZZZZ by complying with the requirements of NSPS Subpart IIII.

State

CARB is the state agency charged with coordinating efforts to attain and maintain ambient air quality standards, to conduct research into the causes of and solution to air pollution, and to systematically attack the serious problem causes by motor vehicles. (Health and Saf. Code, § 39003) Generally, state law designates local air districts as having primary responsibility for the control of air pollution from all sources other than mobile sources, while the control of vehicular air pollution sources is the responsibility of CARB. (Health and Saf. Code, § 39002) CARB is also responsible for the state's overall air quality management, including, among other things, establishing CAAQS for criteria pollutants identifying TACs of statewide concern and adopting measures to reduce the emissions of those TACs through airborne toxic control measures (ATCM), and regulating emissions of GHGs.

Section 41700 of the California State Health and Safety Code. This section states that "no person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause injury or damage to business or property."

California Code of Regulations. California Code of Regulations, title 17 Section 93115 ATCM for Stationary Compression Ignition Engines limits the types of fuels allowed, establishes maximum emission rates, and establishes recordkeeping requirements on stationary compression ignition engines, including diesel-powered emergency generator and fire water pump engines.

U.S. EPA/CARB Off-Road Mobile Sources Emission Reduction Program. The California Clean Air Act mandates that CARB achieve the maximum degree of emission reductions from all off-road mobile sources to attain the state ambient air quality standards. Off-road mobile sources include construction equipment. The earliest (Tier 1) standards for large compression-ignition engines used in off-road mobile sources became effective in California in 1996. Since then, the Tier 3 standards for large compression-ignition engines used in off-road mobile sources went into effect in California for most engine classes in 2006, and Tier 4 or Tier 4 Interim (4i) standards apply to all off-road diesel engines model year 2012 or newer. The tiered engine

exhaust standards and standards for fleets that are already in-use provide comprehensive regulation and control to reduce NOx and toxic diesel particulate matter (DPM) emissions from equipment throughout the State.

CARB In-Use Off-Road Diesel Fueled Fleets Regulation. The regulations for in-use off-road diesel equipment are designed to reduce NOx and DPM. Depending on the size of the fleet of equipment, the owner would need to ensure that the average emissions performance of the fleet meets certain state-wide standards (California Code of Regulations, title 13, Section 2449.1). In lieu of improving the emissions performance of the fleet, electric systems can be installed to replace diesel equipment in the fleet average calculations. Presently, all equipment owners are subject to a five-minute idling restriction in the rule (California Code of Regulations, title 13, Section 2449).

CARB Portable Equipment Registration Program (PERP). This program allows owners or operators of portable engines and associated equipment commonly used for construction or farming to register their units under a statewide portable program. This program allows them to operate their equipment throughout California without having to obtain individual permits from local air districts.

Local

The WRESC Site is proposed to be within the high desert portion of Kern County in the EKAPCD. In 1992, Kern County was split into two air districts. The San Joaquin Valley portion of Kern County became part of the San Joaquin Valley Unified Air Pollution Control District (SJVUAPCD) and the Eastern Kern, high-desert portion of the County remained the Kern County Air Pollution Control District (KCAPCD). In 2010 the KCAPCD was renamed EKAPCD. EKAPCD prepared and adopted an Ozone Attainment Plan on May 4, 2023, to satisfy the requirements of the Federal Clean Air Act (FCAA) pursuant to the 2008 and 2015, 8-Hour Ozone NAAQS. The plan presents the EKAPCD's strategy, which includes mandated elements, to attain the 2008, 8-hour NAAQS by 2027 and the 2015 NAAQS by 2032. At a public meeting held on June 22nd, 2023, CARB approved of the 2023 Ozone Plan for the 70-ppb and 75-ppb 8-Hour Ozone Standards for the Eastern Kern Nonattainment Area.

Generally, state law designates local air districts, such as EKAPCD as having primary responsibility for the control of air pollution from all sources other than mobile sources. (Health and Saf. Code, § 39002) Except as provided in state law, local air districts may establish stricter standards than those set by law or by CARB for nonvehicular sources (Health and Saf. Code, § 39002).

Rule 201 – Permits Required. Any person building, altering, or replacing any equipment, the use of which may cause the issuance of air contaminants or the use of which may eliminate or reduce or control the issuance of air contaminants, shall first obtain authorization for such construction from the Air Pollution Control Officer (APCO). An Authority to Construct (ATC) shall remain in effect until the permit to operate the

equipment for which the application was filed is granted, denied, or canceled. The diesel engines proposed for the operating phase of the WRESC must obtain an air authority to construct and a permit to operate from EKAPCD.

Rule 208.2 – Criteria for finding of No Significant Environmental Impact [California Environmental Quality Act (CEQA)]. Establishes criteria by which a project under review by EKAPCD can be found to have no potential for causing a significant environmental impact, and, thus, be granted a general rule exemption pursuant to California Code of Regulations, title 14, Section 15061 (b)(3) (State CEQA Guidelines).

Rule 210.1 – New and Modified Stationary Source Review (NSR). 1) Provide for pre-construction review of new and modified stationary sources of affected pollutants to ensure emissions will not interfere with the attainment of ambient air quality standards. 2) Ensure that appropriate new and modified sources of affected pollutants are constructed with Best Available Control Technology, and 3) Provide for no significant net increase in emissions from new and modified stationary sources for all non-attainment pollutants and their precursors. The WRESC emission units will be subject to new source review for minor sources. The process will require application of BACT. Offsets will not be required because the emission units are for emergency use only and will limit operation to no more than 200 hours per year (excluding maintenance and readiness testing).

Rule 401 – Visible Emissions. A person shall not discharge into the atmosphere emissions as dark as or darker than Ringelmann 1 or 20% opacity for more than 3 minutes in any one hour or of such opacity as to obscure an observer's view to a degree equal to or greater than does smoke as dark as or darker than Ringelmann 1. The diesel engines proposed for the operating phase of the WRESC must obtain an air permit, which will contain conditions that require compliance with the visible emission limits.

Rule 402 – Fugitive Dust. A person shall not cause or allow fugitive dust emissions from any active operation to remain visible in the atmosphere beyond the property line of the emission source. In addition, an owner/operator shall implement one or more fugitive dust emission control strategy from Table 1, Reasonably Available Control Measure (RACM) or Table 2, Bulk Material Control Measures (BMCM) of the Rule to limit visible dust emissions (VDE) to no more than 20% opacity or meet conditions for a stabilized surface. An owner/operator of a Large Operation (involving 10 or more contiguous acres) will be required to submit a Fugitive Dust Emission Control Plan to the APCO prior to the start of any earthmoving activity. The applicant will submit a Fugitive Dust Emission Control Plan prior to the commencement of construction (WSP 2024ee).

Rule 404.1 – Particulate Matter Concentration. A person shall not discharge particulate matter in excess of 0.1 grains per cubic foot of gas at standard condition from any single source operation.

Rule 407 – Sulfur Compounds. A person shall not discharge into the atmosphere sulfur compounds, which would exist as a liquid or gas at standard conditions, exceeding in concentration at the point of discharge: 0.2 percent by volume calculated as sulfur dioxide (SO_2). Diesel engines in the operating the WRESC will comply by combusting diesel fuel that contains not more than 15 ppm sulfur.

Rule 419 – Nuisance. A person shall not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public or which endanger the comfort, repose, health or safety of any such persons or the public or which cause or have a natural tendency to cause injury or damage to business or property.

Rule 423 – National Emissions Standards for Hazardous Air Pollutants (40 CFR 63 Subpart ZZZZ: National Emissions Standards for Reciprocating Internal Combustion Engines) (Amended 01/13/11). Establishes national emission and operating limitations for HAPs emitted from stationary reciprocating internal combustion engines (RICE) at a major and area sources of HAP emissions. Requirements to demonstrate initial and continuous compliance with limitations are also established.

Rule 427 – Stationary Piston Engine. The purpose of this rule is to limit oxides of nitrogen from stationary piston engine to levels consistent with Reasonable Available Control Technology (RACT) to satisfy California Health and Safety Code Section 40918 (b). The engines for the WRESC will be for emergency use so this rule does not apply.

Cumulative

The proposed project would be in EKAPCD, which is classified as a nonattainment area for the state 1-hour and 8-hour ozone standards, as well as state 24-hour and annual PM10 standards. The criteria air pollutants of greatest concern are ozone and PM10.

The Cumulative Project Scenario and a list of cumulative projects appears in **Table A-1**. For Air Quality cumulative analysis, a radius of six miles is normally used because based on staff's modeling experience, beyond six miles there is no statistically significant concentration overlap for nonreactive pollutant concentration between two stationary emission sources. According to **Table A-1**, the existing, approved, pending and proposed projects of potential sources of toxic air pollutants within six miles include:

- Mojave Micro Mill (1.3 miles to the project)
- Edwards Air Force Base Solar Project (2.5 miles to the project)
- True North Renewable Energy (5.4 miles to the project)
- Capella Solar (5.4 miles to the project)
- Organics Energy Solar (5.4 miles to the project)

- Golden Queen Mining Company, LLC (5.5 miles to the project)
- Sanborn Solar (5.9 miles to the project)

This analysis considers how the Willow Rock project along with these projects may impact air quality.

5.1.2 Environmental Impacts

AIR QUALITY Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a. Conflict with or obstruct implementation of the applicable air quality plan?	☐	☒	☐	☐
b. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☒	☐	☐
c. Expose sensitive receptors to substantial pollutant concentrations?	☐	☒	☐	☐
d. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☒	☐

Environmental checklist established by Cal. Code Regs., tit. 14, Div. 6, Ch. 3, Appendix G, air quality.

5.1.2.1 Methodology and Thresholds of Significance

In addition to the above environmental checklist, staff used the following methodology and thresholds of significance to evaluate the project.

Methodology

This air quality evaluation assesses the degree to which the project would potentially cause a significant impact according to the California Environmental Quality Act (CEQA) guidelines and federal, state, and local air district rules and regulations. EKAPCD is the local air district responsible for the attainment and maintenance of the federal and state AAQS and associated program requirements at the project location. The analysis is based upon the methodologies and related thresholds of significance in the EKAPCD's Guidelines for Implementation of CEQA (EKAPCD 1999) to determine the significance of the potential air quality emissions and impacts.

The emissions estimation methodology for the project was developed in coordination with the latest available data and engineering design. Construction emissions were

estimated based on emission factors from California Emissions Estimator Model (CalEEMod) and EMFAC2021. The operational emissions of the three emergency diesel generators were estimated based on U.S. EPA Tier 4 emissions standards. And the fire pump was based on Tire 3 emission standards.

CEC staff's analysis determines whether the project's ground-level impacts would be likely to exceed any AAQS or contribute substantially to an existing or projected air quality violation, and, if necessary, proposes mitigation to reduce or eliminate these pollutant exceedances or substantial contributions. The American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD [Version 23132]) was used for this ambient air quality impact analysis, as recommended in the U.S. EPA's Guideline on Air Quality Models (U.S. EPA 2017).

Thresholds of Significance

Table 5.1-4 presents the EKAPCD's regional air quality significance thresholds currently being implemented, as derived from the EKAPCD's Guidelines for Implementation of CEQA (EKAPCD 1999) and Subsection III.B.3 of Rule 210.1. If a project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the district's existing air quality conditions. Staff evaluates project emissions against the EKAPCD significance thresholds under environmental checklist criterion "b."

TABLE 5.1-4 EKAPCD THRESHOLDS OF SIGNIFICANCE

	Annual Emissions (tons/year)
NOx	25
CO	—
VOC	25
SOx	27
PM10	15
PM2.5	—

Sources: EKAPCD 1999

Staff also evaluates the project's potential to expose sensitive receptors to substantial pollutant concentrations under environmental checklist criterion "c." The analysis includes ambient air quality impact modeling for construction and operation to estimate the air quality impacts caused by the emissions. Staff uses AAQS, shown in **Table 5.1-1**, to help define what is considered a substantial pollutant concentration for criteria pollutants. Staff's analysis determines whether the project would be likely to exceed any AAQS or contribute substantially to an existing or projected air quality violation, and, if necessary, proposes mitigation to reduce or eliminate these pollutant exceedances or substantial contributions.

Significance criteria also include U.S. EPA Significant Impact Levels (SILs), as shown in **Table 5.1-5**. Regulatory agencies have traditionally applied SILs as a threshold value. Levels of off-site concentration predicted to result from a source's emissions below the SIL are not significant and do not warrant additional analysis or mitigation. Specifically,

U.S. EPA has stated in its guidance, when a PSD permit applicant has shown through air quality modeling that the projected air quality impact from a proposed source for a particular pollutant is not significant or meaningful, there is a valid basis in most cases for the permitting authority to conclude that the proposed source will not cause or contribute to a violation of a NAAQS or PSD increment for that pollutant. To show that the proposed source will not have a significant or meaningful impact on air quality, permit applicants and permitting authorities may elect to use these SIL values (U.S. EPA 2018).

However, if the ambient concentration estimates from the refined modeling analysis indicate that the source's emissions have the potential to cause or contribute to a violation, then a cumulative impact analysis should be undertaken (U.S. EPA 2017).

TABLE 5.1-5 SIGNIFICANT IMPACT LEVELS (µg/m³)

Pollutant	Averaging Time	Class II[2] Significant Impact Levels
Ozone	8-hour	1.96 (1.0 ppb) [a]
PM10	24-hour	5.0 [b]
	Annual	1.0 [b]
PM2.5	24-hour	1.2 [b]
	Annual	0.13 [c]
CO	1-hour	2,000 [b]
	8-hour	500 [b]
NO_2	1-hour	7.5 (4 ppb) [d]
	Annual	1.0 [b]
SO_2	1-hour	7.86 (3 ppb) [e]
	24-hour	5 [b]
	Annual	1.0 [b]

Notes: SIL values are based on the form of the applicable NAAQS
[a] Ozone and annual PM2.5 SILs from U.S. EPA 2018 Guidance on Significant Impact Levels for Ozone and Fine Particles in the Prevention of Significant Deterioration Permit Program (U.S. EPA 2018).
[b] SIL values provided in 40 CFR 51.165(b)
[c] The U.S. EPA issued a recommendation to set the PM2.5 SIL value for annual impacts at 0.13 µg/m³ (effective May 6, 2024 [U.S. EPA 2024b]).
[d] Interim NO_2 SIL (U.S. EPA 2011)
[e] Interim SO_2 SIL (U.S. EPA 2010)
Sources: U.S. EPA 2010, U.S. EPA 2011, U.S. EPA 2018, U.S. EPA 2024b

2 Class I federal lands include areas such as national parks, national wilderness areas, and national monuments. These areas are granted special air quality protections under the federal Clean Air Act. All other areas that attain the NAAQS are initially designated as Class II, and can be redesignated as either Class I or Class III. Class III designation indicates areas where substantial industrial or other growth is allowed and where increases in concentrations up to the national standards would be insignificant.

5.1.2.2 Direct and Indirect Impacts

a. Would the project conflict with or obstruct implementation of the applicable air quality plan?

This section considers the project's consistency with the applicable air quality management plan. This is a qualitative determination that considers the impacts from project construction and operation.

Construction and operation of the project would result in emissions of criteria pollutants including ozone precursors (such as ROG and NOx) and PM. The EKAPCD has prepared several air quality attainment plans to achieve ozone and particulate matter standards. Recent and historical EKAPCD State Implementation Plans (SIP) include: 1) 2023 Reasonable Available Control Technology SIP for the 2008 and 2015 8-Hour Ozone National Ambient Air Quality Standards (NAAQS); 2) 2023 8-Hour Ozone Plan for the 70-ppb and 75-ppb 8-Hour Ozone Standards for the Eastern Kern Nonattainment Area; 3) 2020 Indian Wells Second 10-Year PM10 Maintenance Plan; 4) 2017 Ozone Attainment Plan for 2008 Federal 75 ppb 8-Hour Ozone Standard as a revision to the California SIP; 5) February 2008 Ozone Early Progress Plans toward attaining the 8-hour NAAQS for Ozone and Setting Transportation Conformity Budgets for Ventura County, Antelope Valley-Western Mojave Desert, Coachella Valley, Eastern Kern County, and Imperial County, as a revision to the California SIP; 6) 2003 Ozone Attainment Demonstration, Maintenance Plan, and Redesignation Request for the East Kern County Nonattainment area; and 7) 2002 Indian Wells PM10 Attainment Demonstration, Maintenance Plan, and Redesignation Request.

The EKAPCD has the responsibility to develop the applicable air quality management plans and regulations to achieve the air quality standards consistent with the plans. Additionally, the EKAPCD has the authority to adopt and enforce rules and regulations to achieve and maintain the state and federal ambient air quality standards, as necessary to implement the air quality management plans.

To determine if a project would conflict with or obstruct implementation of the applicable air quality plan, lead agencies must demonstrate that a given project would not directly obstruct implementation of an applicable air quality plan and that the project would be consistent with the assumptions upon which the air quality plan is based. Each air quality management plan includes emission inventory, population, and employment growth forecasts that are relied upon for projecting how attainment is achieved.

Construction

Less Than Significant with Mitigation Incorporated. All construction activities would occur in compliance with applicable federal, state, and local requirements, including those that are relied upon for attainment planning. The employment associated with the project would be consistent with the planning forecasts. Compliance with air permitting requirements, and other applicable requirements, ensures that proposed project

emissions are included within the emission inventory forecasts that are relied upon for attainment planning. With incorporation of COC **AQ-SC1** through **AQ-SC6**, construction of the project would not conflict with or obstruct implementation of the applicable air quality plans for minimizing ozone precursors and particulate matter emissions.

Operation

Less Than Significant Impact with Mitigation Incorporated. As discussed in more detail below, the operation and maintenance activities would result in limited emissions of ozone precursors and particulate matter. The emissions from worker automobile trips, water trucks, and emergency generator and fire pump testing would occur at levels that would not obstruct implementation of the air quality management plans. New sources of emissions would be conditioned to comply with EKAPCD air permitting requirements, including operating limitations and applicable emission standards that form the basis of attainment planning.

Operational activities would not exceed the EKAPCD annual thresholds of significance. Operation of this project would not conflict with implementation of existing air quality plans. For these reasons, the project would be consistent with the applicable air quality plans. With the implementation of COCs, the project would have a less than significant impact related to implementation of the applicable air quality management plans.

b. Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

Construction

Less Than Significant with Mitigation Incorporated. Construction of WRESC is expected to last approximately 60 months. Project construction emissions would result from 1) onsite earth and rock movement activities, land preparation, shaft and cavern drilling, blasting, excavation, equipment exhaust, vehicle travel (truck hauling, deliveries and take-aways), construction of the power blocks and associated tanks and buildings, rock crushing plant operation, concrete batch plant operation, and 2) offsite vehicle travel (worker travel), truck hauling travel (deliveries and take-aways), paved roadway fugitives, T-line equipment exhaust, pole site fugitives.

The project emissions from construction activities were evaluated under two scenarios: with the construction of an architectural berm and without the architectural berm. The scenario with the architectural berm assumes that the cavern rock will be used to build an architectural berm. Under this scenario, approximately 25 percent of the cavern rock will be processed through the proposed temporary portable onsite crushing/screening plant before being delivered to the architectural berm construction area along with the remaining 75 percent of the cavern rock. The no architectural berm scenario conservatively assumes that virtually all the cavern rock will be processed through the

crushing/screening plant and subsequently hauled offsite to an existing materials site for future use.

Annual emissions are based on the estimated highest consecutive 12-month period, which was months 25 through 36 for the "architectural berm" option, and months 30 through 41 for the "no architectural berm" option. These 12-month periods considered manpower values, equipment numbers, and use rates, as well as construction activities (both aboveground and belowground). The estimated highest monthly emissions are based on the annual emissions divided by 12, while the highest daily emissions are based on the highest monthly emissions divided by 30 days per month. Emissions from the construction period were estimated using the California Emissions Estimator Model (CalEEMod) program. The estimated criteria pollutant construction phase emissions are summarized in **Table 5.1-6**.

The CEC staff air quality impact analysis for project construction conducted under CEQA environmental checklist criterion "c" concluded that project construction would not expose sensitive receptors to substantial criteria pollutant concentrations, and thus have a less than significant impact. **Table 5.1-8** and **Table 5.1-9** show that the impacts from project construction would be below the limiting standards for PM2.5, CO, NO_2, and SO_2. The project would contribute to existing exceedances of the 24-hour and annual PM10 CAAQS. However, the maximum PM10 impacts at the nearest sensitive receptors would be lower than PM10 SILs levels.

Staff generally concurs with the applicant's proposed measures and recommends COCs **AQ-SC1** through **AQ-SC5**. In addition, staff also concurs with the conditions suggested by Kern County Planning and Natural Resources Department and incorporated them into the COCs. COCs **AQ-SC1** through **AQ-SC5** would ensure that PM10 and PM2.5 emissions are maintained to a level that is not a considerable increase of these pollutants. The project's impact would thus be considered less than significant.

TABLE 5.1-6 CRITERIA POLLUTANT EMISSIONS FROM PROJECT CONSTRUCTION

			NOx	CO	VOC	PM10	PM2.5	SO_2
Architectural Berm Option	**Onsite**	**Tons/year**	27.13	32.88	3.37	15.54	3.90	0.08
		lbs/day	150.7	182.7	18.7	86.3	21.7	0.4
	Offsite	**Tons/year**	1.4	7.4	0.6	2.9	0.5	0.04
		lbs/day	7.6	40.9	3.3	15.9	2.5	0.2
No-Architectural Berm Option	**Onsite**	**Tons/year**	42.70	60.03	6.47	14.60	3.86	0.17
		lbs/day	237.2	333.5	36.0	81.1	21.4	1.0
	Offsite	**Tons/year**	9.5	7.7	1.6	7.8	0.9	0.11
		lbs/day	52.9	42.7	8.7	43.4	4.7	0.6

Source: ESHD 2024i, CEC staff analysis

Operation

Less Than Significant with Mitigation Incorporated. The proposed A-CAES system does not involve the use of a combustion turbine. The project would be an energy storage facility consisting of four 130 MW power blocks. Each power block would contain an electric motor-driven air compressor drivetrain, heat exchangers, and an air turbine generator and their ancillary equipment. Therefore, the project would have no impacts associated with combustion turbine emissions.

Operation emissions of WRESC includes the emissions of the three emergency generators and one fire pump engine. Operation of these diesel engines will result in emissions to the atmosphere of both criteria and toxic air pollutants. Criteria pollutant emissions will consist primarily of NOx, CO, VOCs, SOx, PM10, and PM2.5. Air toxic pollutants will consist of a combination of hazardous air pollutants and other compounds which are commonly generated from the combustion of fuel. Other than the operation of the diesel engines for testing and maintenance, there are no additional significant sources of air emissions from the maintenance of the WRESC. Commissioning of the diesel engines is not anticipated to take a significant amount of time and will result in emissions that are characteristically like normal operation; no emission testing is anticipated for commissioning.

Table 5.1-7 presents the maximum hourly and annual operation emissions based on a maximum annual runtime of 200 hours per engine. As permitted by the EKAPCD and specified in COC **AQ-4**, this 200-hour limit excludes maintenance and readiness testing. However, the applicant has included the 50 hours of maintenance and readiness testing within the 200-hour annual limit. The 50-hour maintenance and readiness testing limit is required by the California Air Toxics Control Measure and specified in COC **AQ-11**. The applicant assumed only one engine will be tested during any single hour. The annual emissions are based on all three emergency generators and the single fire pump.

TABLE 5.1-7 MAXIMUM HOURLY AND ANNUAL OPERATION EMISSIONS (LBS/HR)

Pollutant	Maximum Emission, Single Emergency Generator (lb/hr)	Maximum Emission, Fire Pump Engine (lb/hr)	Potential to Emit All Engines (tpy)	EKAPCD CEQA Thresholds (tpy)	Exceeds EKAPCD CEQA Thresholds?
NOx	3.991	2.890	1.49	25	No
CO	20.756	2.637	6.50	—	No
VOC	1.118	0.152	0.35	25	No
SO_2	0.037	0.005	0.013	27	No
PM10	0.16	0.152	0.063	15	No
PM2.5	0.16	0.152	0.063	—	No

Source: ESHD 2024i, EKAPCD 2024, CEC staff analysis

The annual operational emissions of the project shown in **Table 5.1-7** would be well below the EKAPCD offset thresholds in Rules 201 and 210.1, the operation of the project will not result in significant impacts as defined by the EKAPCD CEQA Guidelines.

As noted above, the applicant calculated the annual potential to emit (PTE) based on the assumption of total annual operation of 200 hours for each engine, which includes 50 hours of maintenance and readiness testing and 150 hours of emergency operation. However, COC **AQ-4** would allow operation (excluding maintenance and testing) up to 200 hours per year and COC **AQ-11** limits maintenance and testing to 50 hours per year. Increasing the total operation hours from 200 to 250 (=200+50) would increase annual PTE by 1.25 times. However, since the annual PTE based on 200 hours of total operation would be well below the EKAPCD offset thresholds, increasing the PTE by 1.25 times would not change conclusion of the project impact. In addition, staff believes that the applicant's assumption of 150 hours of emergency operation per year per engine is already very conservative.

The applicant estimated that the number of workers during normal facility operations at 40 full time equivalents. It is expected that all 40 employees will live within Kern County for the assumption of 50 miles per round trip, which corresponds to 2,000 vehicle miles traveled per day. Using 2029 standard vehicle mix, the indirect project emissions would be well below the 137 pounds per day CEQA threshold for motor vehicle trips: 0.283 lbs/day of NOx and 0.0445 lbs/day of VOCs (ESHD 2024i), which are equivalent to 0.05 tpy of NOx and 0.008 tpy of VOCs. As a result, emissions from the worker trips would be less than significant.

The applicant has removed the evaporation pond and reverse osmosis system from the proposed project design. Instead, most of the water generated during operations will be immediately reused within the system, with the remaining volume transported offsite. In the most conservative scenario, up to 250,000 gallons of water will be hauled to a facility 27 miles away in Palmdale 13 times per year using heavy duty diesel water trucks. These trips would produce 2.4 lbs/year of NO_X and less than 1 lbs/year of other criteria pollutants. As a result, emissions would be *de minimis*, and the air quality impacts due to water truck deliveries would be negligible (CELG 2025).

c. Would the project expose sensitive receptors to substantial pollutant concentrations?

This section quantifies the ambient air quality pollutant concentrations caused by the project and determines whether sensitive receptors could be exposed to substantial pollutant concentrations.

This section addresses impacts from criteria pollutants in staff's Air Quality Impact Analysis (AQIA). Staff's AQIA discusses criteria pollutant impacts from construction and operation. **Section 5.10, Public Health** discusses the results of toxic air contaminants for both construction and operation.

Air Quality Impact Analysis for Criteria Pollutants

Staff considers any new AAQS exceedance and substantial contribution to any existing AAQS exceedance caused by the project's emissions to be substantial evidence of potentially significant impacts that would require the evaluation of potential mitigation measures. In this case, the project area in EKAPCD is classified as nonattainment for ozone (CAAQS and NAAQS) and PM10 (CAAQS).

Construction

Less Than Significant with Mitigation Incorporated. Construction emissions of criteria pollutants are shown in **Table 5.1-6** under criterion "b" of the CEQA environmental checklist. This section of the staff analysis explores the ambient air quality impacts of criteria pollutant emissions during construction to evaluate whether substantial pollutant concentrations could occur.

The applicant provided the modeled ambient air quality concentrations caused by the construction emissions. CEC staff reviewed the applicant's dispersion modeling files and agrees with the inputs used by the applicant and the outputs from the model for the construction AQIA for all criteria pollutants.

The applicant's AQIA uses the U.S. EPA preferred and recommended dispersion model, AERMOD (Version 23132) to estimate ambient air quality impacts. For the 1-hour NO_2 modeling analysis, the applicant used the Ozone Limiting Method (OLM) along with the use of seasonal hour by day background NO_2 and ozone monitoring data.

Meteorological Data. Five years of surface meteorological data (2018 to 2022) from the Lancaster/Fox Field Airport (approximately 19 km south of the WRESC site) were combined with concurrent upper air data from Harry Reid International Airport in Las Vegas, Nevada. The Lancaster/Fox Field Airport is considered representative of the project site because: 1) it is near the project site and has the same base elevations and exposure to terrain toward the northwest; 2) the airport and the project site are both in the same area of the broad and relatively flat Antelope Valley; 3) the meteorological instrumentation at Lancaster/Fox Field is properly exposed and not adjacent to structures or terrain; and 4) the period of meteorological data selected at the time of the modeling analyses (2018-2022) would be expected to be the most representative of current conditions, with the same general land uses surrounding the airport location as well as the proposed WRESC site. While Edwards Air Force Base does collect both surface and upper air data, the data recovery statistics were less than the U.S. EPA completeness requirement of 90 percent on both a quarterly and annual basis. Harry Reid International Airport was the closest and most representative upper air site and was chosen for the project. The data was processed with both AERMINUTE (version 15272) and AERMET (version 23132), which are the AERMOD meteorological data preprocessor modules.

Table 5.1-8 and **Table 5.1-9** shows the impacts of the project during the construction period. The project impact column shows the worst-case impacts of the project from

modeling. The background column shows the highest concentrations, or the three-year averages of the highest concentrations for 24-hour PM2.5 and annual PM2.5 following the forms of the standards, from the most recent 3 year available during the 5-year period (2019-2023). The background data are from the closest and most representative ambient air monitoring stations as described above.

The background PM10 concentrations are shown in **bold** because they already exceeded the CAAQS. The total impact column shows the sum of the existing background condition plus the maximum impact predicted by the modeling analysis for construction. The limiting standard column combines CAAQS and NAAQS, whichever is more stringent.

TABLE 5.1-8 MAXIMUM AMBIENT AIR QUALITY IMPACTS DURING CONSTRUCTION – ARCHITECTURAL BERM OPTION (µg/m^3)

Pollutant	Averaging Time	Project Impact	Background	Total Impact	Limiting Standard	Percent of Standard
PM10	24-hour	23.94	**352.0**	**375.94**	50	**752%**
	Annual	5.99	**29.9**	**35.89**	20	**179%**
PM2.5	24-hour	6.18	27.1	33.28	35	95%
	Annual	2.52	6.1	8.62	9	96%
CO	1-hour	511.04	1,832	2,343.04	23,000	10%
	8-hour	120.22	1,260	1,380.22	10,000	14%
NO_2 [a]	State 1-hour	-	-	297.4	339	88%
	Federal 1-hour	-	-	157.41	188	84%
	Annual	13.77	15.7	29.47	57	52%
SO_2	State 1-hour	0.94	11.2	12.14	655	2%
	Federal 1-hour	0.80	10.5	11.3	196	6%
	24-hour	0.13	8.9	9.03	105	9%
	Annual	0.036	4.6	4.64	80	6%

Source: ESHD 2024i, WSP 2024cc, CEC staff analysis.
Notes: Concentrations in **bold** type are those that exceed the limiting ambient air quality standard.
[a] The NO_2 total impacts combine the project impacts modeled with OLM in AERMOD with first high (CAAQS) or third high (NAAQS) seasonal hour-by-day NO_2 background.

TABLE 5.1-9 MAXIMUM AMBIENT AIR QUALITY IMPACTS DURING CONSTRUCTION – NO-ARCHITECTURAL BERM OPTION (µg/m^3)

Pollutant	Averaging Time	Project Impact	Background	Total Impact	Limiting Standard	Percent of Standard
PM10	24-hour	28.97	**352.0**	**380.97**	50	**762%**
	Annual	5.21	**29.9**	**35.11**	20	**176%**
PM2.5	24-hour	3.77	27.1	30.87	35	88%
	Annual	1.44	6.1	8.94	9	84%
CO	1-hour	1,285.86	1,832	3,117.86	23,000	14%
	8-hour	263.74	1,260	1,523.74	10,000	15%

TABLE 5.1-9 MAXIMUM AMBIENT AIR QUALITY IMPACTS DURING CONSTRUCTION – NO-ARCHITECTURAL BERM OPTION (µg/m³)

Pollutant	Averaging Time	Project Impact	Background	Total Impact	Limiting Standard	Percent of Standard
NO_2 [a]	State 1-hour	-	-	335.54	339	99%
	Federal 1-hour	-	-	174.59	188	93%
	Annual	7.54	15.7	23.24	57	41%
SO_2	State 1-hour	4.32	11.2	15.52	655	2%
	Federal 1-hour	2.28	10.5	12.78	196	7%
	24-hour	0.43	8.9	9.33	105	9%
	Annual	0.038	4.6	4.64	80	6%

Source: ESHD 2024i, WSP 2024cc, CEC staff analysis.
Notes: Concentrations in **bold** type are those that exceed the limiting ambient air quality standard.
[a] The NO_2 total impacts combine the project impacts modeled with OLM in AERMOD with first high (CAAQS) or third high (NAAQS) seasonal hour-by-day NO_2 background.

Table 5.1-8 and **Table 5.1-9** shows that the impacts from project construction would be below the limiting standards for PM2.5, CO, NO_2, and SO_2. **Table 5.1-8** and **Table 5.1-9** also shows that the existing 24-hour and annual PM10 background concentrations are already above the CAAQS. The project would, therefore, contribute to existing exceedances of the 24-hour and annual PM10 CAAQS. The maximum modeled 24-hour PM10 impacts from project construction in both options would exceed the U.S. EPA PM10 SILs of 5 µg/m³ for 24-hour impacts. The maximum modeled annual PM10 concentrations in both options would exceed the PM10 SILs of 1 µg/m³ for annual impacts. However, the results provided in **Table 5.1-8** and **Table 5.1-9** are maximum impacts predicted to occur primarily due to fugitive dust. Thus, practices that reduce the generation of dust during construction will reduce the levels of PM10 throughout the project site. The impacts would decrease rapidly with distance from the fence line. The maximum PM10 impacts at the nearest sensitive receptors would be lower than PM10 SILs levels. In addition, the impacts to the general population and sensitive populations during construction would be reduced with the implementation of **AQ-SC1** through **AQ-SC5**. With mitigation, the PM10 impacts of the project during construction would be less than significant.

With the implementation of **AQ-SC1** through **AQ-SC5**, project construction would not expose any sensitive receptors to substantial criteria pollutant concentrations, and this impact would be less than significant.

Operation

Less Than Significant with Mitigation Incorporated. The AQIA for project operation includes emissions from the emergency generators and diesel fire water pump. The applicant modeled the operation impacts for both the architectural berm and no-architectural berm options. Because the only difference between the two operational scenarios is the location of the western and northern fence lines, with the no-

architectural berm option having the shorter distance to the receptors along the western and northern fence, the no-architectural berm option produced the higher modeled concentrations.

For annual averaging periods, each engine was assumed to be capable of operating up to its assumed 200-hour-per-year limit. For shorter averaging periods, i.e., maintenance and readiness testing, only one engine is assumed to be operating in any 1 hour, while up to four engines may be tested in any one day. The use of 200 hours of operation per year results in very conservative criteria pollutant impact assessments since it assumes that up to 150 hours per year will be emergency operation.

The applicant's AQIA compares worst-case ground-level impacts resulting from the project operation with established state and federal AAQS. Staff reviewed the applicant's dispersion modeling files, and staff agrees with the inputs used by the applicant and the outputs from the model for the AQIA.

Table 5.1-10 shows the maximum impacts from project operation. The project impact column shows the worst-case impacts of the project from modeling. The background column shows the highest concentrations, or the three-year averages of the highest concentrations for 24-hour PM2.5 and annual PM2.5 following the forms of the standards, from the most recent 3 year available during the 5-year period (2019-2023). The background PM10 concentrations are shown in **bold** because they already exceeded the CAAQS. The total impact column shows the sum of the existing background condition plus the maximum impact predicted by the modeling analysis for operation. The limiting standard column combines CAAQS and NAAQS, whichever is more stringent.

TABLE 5.1-10 MAXIMUM AMBIENT AIR QUALITY IMPACTS DURING OPERATION – NO-ARCHITECTURAL BERM OPTION (µg/m^3)

Pollutant	Averaging Time	Project Impact	Background	Total Impact	Limiting Standard	Percent of Standard
PM10	24-hour	0.1	**352.0**	**352.1**	50	**704%**
	Annual	0.02	**29.9**	**29.92**	20	**150%**
PM2.5	24-hour	0.08	27.1	27.18	35	78%
	Annual	0.01	6.1	6.1	9	68%
CO	1-hour	503.2	1,832	2,335.2	23,000	10%
	8-hour	51.5	1,260	1,311.5	10,000	13%
NO_2	State 1-hour	120.3	96.9	217.2	339	64%
	Federal 1-hour	2.9	79.2	82.1	188	44%
	Annual	0.3	15.7	16.0	57	28%
SO_2	State 1-hour	1.0	11.2	12.2	655	2%
	Federal 1-hour	0.04	10.5	10.54	196	5%
	24-hour	0.03	8.9	8.93	105	9%
	Annual	0.003	4.6	4.60	80	6%

Source: ESHD 2024i, CEC staff analysis.
Notes: Concentrations in **bold** type are those that exceed the limiting ambient air quality standard.

Table 5.1-10 shows that the impacts from project operation would be below the limiting standards for PM2.5, CO, NO_2, and SO_2. **Table 5.1-10** also shows that the existing 24-hour and annual PM10 background concentrations are already above the CAAQS. The project would, therefore, contribute to existing exceedances of the 24-hour and annual PM10 CAAQS. However, the maximum modeled 24-hour PM10 impact of 0.1 µg/m^3 and annual PM10 concentration of 0.02 µg/m^3 from project operation would not exceed the U.S. EPA 24-hour PM10 SILs of 5 µg/m^3 or annual PM10 SILs of 1 µg/m^3. Therefore, the PM10 impacts of the project during operation would be less than significant.

Project operation would not expose sensitive receptors to substantial criteria pollutant concentrations, and therefore this impact would be less than significant.

Fumigation Impacts. Inversion break-up fumigation was not assessed. The U.S. EPA Model AERSCREEN, based upon guidance given in "Screening Procedures for Estimating the Air Quality Impact of Stationary Sources, Revised" (USEPA- 454/R-92-019) requires that the point source stack heights would need to exceed 10 meters (33 feet) in order for fumigation impacts to occur (U.S. EPA 2021b). As all the point source emission release heights are less than 10 meters feet above ground level, fumigation was not assessed.

d. Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

This section considers impacts that may arise from emissions other than criteria air pollutants and TACs, such as emissions that may lead to odors.

EKAPCD Rule 419 states that no person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance or annoyance to any considerable number of persons or to the public or which endanger the comfort, repose, health or safety of any such persons or the public or which cause or have a natural tendency to cause injury or damage to business or property.

Construction

Less Than Significant Impact. Minor odor sources during construction activities include diesel exhaust from heavy-duty equipment. Odors from construction activities near existing receptors would be temporary in nature and dissipate as a function of distance. Accordingly, the construction of the project is not expected to result in substantial emissions that may lead to odor impacts or impacts of emissions other than those of criteria pollutants and toxic air contaminants identified elsewhere in this analysis.

Fugitive dust emissions can also create a nuisance that can cause adverse effects. The project would comply with the construction fugitive dust control measures specified in **AQ-SC3** and so should not have substantial fugitive dust emissions during construction that could adversely affect a substantial number of people.

Therefore, the construction of the project would not result in other emissions, such as those leading to odors, that could adversely affect a substantial number of people and would have a less than significant impact.

Operation

Less Than Significant Impact. Potential odor sources from the project would include diesel exhaust from the emergency generators and fire pump engine. When compared to existing odor sources near the project site, which include emergency generators and agricultural equipment, odor impacts from the fire pump engine, emergency generators of the project would be similar.

The project operation would not result in odors or other emissions that could adversely affect a substantial number of people and would have a less than significant impact related to odors.

5.1.2.3 Cumulative Impacts

Less Than Significant with Mitigation Incorporated. "Cumulative impacts" are defined as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts" (CEQA Guidelines, § 15355). Such impacts can be relatively minor and incremental yet still be significant because of the existing environmental background, particularly when considering other closely related past, present, and reasonably foreseeable future projects.

As mentioned above, according to **Table A-1**, the existing, approved, pending and proposed projects of potential sources of criteria air pollutants within six miles include:

- Mojave Micro Mill (1.3 miles to the project)
- Edwards Air Force Base Solar Project (2.5 miles to the project)
- True North Renewable Energy (5.4 miles to the project)
- Capella Solar (5.4 miles to the project)
- Organics Energy Solar (5.4 miles to the project)
- Golden Queen Mining Company, LLC (5.5 miles to the project)
- Sanborn Solar (5.9 miles to the project)

Under CEQA environmental checklist criterion "b," staff concludes that the project's criteria pollutant emissions would not occur at rates that could be cumulatively significant. With the implementation of COC **AQ-SC1** through **AQ-SC5**, the project construction would not result in a cumulatively significant impact.

Under environmental checklist criterion "c," staff presents the results of the staff's independent air quality impact analysis for all criteria pollutants during construction and operation. The total air quality impacts include background concentrations as a means of capturing the effects of existing sources in the cumulative conditions. The project would not cause or contribute to a violation of any PM2.5, NO_2, CO, or SO_2 AAQS and the cumulative impacts would be less than significant.

The local cumulative PM10 concentrations that occur above the most-stringent standards are dominated by the combined effects of existing, background stationary and mobile sources. Because the overall cumulative impact to PM10 exceed the standards, the proposed project would contribute to a significant cumulative impact. However, based on the proposed project's individual impact being below the thresholds of the PM10 SILs at all sensitive receptor locations, the project's incremental contribution to the cumulative impact would not be cumulatively considerable. The project's contribution to the cumulative PM10 impacts would be less than significant.

In addition, **Table 5.1-10** shows that the project's worst-case operational impacts would be below all applicable SILs shown in **Table 5.1-5**. Therefore, the project's incremental contribution to the cumulative impacts to AAQS would be less than significant, and a localized cumulative impacts modeling analysis is not required.

Thus, staff concludes that the project with implementation of COCs **AQ-SC1** through **AQ-SC5**, would not result in a cumulatively considerable net increase of any criteria air pollutant, and the project's potential to contribute to the cumulative impact of criteria pollutant concentrations would be less than significant with mitigation incorporated.

5.1.3 Applicable LORS and Project Conformance

Table 5.1-16 shows staff's determination of conformance with applicable local, state and federal LORS, including any proposed COCs, where applicable, to ensure the project would comply with LORS. As shown in this table, CEC staff concludes that with implementation of specific COCs, the proposed project would be consistent with all applicable LORS. The subsection below, "Staff Proposed Conditions of Certification," contains the full text of the referenced COCs.

TABLE 5.1-11 CONFORMANCE WITH APPLICABLE LORS

Applicable LORS	Conformance and Basis For Determination
Federal	
Clean Air Act	
40 Code of Federal Regulations (CFR) Part 51, Nonattainment NSR Program	**Yes.** New source review requirements are implemented through EKAPCD rules and regulations. COCs **AQ-SC6** and **AQ-1** through **AQ-18** would ensure EKAPCD permit conditions are satisfied.
State	
California Health and Safety Code	
Section 41700, Nuisance Provisions	**Yes.** This section prohibits emissions resulting from use of this equipment which cause injury,

TABLE 5.1-11 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
	detriment, nuisance, annoyance to or endanger comfort, repose, health or safety of any considerable number of persons or public, which applies to all of the proposed project's emitting activities and sources. To avoid the potential for injury, detriment, nuisance, or annoyance this analysis includes COC **AQ-SC1** to **AQ-SC4** for minimizing visible dust during construction.
EKAPCD	
Rule 201 – Permits Required	**Yes.** This rule requires any person building, altering, or replacing any equipment, the use of which may cause the issuance of air contaminants or the use of which may eliminate or reduce or control the issuance of air contaminants, shall first obtain authorization for such construction from the APCO. An Authority to Construct (ATC) shall remain in effect until the permit to operate the equipment for which the application was filed is granted, denied, or canceled. This analysis includes COCs **AQ-SC6** and **AQ-1** through **AQ-18** for stationary source permit conditions.
Rule 208.2 – Criteria for finding of No Significant Environmental Impact [California Environmental Quality Act (CEQA)]	**Yes.** This rule establishes criteria by which a project under review by EKAPCD can be found to have no potential for causing a significant environmental impact, and, thus, be granted a general rule exemption pursuant to Section 15061 (b)(3) of the State CEQA Guidelines. The CEQA compliance of the project has been determined by this staff analysis and district permit.
Rule 210.1 – New and Modified Stationary Source Review	**Yes.** This rule requires 1) pre-construction review of new and modified stationary sources of affected pollutants to insure emissions will not interfere with the attainment of ambient air quality standards, 2) appropriate new and modified sources of affected pollutants are constructed with Best Available Control Technology, and 3) no significant net increase in emissions from new and modified stationary sources for all non-attainment pollutants and their precursors. The project emission units will be subject to new source review for minor sources. The process will require application of BACT. Offsets will not be required because the emission units are for emergency use only and Condition of Certification **AQ-4** will limit operation to no more than 200 hours per year (excluding maintenance and readiness testing)
Rule 401 – Visible Emissions	**Yes.** This rule prohibits the discharge into the atmosphere emissions as dark as or darker than Ringelmann 1 or 20% opacity for more than 3 minutes in any one hour. Engines are diesel fueled. In accordance with BACT requirements, visible emissions shall be limited to 5% opacity as

TABLE 5.1-11 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
	required by **AQ-5**. Visible emissions of 20% opacity are not expected.
Rule 402 – Fugitive Dust	**Yes.** The purpose of Rule 402 is to prevent, reduce, and mitigate ambient concentrations of anthropogenic fugitive dust emissions to an amount sufficient to attain and maintain the NAAQS and CAAQS. The applicant will submit a Fugitive Dust Emission Control Plan prior to the commencement of construction as required by the rule. In addition, COC **AQ-SC1** to **AQ-SC4** would minimize visible dust during construction.
Rule 404.1 – Particulate Matter Concentration	**Yes.** This rule prohibits the discharge of particulate matter in excess of 0.1 grains per cubic foot of gas at standard condition from any single source operation. The discharge of particulate matter is 0.02 gr/scf, which is less than 0.1 grains per cubic foot of gas at standard conditions as required by **AQ-7**.
Rule 407 – Sulfur Compounds	**Yes.** This rule prohibits the discharge into the atmosphere sulfur compounds, which would exist as a liquid or gas at standard conditions, exceeding in concentration at the point of discharge: 0.2 percent by volume calculated as sulfur dioxide (SO_2). Sulfur content of diesel fuel shall not exceed 0.0015% (15 ppmv) as required by **AQ-6**. Given known combustion principles, SO2 emission rate shall be less than 0.2% by volume.
Rule 419 – Nuisance	**Yes.** This rule prohibits the discharge of air contaminants or other materials in quantities that may cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public or which endanger the comfort, repose, health or safety of any such persons or the public or which cause or have a natural tendency to cause injury or damage to business or property. See COC **AQ-14**.
Rule 423 – National Emissions Standards for Hazardous Air Pollutants	**Yes.** This Rule establishes national emission and operating limitations for hazardous air pollutants (HAP) emitted from stationary reciprocating internal combustion engines (RICE) at a major and area sources of HAP emissions. Requirements to demonstrate initial and continuous compliance with limitations are also established. By meeting ATCM emission requirements, the engines in this project comply with the requirements of 40 CFR Part 60 Subpart IIII, which satisfies the requirements of 40 CFR 63 Subpart ZZZZ.
Rule 427 – Stationary Piston Engine.	**Yes.** This rule limit oxides of nitrogen from stationary piston engine to levels consistent with Reasonable Available Control Technology (RACT) to satisfy California Health & Safety Code (CH&SC) Section 40918 (b). Emergency generators in this

TABLE 5.1-11 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
	project driven by the 3,621-bhp and 460-bhp diesel engines will be permitted to operate 200 hours per year, as required by **AQ-4**. Therefore, owner/operator of the engines is not required to comply with Rule 427.

5.1.4 Comments and Responses on the Preliminary Staff Assessment

Response to Comments from the Applicant (TN 264316)

The project applicant submitted comments (TN 264316) on the Air Quality section of the Preliminary Staff Assessment (PSA). Staff prepared the following responses to comments.

Comment: One comment on pages 6 and 7 requests edits to COC **AQ-SC3**. The comment requests to add the option of soil stabilizers in addition to watering to minimize fugitive dust. The comment requests to remove the requirement to increase watering or soil stabilizers when wind speeds exceed 15 mph. The comment requests to remove the opacity measurement as it is not applicable to fugitive dust sources. The comment requests to remove #7 as it is redundant to #6. The comment also requests to remove #13 as it is not applicable to desert climate.

Response: Staff agrees with all edits except: 1) removing the watering frequency application of "minimum of three times daily" in active excavation or grading areas in bullet #1 of COC **AQ-SC3**; and 2) removing the requirement to increase watering or soil stabilizers when wind speeds exceed 15 mph, and rather focuses on watering or treatment to minimize wind-blown dust "as needed" in bullet #6 of COC **AQ-SC3**. For worker protections from Valley Fever exposure and dust impacts, it is necessary to keep the watering frequency of three times a day in active excavation or grading areas in bullet #1 of COC **AQ-SC3**. In addition, staff consulted with Kern County Planning and Natural Resources Department. It is the experience of the County that what an applicant may consider "as needed" in the desert region is not sufficient. This project is situated next to Sierra Highway and Highway 14, and windblown dust during high wind events (in excess of 15 mph) could obscure these major roadways. Therefore, the requirement to increase dust control during high wind events needs to remain in bullet #6 of COC **AQ-SC3**.

Comment: One comment on page 7 requests to remove "...This measure would minimize the use of higher polluting gas or diesel generators..." in bullet #7 of COC **AQ-SC5**.

Response: Staff agrees with this edit as it only states the potential benefit of using electric power sources without describing an enforceable requirement.

Comment: Multiple comments on page 7 request edits to the verification of COCs **AQ-7, AQ-17 and AQ-18**. These comments request the submission of a manufacturer's certification in lieu of operating data to demonstrate compliance. The applicant states that "…the only way to provide 'operating data' to demonstrate compliance with this condition is to conduct a source test. Engines typically only run for 30 minutes once a month. That is not long enough to complete a source test…"

Response: Staff agrees with the edits. Staff consulted with EKAPCD. There are no source testing requirements for the emergency-use engines. The emissions limits were established using state emission standards. Therefore, compliance should be demonstrated by maintaining a copy of emissions certificate, maintaining records of hours of operation and records of applicable maintenance items.

Response to comment from California Unions for Reliable Energy (CURE) (TN 264343)

Comment: CURE asserts that the PSA lacks substantial evidence to conclude Valley Fever impacts are less than significant because the identified mitigation measures are designed to address dust and not the smaller spores. CURE also presents *Attachment A Comments On Willow Rock Energy Storage Center Project, Kern County, CA*, authored by Dr. Clark (18 pages).

Staff response: Please see the detailed responses in Section 4.4, Worker Safety and Fire Protection which address specific issues raised by Dr. Clark regarding Valley Fever and discuss staff's modifications to **Worker Safety-7** condition based on recommendations from Dr. Clark. With the implementation of **PH-1**, **WORKER SAFETY-7**, **AQ-SC3**, and **AQ-SC4**, Valley Fever exposure risks for on-site personnel and the general public would be effectively minimized.

5.1.5 Conclusions and Recommendations

As discussed above, with implementation of COCs, the project would have a less than significant impact related to air quality and would conform with applicable LORS. CEC staff recommends adopting the COCs as detailed in subsection "5.1.5 Proposed Conditions of Certification" below.

5.1.6 Proposed Conditions of Certification

The following proposed COCs include measures to both mitigate environmental impacts and ensure conformance with applicable LORS. Staff proposes the following COCs (identified as the **AQ-SCx** series of conditions) to provide measures to mitigate environmental impacts and ensure conformance with applicable LORS.

AQ-SC1 Air Quality Construction Mitigation Manager (AQCMM): The project owner shall designate and retain an on-site AQCMM who shall be responsible for directing and documenting compliance with COCs **AQ-SC3**, **AQ-SC4** and **AQ-SC5** for the entire project site. The on-site AQCMM may delegate responsibilities to one or

more AQCMM Delegates. The AQCMM and AQCMM Delegates shall have full access to all areas of construction on the project site and shall have the authority to stop any or all construction activities as warranted by applicable construction mitigation conditions. The AQCMM and AQCMM Delegates may have other responsibilities in addition to those described in this condition. The AQCMM shall not be terminated without written consent of the Compliance Project Manager (CPM).

Verification: At least 30 days prior to the start of ground disturbance, the project owner shall submit to the CPM for approval, the name, resume, qualifications, and contact information for the on-site AQCMM and all AQCMM Delegates.

AQ-SC2 Air Quality Construction Mitigation Plan (AQCMP): The project owner shall provide an AQCMP, for approval, which details the steps that will be taken and the reporting requirements necessary to ensure compliance with COCs **AQ-SC3**, **AQ-SC4**, and **AQ-SC5**.

Verification: At least 30 days prior to the start of any ground disturbance, the project owner shall submit the AQCMP to the CPM for approval. The CPM will notify the project owner of any necessary modifications to the plan within 15 days from the date of receipt.

AQ-SC3 Construction Fugitive Dust Control: The AQCMM shall submit documentation to the CPM in each Monthly Compliance Report that demonstrates compliance with the Air Quality Construction Mitigation Plan (AQCMP) mitigation measures for the purposes of minimizing fugitive dust emission creation from construction activities and preventing all fugitive dust plumes that would not comply with the performance standards identified in **AQ-SC4** from leaving the project site. Any deviation from the AQCMP mitigation measures shall require prior CPM notification and approval.

Report monthly on the following fugitive dust mitigation measures that shall be included in the Air Quality Construction Mitigation Plan (AQCMP) required by **AQ-SC2**:

1. All soil being actively excavated or graded and all crushed rocks shall be sufficiently watered or stabilized to prevent excessive dust. Watering or the application of soil stabilizers shall occur as needed with complete coverage of disturbed soils areas. Watering shall take place a minimum of three times daily where soil is being actively disturbed, unless dust is otherwise controlled by rainfall or use of soil stabilizers.
2. Vehicle speed for all on site (i.e., within the project boundary) construction vehicles shall not exceed 15 mph on any unpaved surface at the construction site. Signs identifying construction vehicle speed limits shall be posted along onsite roadways, at the site entrance/exit, and along unpaved site access roads.

3. Vehicle speeds on all offsite unpaved project-site access roads (i.e., outside the project boundary) construction vehicles shall not exceed 25 mph. Signs identifying vehicle speed limits shall be posted along unpaved site access roads and at the site entrance/exit.
4. All onsite unpaved roads and offsite unpaved public project-site access road(s) shall be effectively stabilized of dust emissions using water or EKAPCD-approved dust suppressants/palliatives, sufficient to minimize visible wind-blown dust at nearby residences or public roads. During the dry season, unpaved road surfaces and vehicle parking/staging areas shall be watered or otherwise stabilized immediately prior to periods of high use (e.g., worker commute periods, truck convoys). Reclaimed (non-potable) water shall be used to the extent available and feasible.
5. The amount of the disturbed area (e.g., grading, excavation, cavern) shall be reduced and/or phased where possible.
6. All disturbed areas shall be sufficiently watered or stabilized by EKAPCD-approved methods to prevent excessive dust. Watering frequency or the use of soil stabilizers shall be increased whenever wind speeds exceed 15 mph or, as necessary, to minimize visible wind-blown dust at nearby residences or public roads. If water is used in place or to supplement soil stabilizers, then reclaimed (non-potable) water shall be used to the extent available and feasible.
7. All disturbed areas anticipated to be inactive for periods of 30 days or more shall be treated to minimize wind-blown dust emissions. Treatment may include, but is not limited to, the application of an EKAPCD-approved chemical dust suppressant, gravel, hydro-mulch, revegetation/seeding, or wood chips.
8. All active and inactive disturbed surface areas shall be stabilized, where feasible.
9. Equipment and vehicle access to disturbed areas shall be limited to only those vehicles necessary to complete the construction activities.
10. Where applicable, permanent dust control measures shall be implemented as soon as possible following completion of any soil-disturbing activities.
11. Stockpiles of dirt or other fine loose material shall be stabilized by watering or other appropriate methods sufficient to reduce visible dust plumes. If necessary and where feasible, three-sided barriers shall be constructed around storage piles and/or piles shall be covered by use of tarps, hydro-mulch, woodchips, or other materials sufficient to minimize wind-blown dust.
12. All trucks hauling dirt, sand, soil, excavated materials or other loose materials shall be covered or shall maintain at least six inches of freeboard (minimum vertical distance between top of the load and top of the trailer) in accordance with California Vehicle Code Section 23114.

13. Gravel pads, grizzly strips, or other material track-out control methods approved for use by EKAPCD shall be installed where vehicles enter or exit unpaved roads onto paved roadways.
14. Haul trucks and off-road equipment leaving the site shall be washed with water or high-pressure air, and/or rocks/grates at the project entry points shall be used, when necessary, to remove soil deposits and minimize the track-out/deposition of soil onto nearby paved roadways.
15. During construction paved road surfaces adjacent to the site access road(s), including adjoining paved aprons, shall be cleaned, as necessary, to remove visible accumulations of track-out material. If dry sweepers are used, the area shall be sprayed with water prior to sweeping to minimize the entrainment of dust. Reclaimed water shall be used to the extent available.
16. Portable equipment, 50 horsepower or greater, used during construction activities (e.g., portable generators) shall require California statewide portable equipment registration (issued by CARB) or an EKAPCD permit.
17. Signs shall be posted at the project site entrance and written notifications shall be provided a minimum of 30 days prior to initiation of project construction to residential land uses within 1,000 feet of the project site. The signs and written notifications shall include the following information: (a) Project Name; (b) Anticipated Construction Schedule(s); and (c) Telephone Number(s) for designated construction activity monitor(s) or, if established, a complaint hotline.
18. The designated construction monitor shall document and immediately notify EKAPCD of any air quality complaints received. If necessary, the project operator and/or contractor will coordinate with EKAPCD to identify any additional feasible measures and/or strategies to be implemented to address public complaints.
19. The main access roads through the facility will be either paved or stabilized using soil binders, or equivalent methods, to provide a stabilized surface that is similar for the purposes of dust control to paving, that may or may not include a crushed rock (gravel or similar material with fines removed) top layer, prior to initiating construction, and delivery areas for operations materials (chemicals, replacement parts, etc.) will be paved or treated prior to taking initial deliveries.
20. Construction areas adjacent to any paved roadway below the grade of the surrounding construction area or otherwise directly impacted by sediment from site drainage shall be provided with sandbags or other equivalently effective measures to prevent run-off to roadways, or other similar run-off control measures as specified in the Storm Water Pollution Prevention Plan (SWPPP), only when such SWPPP measures are necessary so that this condition does not conflict with the requirements of the SWPPP.

21. At least the first 500 feet of any paved public roadway exiting the construction site or exiting other unpaved roads en route from the construction site or construction staging areas shall be swept as needed (less during periods of precipitation) on days when construction activity occurs or on any other day when dirt or runoff resulting from the construction site activities is visible on the public paved roadways.

Verification: The AQCMM shall provide the CPM a Monthly Compliance Report to include the following to demonstrate control of fugitive dust emissions:

a. A summary of all actions taken to maintain compliance with this condition;

b. Copies of any complaints filed with the EKAPCD in relation to project construction; and

c. Any other documentation deemed necessary by the CPM and AQCMM to verify compliance with this condition. Such information may be provided via electronic format or disk at the project owner's discretion.

AQ-SC4 Dust Plume Response Requirement: The AQCMM or an AQCMM Delegate shall monitor all construction activities for visible dust plumes. Observations of visible dust plumes that have the potential to be transported (A) off the project site and within 400 feet upwind of any regularly occupied structures not owned by the project owner or (B) 200 feet beyond the centerline of the construction of linear facilities indicate that existing mitigation measures are not resulting in effective mitigation. The AQCMP shall include a section detailing the additional mitigation measures described in the verification below and how they will be implemented to meet these fugitive dust control performance standards.

The AQCMM or Delegate shall implement the following procedures for additional mitigation measures if visible dust plumes as defined above are observed:

Step 1: The AQCMM or Delegate shall direct more intensive application of the existing mitigation methods within 15 minutes of making such a determination.

Step 2: The AQCMM or Delegate shall direct implementation of additional methods of dust suppression if Step 1, specified above, fails to result in adequate mitigation within 30 minutes of the original determination.

Step 3: The AQCMM or Delegate shall direct a temporary shutdown of the activity causing the emissions if Step 2, specified above, fails to result in effective mitigation within one hour of the original determination. The activity shall not restart until the AQCMM or Delegate is satisfied that appropriate additional mitigation or other site conditions have changed so that visual dust plumes will not result upon restarting the shutdown source. The project owner may appeal to the CPM any directive from the AQCMM or Delegate to shut down an activity, if the shutdown shall go into effect within one hour of the original determination, unless overruled by the CPM before that time.

Verification: The AQCMM shall provide the CPM a Monthly Compliance Report to include:

a. A summary of all actions taken to maintain compliance with this condition;

b. Copies of any complaints filed with the EKAPCD in relation to project construction; and

c. Any other documentation deemed necessary by the CPM and AQCMM to verify compliance with this condition. Such information may be provided via electronic format or disk at the project owner's discretion.

AQ-SC5 Diesel-Fueled Engine Control: The AQCMM shall submit to the CPM, in the Monthly Compliance Report, a construction mitigation report that demonstrates compliance with the AQCMP mitigation measures for purposes of controlling diesel construction-related emissions. Any deviation from the AQCMP mitigation measures shall require prior and CPM notification and approval.

The following off-road diesel construction equipment mitigation measures shall be included in the Air Quality Construction Mitigation Plan (AQCMP) required by **AQ-SC2**:

1. All diesel-fueled engines used in the construction of the facility shall have clearly visible tags issued by the on-site AQCMM showing that the engine meets the conditions set forth herein.

2. All construction diesel engines with a rating of 25 hp or higher shall meet, at a minimum, the Tier 4 Final California Emission Standards for Off-Road Compression-Ignition Engines, as specified in California Code of Regulations, Title 13, section 2423(b)(1), unless a good faith effort to the satisfaction of the CPM that is certified by the on-site AQCMM demonstrates that such engine is not available for a particular item of equipment. In the event that a Tier 4 Final engine is not available for any off-road equipment larger than 50 hp, a Tier 4 Interim or Tier 3 engine shall be used or that equipment shall be equipped with retrofit controls to reduce exhaust emissions of nitrogen oxides (NOx) and diesel particulate matter (DPM) to no more than Tier 3 levels unless certified by engine manufacturers or the on-site AQCMM that the use of such devices is not practical for specific engine types. For purposes of this condition, the use of such devices is "not practical" for the following, as well as other, reasons.

   i. There is no available retrofit control device that has been verified by either the California Air Resources Board or U.S. Environmental Protection Agency to control the engine in question or

   ii. The construction equipment is intended to be on site for 10 days or less; or

iii. The CPM may grant relief from this requirement if the AQCMM can demonstrate a good faith effort to comply with this requirement and that compliance is not practical.

3. The use of a retrofit control device may be terminated immediately, provided that the CPM is informed within 10 working days of the termination and that a replacement for the equipment item in question meeting the controls required in item "b" occurs within 10 days of termination of the use, if the equipment would be needed to continue working at this site for more than 15 days after the use of the retrofit control device is terminated, if one of the following conditions exists:

   i. The use of the retrofit control device is excessively reducing the normal availability of the construction equipment due to increased down time for maintenance, and/or reduced power output due to an excessive increase in back pressure.

   ii. The retrofit control device is causing or is reasonably expected to cause engine damage.

   iii. The retrofit control device is causing or is reasonably expected to cause a substantial risk to workers or the public.

   iv. Any other seriously detrimental cause which has the approval of the CPM prior to implementation of the termination.

4. All heavy earth-moving equipment and heavy duty construction-related trucks with engines meeting the requirements of (b) above shall be properly maintained and the engines tuned to the engine manufacturer's specifications.

5. All diesel heavy construction equipment shall not idle for more than five minutes. Vehicles that need to idle as part of their normal operation (such as concrete trucks) are exempted from this requirement. Notification shall be provided to trucks and vehicles in loading or unloading queues that their engines shall be turned off when not in use for more than 5 minutes.

6. Construction equipment will employ zero-emission or hybrid powertrains and electric motors when feasible.

7. Existing electric power sources shall be used to the extent feasible.

8. The hours of operation of heavy-duty equipment and/or the quantity of equipment in use shall be limited to the extent feasible.

Verification: The AQCMM shall include in the Monthly Compliance Report the following to demonstrate control of diesel construction-related emissions:

a. A summary of all actions taken to control diesel construction related emissions;

b. A list of all heavy equipment used on site during that month, including the owner of that equipment and a letter from each owner indicating that equipment has been properly maintained; and

c. Any other documentation deemed necessary by the CPM, and the AQCMM to verify compliance with this condition. Such information may be provided via electronic format or disk at the project owner's discretion.

AQ-SC6 New Source Review Permits: The project owner shall provide the CPM copies of any APCD issued Authority to Construct (ATC) and Permit to Operate (PTO) for the facility. The project owner shall submit to the CPM for review and approval any modification proposed by the project owner to any project air permit. The project owner shall submit to the CPM any modification to any permit proposed by the APCD or U.S. Environmental Protection Agency (U.S. EPA), and any revised permit issued by the APCD or U.S. EPA, for the project.

Verification: The project owner shall submit any ATC, PTO, and proposed air permit modification to the CPM within 5 working days of its submittal either by 1) the project owner to an agency, or 2) receipt of proposed modifications from an agency. The project owner shall submit all modified air permits to the CPM within 15 days of receipt.

AQ-SC7 The project owner shall perform readiness testing and maintenance on only one (1) diesel-fired emergency generator or the diesel fire water pump in a single hour.

Verification: The project owner shall demonstrate compliance with this condition in the Quarterly Operational Reports.

AQ-SC8 The project owner shall submit to the CPM Quarterly Operation Reports, following the end of each calendar quarter, that include operational and emissions information as necessary to demonstrate compliance with the COCs herein. The Quarterly Operation Report shall specifically note or highlight incidences of noncompliance.

Verification: The project owner shall submit the Quarterly Operation Reports to the CPM no later than 30 days following the end of each calendar quarter.

District Final Determination of Compliance Conditions (EKAPCD 2024)

The following EKAPCD conditions apply to each unit of equipment, and the proposed facility as a whole.

0570001-003: 2,500-kW Kohler emergency generator set model KD2500, driven by 3,621-bhp Liebherr Machines Bulle Model KD62V12-6CNS, EPA Certified (Tier 4) diesel fueled piston engine with turbocharger, after cooler,

and Selective Catalytic Reduction (SCR). (EPA family PLHAL103.ESP and S/N TBD).

0570004: Emergency fire pump, driven by 460-bhp Cummins Model QSX15, EPA Certified (Tier 3) diesel fueled piston engine with turbocharger and after cooler. (EPA family RCEXL015.AAH and S/N TBD).

AQ-1 Engine shall be equipped with turbocharger and charge air cooler. (Rule 210.1 BACT Requirement)

Verification: The project owner shall make the site available for inspection of records by representatives of the District, CARB, and the CEC.

AQ-2 Elapsed time meter shall be installed and maintained indicating cumulative hours of engine operating time. (Rule 210.1)

Verification: The project owner shall make the site available for inspection of records by representatives of the District, CARB, and the CEC.

AQ-3 Engine shall be equipped with a permanently affixed placard readily available for inspection with the following engine information: brake horsepower, make, model, serial number, and Tier number. (Rule 210.1)

Verification: The project owner shall make the site available for inspection of records by representatives of the District, CARB, and the CEC.

AQ-4 Total hours of operation (excluding maintenance and testing) shall not exceed 200 hours per year without prior District approval. (Rule 210.1)

Verification: The project owner shall submit to the CPM operating data to demonstrate compliance with this condition as part of the Quarterly Operation Reports (**AQ-SC8**).

AQ-5 Engine visible emissions shall be less than 5% opacity or Ringelmann No. ¼ during normal operation, except for not more than 3 minutes in any one hour. (Rule 210.1 BACT Requirement)

Verification: The project owner shall submit to the CPM operating data to demonstrate compliance with this condition as part of the Quarterly Operation Reports (**AQ-SC8**).

AQ-6 Fuel for diesel piston engine shall conform to California Air Resources Board standards for reformulated diesel fuel (low sulfur content, 0.0015% by weight). (Rule 210.1 BACT Requirement)

Verification: The project owner shall submit to the CPM operating data to demonstrate compliance with this condition as part of the Quarterly Operation Reports (**AQ-SC8**).

AQ-7 Exhaust gas particulate matter concentration shall not exceed 0.1 grains/ft^3 of gas at standard conditions. (Rule 404.1)

Verification: The project owner shall submit to the CPM a manufacturer's certification that the equipment complies with this limit as part of the Quarterly Operation Reports (**AQ-SC8**).

AQ-8 Equipment shall be maintained according to manufacturer's specifications to ensure compliance with emission limitations. (Rules 209 and 210.1)

Verification: The project owner shall make the site available for inspection of records by representatives of the District, CARB, and the CEC.

AQ-9 Operation of equipment shall be conducted in compliance with all data and specifications submitted with application under which this permit is issued. (Rule 210.1)

Verification: The project owner shall make the site available for inspection of records by representatives of the District, CARB, and the CEC.

AQ-10 Engine shall comply with the requirements of California Code of Regulations Title 17, Section 93115 (Airborne Toxic Control Measure for Stationary Compression Ignition (CI) Engine). (Cal. Code Regs., Tit. 17, Sections 93115 – 93115.15)

Verification: The project owner shall make the site available for inspection of records by representatives of the District, CARB, and the CEC.

AQ-11 Maintenance and testing shall be limited to no greater than 50 hours per year. (Cal. Code Regs., Tit. 17, Section 93115)

Verification: The project owner shall submit to the CPM operating data to demonstrate compliance with this condition as part of the Quarterly Operation Reports (**AQ-SC8**).

AQ-12 Compliance with all operational conditions shall be verified by appropriate recordkeeping, including records of operational data needed to demonstrate compliance. Such records shall be kept on site in readily available format. (Rule 210.1)

Verification: The project owner shall make the site available for inspection of records by representatives of the District, CARB, and the CEC.

AQ-13 Operating record of equipment shall be maintained in format approved in writing by District kept for a minimum of three years, and made available upon request of District personnel. Record shall include, at minimum, days and hours of operation, amount of fuel oil supplied to this engine, date(s) fuel was supplied, and engine maintenance check(s) including: air filters, fuel filters, oil filters, engine oil, exhaust system, coolant, and spark plugs (if so equipped), hours of operation for emergency use, hours of operation for maintenance and testing, hours of operation for all uses other than those specified in sections 93115.10(f)(1)(A) through (D), and the fuel used. (Cal. Code Regs., Tit. 17, Section 93115 and Rule 210.1).

Verification: The project owner shall make the site available for inspection of records by representatives of the District, CARB, and the CEC.

AQ-14 No emission resulting from use of this equipment shall cause injury, detriment, nuisance, annoyance to or endanger comfort, repose, health or safety of any considerable number of persons or public. (Rule 419 and Health & Saf. Code, Section 41700)

Verification: The project owner shall make the site available for inspection of records by representatives of the District, CARB, and the CEC.

AQ-15 Facility shall comply with California Health and Safety Code Sections 44300 through 44384. (Rule 208.1)

Verification: The project owner shall make the site available for inspection of records by representatives of the District, CARB, and the CEC.

AQ-16 Should inspection reveal conditions indicative of non-compliance, compliance with any emission limitations shall be verified within 60 days of District request. Test results shall be submitted to the District within 30 days after test completion. (Rule 108.1 and 209)

Verification: The project owner shall submit to the CPM operating data to demonstrate compliance with this condition as part of the Quarterly Operation Reports (**AQ-SC8**).

AQ-17 Maximum emissions rate of each air contaminant from each emergency generator shall not exceed following limits:

Particulate Matter (PM10):	0.02 gm/bhp-hr 0.16 lb/hr 3.83 lb/day 0.02 ton/yr
Sulfur Oxides (SOx as SO2):	0.04 lb/hr 0.88 lb/day

	4E-3 ton/yr
Oxides of Nitrogen (NOx as NO2):	0.50 gm/bhp-hr 3.99 lb/hr 95.80 lb/day 0.40 ton/yr
Volatile Organic Compounds (VOC): (as defined in Rule 210.1)	0.14 gm/bhp-hr 1.12 lb/hr 26.82 lb/day 0.11 ton/yr
Carbon Monoxide:	2.6 gm/bhp-hr 20.76 lb/hr 498.14 lb/day 2.08 ton/yr

(Emissions limits established pursuant to Rule 210.1 unless otherwise noted)

Compliance with maximum daily emission limits shall be verified by source operator (with appropriate operational data and recordkeeping to document maximum daily emission rate) each day source is operated and such documentation of compliance shall be retained and made readily available to District for period of three years. (Rule 210.1)

Verification: The project owner shall submit to the CPM operating data to demonstrate compliance with this condition as part of the Quarterly Operation Reports (**AQ-SC8**). Compliance with hourly limits may be demonstrated by providing the CPM with a copy of the manufacturer's certification of emissions performance. Compliance with daily and annual limits may be demonstrated by multiplying hours of operation by manufacturer's certified emissions performance or EKAPCD-approved emission factors.

AQ-18 Maximum emissions rate of each air contaminant from the fire pump shall not exceed following limits:

Particulate Matter (PM10):	0.15 gm/bhp-hr (ATCM Standard) 0.15 lb/hr 3.65 lb/day 0.02 ton/yr
Sulfur Oxides (SOx as SO2):	0.01 lb/hr 0.12 lb/day 1E-3 ton/yr
Oxides of Nitrogen (NOx as NO2):	2.85 gm/bhp-hr (ATCM Standard) 2.89 lb/hr

	69.37 lb/day 0.29 ton/yr
Volatile Organic Compounds (VOC): (as defined in Rule 210.1)	0.15 gm/bhp-hr (ATCM Standard) 0.15 lb/hr 3.65 lb/day 0.02 ton/yr
Carbon Monoxide:	2.6 gm/bhp-hr (ATCM Standard) 2.64 lb/hr 63.28 lb/day 0.26 ton/yr

(Emissions limits established pursuant to Rule 210.1 unless otherwise noted)

Compliance with maximum daily emission limits shall be verified by source operator (with appropriate operational data and recordkeeping to document maximum daily emission rate) each day source is operated and such documentation of compliance shall be retained and made readily available to District for period of three years. (Rule 210.1)

Verification: The project owner shall submit to the CPM operating data to demonstrate compliance with this condition as part of the Quarterly Operation Reports (**AQ-SC8**). Compliance with hourly limits may be demonstrated by providing the CPM with a copy of the manufacturer's certification of emissions performance. Compliance with daily and annual limits may be demonstrated by multiplying hours of operation by manufacturer's certified emissions performance or EKAPCD-approved emission factors.

5.1.7 References

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5.2 Biological Resources

Testimony of Chris Huntley and Jamie Miner

This section describes the biological resources present or with the potential to occur in or near the proposed Willow Rock Energy Storage Center Project (WRESC or Willow Rock). In addition, this section provides the regulatory background, discusses impacts associated with the construction and operation of the proposed project, and identifies conditions of certification (COCs) to reduce impacts to sensitive biological resources where possible.

The analysis in this section is based on information described in the technical studies and surveys conducted by the applicant, independent staff review of existing literature, coordination with regulatory agencies including the California Department of Fish and Wildlife (CDFW) and Lahontan Regional Water Quality Control Board (LRWQCB), and a review of electronically filed comments. CEC staff also conducted multiple reconnaissance level surveys and project site visits in 2024 and 2025.

For the purposes of this analysis, “project area” refers to the areas that would be subject to permanent or temporary ground disturbance plus a 50-foot buffer. The term “study area” refers to the project site plus a 1000-foot buffer around the WRESC and a 500-foot buffer around the gen-tie alignment.

5.2.1 Environmental Setting

This section describes the environmental setting and baseline conditions for biological resources associated with the project. Vegetation types within the project area and study area are described to characterize botanical resources and wildlife habitat values. Biotic habitats suitable for the occurrence of special-status plant and wildlife species are also described below.

Regional Setting

The United States Environmental Protection Agency (USEPA) has established ecoregions which describe ecosystems that share common climactic and vegetation characteristics. Ecoregions are hierarchically organized and range from Level I to Level IV. Level I identifies 15 broadly defined areas with general characteristics and each subsequent level thereafter features smaller and more inclusive ecological regions that provide greater detail. The project area is categorized by the following: North American Deserts (Level I), Warm Deserts (Level II), Mojave Basin and Range (Level III), and Western Mojave Basin (Level IV) (USEPA 2025).

The Level III Mojave Basin spans through the southeastern and central portions of California, smaller parts of southern Nevada, and northwestern Arizona. The region experiences four distinct seasons with large diurnal fluctuations in temperature. Winter storms from the northern Pacific Ocean can bring rain into the region; however, the Sierra Nevada Mountain Range acts as a boundary that prevent west coast moisture

and storms from moving east. The rain shadow that the Sierra Nevada Mountain Range creates causes this region to be the hottest and driest portion of the Mojave Desert. In some of the driest sites, average rainfall can be less than 2 inches. Winter temperatures have been recorded to drop to 20° Celsius in the valleys (Bunn et al. 2007). Despite the arid climate, the region supports a large variety of flora and fauna, many of which have evolved specifically for the region. Common habitats found typically include creosote bush scrub, desert saltbush scrub, Joshua tree woodland, desert wash, alkali scrub, and juniper-pinyon woodland.

The Level IV Western Mojave Basins Ecoregion includes the alluvial plains, fans, and bajadas of the major valleys lying between the scattered, low and arid mountain ranges and foothills of the western Mojave Desert. There is some variation in climate and vegetation from north to south, but the basins typically are dominated by creosote bush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*), with areas of shadscale (*Atriplex confertifolia*), four-wing saltbush (*A. canescens*), and on some upper bajadas and fans, scattered western Joshua trees (*Yucca brevifolia*).

Local Setting

The project area encompasses the approximately 88.6-acre WRESC site, an additional 133 acres of private land parcels surrounding the WRESC site (referred to as P1, P2 North, P2 South, and Villa Haines) that will be allocated for potential temporary staging and laydown areas, and the roughly 380.0-acre right-of-way (ROW) associated with a new approximately 19-mile 230-kilovolt (kV) generation-tie (gen-tie) line plus a 500-foot buffer. The final site boundary and potential construction laydown areas would depend on whether excavated cavern rock would be hauled to offsite facilities in Kern County and Los Angeles County (Option 1 – Without Berm) or if excavated cavern rock would be repurposed onsite for an architectural berm on the west and north sides of the facility (Option 2 - With Berm).

The WRESC site would be on private land immediately north of Dawn Road and between State Route (SR) 14 and Sierra Highway in the rural community of Ansel within unincorporated southeastern Kern County. Energy stored at the WRESC site would be delivered to the Southern California Edison (SCE) Whirlwind Substation southwest of the WRESC site at the intersection of 170th Street West and Rosamond Boulevard via the new gen-tie line. The gen-tie line will be existing road ROWs, including Dawn Road, Rosamond Boulevard, Mojave Tropico Road, Felsite Avenue, and West 65th Street. The gen-tie would include several optional routes connecting the WRESC to the Dawn Road ROW.

The WRESC site is within the 7.5-minute Soledad Mountain U.S. Geological Survey (USGS) topographic quadrangle. The gen-tie route and variances are within the Soledad Mountain, Rosamond, Fairmont Butte, and Little Buttes topographical quadrangles.

The entire project site is within portions of Sections 31, 32, and 33 of Township 10 North and Range 12 West; portions of Section 36 of Township 10 North and Range 13

West; portions of Section 4 of Township 9 North and Range 12 West; portions of Sections 1, 2, 11, 14, 15, 16, 17, and 18 of Township 9 North and Range 13 West; portions of Sections 13, 14, 15, 16, 17, and 18 of Township 9 North and Range 14 West; and portions of Sections 13, 14, and 23 of Township 9 North and Range 15 West (WSP 2024d; WSP 2024v). A small section of the preferred gen-tie alignment traverses two parcels owned by the Bureau of Land Management (BLM).

Topography in the project site slopes from northwest to southeast with flat areas in the southern portions and gently rolling hills in the central portion. Elevations range from approximately 2,400 feet (732 meters) in the southeast corner of the gen-tie line at the corner of Rosamond Boulevard and 65th Street West to 2,720 feet (830 meters) along Dawn Road, just south of an existing water tank facility (WSP 2024d). Dominant soils within the project area consist of sandy loams.

The annual average total precipitation at the nearby Lancaster, CA WETS Station is 6.00 inches (15 centimeters), per data from the past 20 years (NRCS 2023). Over the last five years, the yearly average total precipitation has been recorded at 6.60 inches (16.8 centimeters). According to climatological data referenced at Rosamond Skypark Airport (KCAROSAM2), total rainfall for 2023 was recorded at 11.03 inches.

Surrounding land uses are largely undeveloped and include open areas of desert, sparse residential development, existing renewable energy facilities, and agricultural fields.

Vegetation and Landforms

The dominant vegetation communities that occur in the project site reflect those commonly found throughout the Western Mojave Basins Ecoregion. Portions of the project site and surrounding area have been subject to ongoing disturbance from existing infrastructure and road development, illegal dumping, recreational use, and other activities.

Vegetation Mapping

The applicant conducted vegetation mapping within the study area in 2023 and 2024 to determine the vegetation communities and habitat suitability for special-status and listed species. Mapping was completed following the *National Vegetation Classification System per the Manual of California Vegetation (MCV), Second Edition* (Sawyer et al. 2009). ArcGIS Collector software was used to map various vegetation communities and all relevant data, including dominant and subdominant plant species. For any community that could not be easily classified under the MCV, the *Preliminary Descriptions of the Terrestrial Natural Communities of California* was used (Holland 1986). The applicant's biologists drove throughout the entire study area, where accessible, and accessed areas as needed on foot. The project site and adjacent areas were characterized to describe their existing conditions and current land uses. A total of 100 plant species were observed during the vegetation mapping efforts, of which 91 were native species and 11 non-native species. A summary of vegetation communities

occurring within the study area is presented in **Table 5.2-1** (Vegetation Communities and Land Cover Types within the Study Area) and are presented in Appendix C.

For the purposes of this analysis, staff are using the latest vegetation maps provided by the applicant. Staff also recognizes there are limitations and challenges when mapping large areas using aerial imagery. Mapping vegetation communities over a large area and over a long period of time has inherent limitations. Vegetation communities overlap in most characteristics and, over time, will shift from one community type to another. Natural and anthropogenic processes, such as flooding, grazing, and off-highway vehicle (OHV) use may result in type conversion of habitats over a progressive period of time as habitats begin to recover. In addition, all vegetation maps and descriptions are subject to imprecision resulting from several sources, including:

- Vegetation types tend to intergrade on the landscape, without precise boundaries among them. Even distinct boundaries can be disguised after years of post-disturbance succession (i.e., the process by which vegetation communities' changes over time). Mapped boundaries represent best professional judgment, but usually should not be interpreted as literal delineations among sharply defined vegetation types.
- Natural vegetation tends to exist in general recognizable types, but also may vary over time and geographic region. Written descriptions cannot reflect all local or regional variation. Many (perhaps most) stands of natural vegetation do not strictly fit into any named type. Therefore, a mapped unit is given the best name available in the classification, but this name does not imply that the vegetation clearly matches written descriptions.
- Vegetation tends to be patchy. Small patches of one named type are often included within larger stands mapped as units of another type. In desert habitats, which occur at the project site, broadly defined monotypic vegetation communities (i.e., vegetation communities dominated by a single species) often mask smaller plant associations or other vegetation types that are not easily observed from aerial imagery alone. Similarly, smaller units of desert wash vegetation are often a small component within larger upland communities. Photo interpretation of some types may be difficult, and accuracy of a vegetation map will vary depending on ground-truthing efforts.

TABLE 5.2-1 VEGETATION COMMUNITIES AND LAND COVER TYPES WITHIN THE STUDY AREA

Vegetation Community/Land Cover Type	Acreage
Allscale Scrub	571.36
Cheesebush Scrub	114.49
Creosote Bush – White Bursage Series	1,447.42
Creosote Bush Scrub	154.06
Disturbed/Developed	1,069.07
Joshua Tree Woodland	83.82

TABLE 5.2-1 VEGETATION COMMUNITIES AND LAND COVER TYPES WITHIN THE STUDY AREA	
Needleleaf Rabbitbrush Scrub	77.08
Non-Native Grassland and Forbs	151.49
Rubber Rabbitbrush Scrub	119.35
Tamarisk Thickets	2.21
White Bursage Scrub	80.55
Total	**3,913.17**

Sources: ESHD 2024i; WSP 2024d; WSP 2024v

Allscale Scrub. A total of 571.36 acres of allscale habitat was mapped in the study area (WSP 2024d; WSP 2024v). Allscale scrub is dominated by allscale (*Atriplex polycarpa*). This vegetation community also contains four-wing saltbush (*Atriplex canescens*), shadscale saltbush (*Atriplex confertifolia*), and creosote bush (*Larrea tridentata*) with subdominant species that include shortpod mustard (*Hirschfeldia incana*), dove weed (*Croton setiger*), Nevada ephedra (*Ephedra nevadensis*), and western Joshua tree (*Yucca brevifolia*). Shrubs are generally less than 10 feet (3 meters) in height, and understory consists of seasonal annuals. Total shrub cover varies throughout the project site with increased cover corresponding with greater dominance by creosote bush.

Cheesebush Scrub. A total of 114.49 acres of cheesebush scrub habitat was mapped in the study area (WSP 2024d). Cheesebush (*Ambrosia salsola*) is the dominant species and is characterized as a low-growing, small grayish-green shrub commonly found in desert areas. Other species identified in this vegetation community include California matchweed (*Gutierrezia californica*) and rubber rabbitbrush (*Ericameria nauseosa*). Additionally, this vegetation community exhibits low overall cover and large gaps between shrubs. Shrubs are generally less than 6.5 (2 meters) in height and understory is generally sparse, but when present typically consists of a variety of seasonal annuals.

Creosote Bush – White Bursage Series. A total of 1,447.42 acres of creosote bush – white bursage series habitat was mapped in the study area (WSP 2024d; WSP 2024v). Creosote bush – white bursage series is dominated by a combination of creosote bush and white bursage (*Ambrosia dumosa*), with subdominant species that include Cooper's goldenbush (*Ericameria cooperi*), western Joshua tree, and Nevada ephedra. This is the most dominant vegetation community within the project site. Shrubs are generally less than 10 feet (3 meters) in height and understory consists of seasonal annuals.

Creosote Bush Scrub. A total of 154.06 acres of creosote bush scrub was mapped in the study area (WSP 2024d; WSP 2024v). Creosote bush scrub is similar to creosote bush – white bursage series; however, this community is entirely dominated by creosote bush scrub. Codominant species reflect those species found in creosote bush – white bursage series, but vary throughout habitats and are not in sufficient numbers to

be considered a codominant vegetation community. Shrubs are generally less than 10 feet (3 meters) in height and the understory is open to intermittent with seasonal annuals or perennial grasses.

Disturbed/Developed. A total of 1,069.07 acres of disturbed/developed habitat was mapped in the study area (WSP 2024d; WSP 2024v). Developed/disturbed habitat within the project site is composed of areas of bare ground either sparsely or moderately vegetated with a mix of mostly non-native, invasive, annual, weedy plant species with marginal cover of native species. Developed areas consist of buildings, residences, and their associated parcel footprints, as well as existing solar array facilities. Dominant plant species include shortpod mustard, brome grasses (*Bromus* spp.), Russian thistle (*Salsola tragus*), bristly fiddleneck (*Amsinckia tessellata*), anglestem buckwheat (*Eriogonum angulosum*), and dove weed. Disturbed habitat includes large areas of bare ground supporting little to no vegetation that indicates historical or current anthropogenic use (e.g., dirt roads, staging areas, vacant lots, and margins of developed areas). These areas have little to no habitat value to most native plant and wildlife species.

Joshua Tree Woodland. Joshua tree woodland is designated as a sensitive natural community by CDFW. A total of 83.82 acres of Joshua tree woodland was mapped in the study area (WSP 2024d; WSP 2024v). The Applicant suggests that western Joshua tree woodland is characterized by dense stands of western Joshua trees with little to no other dominant or co-dominant species. Although individual western Joshua trees occur throughout the project site, the applicant mapped western Joshua tree woodland along the very northern portion of the gen-tie alignment west of the WRESC site and primarily just east of 30th Street West. The applicant has defined this habitat to include an exceptionally dense stand of western Joshua trees that are generally below 46 feet (14 meters) and well-spaced. The understory is generally open to intermittent with perennial grasses and seasonal annuals. The California Native Plant Society (CNPS) defines Joshua tree woodland as consisting of Joshua trees evenly distributed at greater than or equal to 1 percent cover (CNPS 2025a). Staff notes that numerous western Joshua trees were documented within the WRESC site by the applicant and these areas may also meet the CNPS definition for Joshua tree woodland.

Needleleaf Rabbitbrush Scrub. A total of 77.08 acres of needleleaf rabbitbrush scrub was mapped in the study area (WSP 2024d). This vegetation community is dominated by needleleaf rabbitbrush (*Ericameria teretifolia*). Subdominant species include silver cholla (*Cylindropuntia acanthocarpa*), Nevada ephedra, California buckwheat (*Eriogonum fasciculatum*), and Dorr's sage (*Salvia dorrii*). Typical canopy is less than 6.5 feet (2 meters) and is generally sparsely covered. Shrubs are generally less than 6.5 feet (2 meters) in height and understory is open to intermittent and grassy.

Non-native Grassland and Forbs. A total of 151.49 acres of non-native grassland and forbs habitat was mapped in the study area (WSP 2024d). Although not a classic vegetation community under the vegetation classification system, this habitat consists

of non-native grasses and forbs and is usually the result of a recent disturbance that has just started a natural revegetation process. Emergent shrubs may be present, but are usually sparse and do not have enough individuals to be characterized as a separate vegetation community.

Rubber Rabbitbrush Scrub. A total of 119.35 acres of rubber rabbitbrush scrub was mapped in the study area (WSP 2024d). Rubber rabbitbrush is dominant or co-dominant in the shrub canopy with big sagebrush (*Artemisia tridentata*), Nevada ephedra, California buckwheat, and scalebroom (*Lepidospartum squamatum*). Emergent trees may be present at low cover, including western Joshua trees. Shrubs are generally less than 10 feet (3 meters) in height and the understory is sparse and grassy.

Tamarisk Thickets. A total of 2.21 acres of tamarisk thickets was mapped in the study area (WSP 2024d). Tamarisk (*Tamarix ramosissima*) is the dominant or co-dominant species and may occur along with native species such as cottonwood (*Populus fremontii*) or willow species (*Salix* spp.). Shrubs are generally less than 26 feet (8 meters) in height and the understory is sparse. This vegetation community is commonly associated with arroyo margins, lake margins, ditches, washes, rivers, and often artificially created watercourses.

White Bursage Scrub. A total of 80.55 acres of white bursage scrub was mapped in the study area (WSP 2024d; WSP 2024v). White bursage is the dominant or co-dominant species and may also include four-wing saltbush, silver cholla, desert brittlebush (*Encelia farinosa*), Nevada ephedra, and creosote bush. Shrubs are generally less than 3 feet (1 meter) in height and understory consists of seasonal annuals.

Non-Native Invasive / Noxious Weeds

Non-native invasive or noxious weeds are plants that can directly or indirectly cause problems for agriculture, natural resources, wildlife, recreation, navigation, public health, or the environment. The California Department of Food and Agriculture (CDFA) and the California Invasive Plant Council (Cal-IPC) have rated invasive or noxious weeds in California based on the threat these species pose to the natural landscape (CDFA 2021; Cal-IPC 2017.

The applicant identified several non-native invasive plant species within the study area during surveys conducted in 2023 and 2024. **Table 5.2-2** provides a list of the non-native invasive species documented by the applicant.

TABLE 5.2-2 NON-NATIVE INVASIVE WEEDS IDENTIFIED IN THE STUDY AREA

Scientific Name	Common Name	Rating		Comments
		CDFA[1]	Cal-IPC[2]	
Bromus diandrus	Ripgut brome	--	Moderate	Annual grass found throughout California and other western states; one of several European grasses that have displaced much of the native grasses throughout the state; becomes very dry and flammable during the dry season; seeds may spread great distances via water, soil movement, and by clinging to animals and people.
Bromus madritensis	Foxtail brome	--	High	Cool-season annual grass found throughout California, especially in the southern part of the state; invades disturbed areas, roadsides, agricultural fields, rangelands, and forestry sites, in addition to native communities; spreading rapidly in desert shrublands, pinyon-juniper communities, and coastal scrub.
Bromus tectorum	Cheatgrass	C	High	Annual grass that is dominant on sagebrush rangelands on the Modoc Plateau in northeastern California and along the eastern Sierra Nevada to Owens Valley; overcrowds native grasslands and croplands; spread by attachment to clothing or shoes.
Erodium cicutarium	Red-stemmed filaree	--	Limited	Aggressive annual/biannual that is very widespread throughout California; commonly found along roadsides, grasslands, fields, and semi-desert to desert areas; seeds natural or anthropogenic disturbance for establishment; provides forage for kangaroo rats and desert tortoises; can be dispersed by clinging to shoes and clothes, tires, and heavy equipment.
Hirschfeldia incana	Short-pod mustard		Moderate	Biennia or short-lived perennial forb native to Mediterranean; can suppress native vegetation through rapid growth and shading and flourishes in disturbed conditions and recent burn areas; occurs along roadsides and other disturbed habitats, shrublands, and grasslands; consumption may have negative physiological effects on desert tortoise; wet and sticky seeds may be dispersed by vehicles and equipment.

TABLE 5.2-2 NON-NATIVE INVASIVE WEEDS IDENTIFIED IN THE STUDY AREA				
Hordeum murinum	Hare barley	--	Moderate	Annual grass native to the Mediterranean, northern Africa, and temperate Asia; common throughout California in disturbed areas and can persist even with frequent mowing by growing nearly flat; may be dispersed by attaching to tires, heavy equipment, shoes and clothing.
Rumex crispus	Curly dock	--	Limited	Perennial herb found throughout California; grows in many habitats, including grasslands, roadsides, agricultural fields; easily dominates habitats once established; largely spread due to heavy seed propagulation; not easily dispersed.
Salsola tragus	Russian thistle	C*	Limited	Large, bushy summer annual found throughout California; occurs in agricultural fields, deserts, roadsides and other disturbed areas; often the first species to colonize disturbed sites, but can become established without disturbance; typically dispersed over long-distances by wind.
Schismus baratus	Common Mediterranean grass	--	Limited	Annual grass in disturbed areas and deserts; contributes to conversion of desert shrublands into grasslands; can probably spread rapidly by wind dispersal; competes with native plants that are preferred forage of desert tortoise.
Sisymbrium irio	London rocket	--	Limited	Winter annual herb that occurs in abandoned fields, roadsides, orchards and other disturbed areas across southern and central California; matures earlier in the year than most native species, allowing it to outcompete; consumption may have negative physiological effects on desert tortoise.

TABLE 5.2-2 NON-NATIVE INVASIVE WEEDS IDENTIFIED IN THE STUDY AREA

[1] CDFA Ratings:	[2] Cal-IPC Ratings:
A = A pest of known economic or environmental detriment and is either not known to be established in California or it is present in a limited distribution that allows for the possibility of eradication or successful containment. B = A pest of known economic or environmental detriment and, if present in California, it is of limited distribution. C = A pest of known economic or environmental detriment, if present in California, it is usually widespread. D = An organism known to be of little or no economic or environmental detriment, to have an extremely low likelihood of weediness, or is known to be a parasite or predator. Q = An organism or disorder suspected to be of economic or environmental detriment, but whose status is uncertain because of incomplete identification or inadequate information. * = An asterisk next to the rating indicates that a plant is included in the CCR Section 4500 list of California State Noxious Weeds.	High = These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically. Moderate = These species have substantial and apparent, but generally not severe, ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread. Limited = These species are invasive, but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic. Allert = An Alert is listed on species with High or Moderate impacts that have limited distribution in California, but may have the potential to spread much farther. Watch = These species have been assessed as posing a high risk of becoming invasive in the future in California.

Aquatic Resources

As part of the Supplemental Application for Certification (AFC) (ESHD 2024), submitted on March 1, 2024, the applicant provided a Delineation of Jurisdictional Waters, dated January 2024 (WSP 2024g). Since that initial filing, there have been several revisions to that report based on concerns raised by staff, CDFW, and LRWQCB regarding several undocumented and unmapped features within the study area that had the potential to meet the definitions of waters of the state under Section 401 of the Clean Water Act and CDFW jurisdictional streams under Section 1600 and the following of the Fish and Game Code. Most of these features appeared to be capable of conveying flow during storm events, were visible on aerial maps, and were field verified by staff during subsequent site visits in November 2024. To address these concerns, the applicant submitted the most recent Supplemental Preliminary Delineation of Jurisdictional Waters in February 2025 (WSP 2025n).

To date, the applicant has documented 25 ephemeral drainage features in the study area that meet the definitions of jurisdiction under LRWQCB and CDFW regulations. Given the episodic flow regime and well-drained soils, both LRWQCB and CDFW jurisdictions coincided throughout the study area. There was no evidence of adjacent riparian habitat that would expand the CDFW jurisdictional limits.

An additional 49 ephemeral drainages within the study area were determined by the applicant to not meet the definitions of LRWQCB and CDFW jurisdiction. At the request of staff and LRWQCB, the applicant submitted additional information in response to DR-128 which included a delineation of jurisdictional waters along with updated maps in March 2025 (WSP 2025p; WSP 2025q). The purpose of these submittals was to summarize all potential non-jurisdictional waters within the study area and to provide justification of non-jurisdictional classification of features. At this time, staff does not concur and considers these features to meet LRWQCB and CDFW jurisdiction because many of these features exhibited signs of hydrology, and although some are short the CDFW does not prescribe how long a feature or drainage has to be to be considered jurisdictional. **Table 5.2-3** summarizes the potentially jurisdictional features identified in the project area by the applicant. Note that not all the drainage features summarized in **Table 5.2-3** would be impacted during implementation of the project.

TABLE 5.2-3 POTENTIALLY JURISDICTIONAL DRAINAGE FEATURES IDENTIFIED IN THE PROJECT AREA BY THE APPLICANT

Feature ID	Acres	Linear Feet
1	0.059	1,305.84
2a	2.744	4,464.69
2b	4.854	2,139.58
3	0.005	172.36
4	0.017	323.80
5a	0.006	216.39
5b	0.005	201.85
5c	0.020	537.25
5d	0.007	179.55
5e	0.020	489.16
6	0.090	1,000.13
7	0.042	994.96
8	0.128	2,018.91
9	0.072	426.81
10	0.575	901.76
11a	0.032	171.32
11b	0.007	161.51

TABLE 5.2-3 POTENTIALLY JURISDICTIONAL DRAINAGE FEATURES IDENTIFIED IN THE PROJECT AREA BY THE APPLICANT

12	0.038	889.33
13	0.009	294.41
14	7.979	1,243.47
15	0.887	463.24
16	0.039	790.88
17	0.012	240.68
18a	0.030	887.63
18b	0.097	1,378.22
19	3.029	1,158.56
20a	0.029	692.93
20b	0.037	889.49
20c	0.002	119.00
21a	0.142	192.50
21b	0.019	419.63
22a	0.009	212.28
22b	0.002	85.27
22c	0.001	57.61
23a	0.018	546.06
23b	0.020	499.95
24	0.014	306.12
25	0.020	461.90
26	0.002	65.81
27	0.002	56.30
28	0.004	63.79
29	0.002	58.37
30	0.011	237.51
31	0.003	72.08
32	0.024	321.67
33	0.012	225.70
34	0.007	185.97
35	0.467	205.36
36	0.163	1,290.23
37	0.049	1,959.47
38	0.024	252.08
39	0.038	297.55
40	0.080	541.00

TABLE 5.2-3 POTENTIALLY JURISDICTIONAL DRAINAGE FEATURES IDENTIFIED IN THE PROJECT AREA BY THE APPLICANT

41	0.220	883.00
42	0.035	525.58
43a	0.053	787.45
43b	0.032	385.60
44a	0.213	1,526.56
44b	0.054	826.27
45	0.010	158.25
46	0.015	279.42
47	0.007	99.21
48	0.003	117.24
49	0.003	104.10
50	0.005	175.00
51	0.003	88.79
52	0.010	301.95
53	0.014	455.30
54	0.012	270.01
55	0.018	257.90
56	0.002	86.41
57a	0.005	166.84
57b	0.001	77.97
58a	0.073	1,124.23
58b	0.073	1,009.26
59	0.004	142.23
60	0.002	66.42
61	0.004	169.23
62	0.002	89.01
63a	0.365	2,358.76
63b	0.008	331.76
63c	0.072	581.41
64a	0.059	661.20
64b	0.003	71.10
64c	0.005	75.36
64d	0.005	90.59
64e	0.008	167.00
65a	0.030	253.84
65b	0.006	137.79

TABLE 5.2-3 POTENTIALLY JURISDICTIONAL DRAINAGE FEATURES IDENTIFIED IN THE PROJECT AREA BY THE APPLICANT

66	0.027	492.82
67	0.102	613.57
68a	0.020	408.98
68b	0.028	368.62
69	0.009	182.27
70	0.004	192.96
71	0.119	627.17
72	0.001	140.03
73	0.192	1,908.70
74	0.592	2,534.49
Total	**24.532**	**55,739.57**

Designated Critical Habitat and Special Habitat Designations

The federal Endangered Species Act (ESA) defines critical habitat as specific geographic areas that contain features essential to the conservation of an endangered or threatened species that may require special management and protection. Critical habitat may also include areas that are not currently occupied by the species but will be needed for its recovery. The U.S. Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) publish proposals to designate critical habitat in the Federal Register, a daily publication of the federal government.

Critical Habitat for federally listed species does not occur in or adjacent to the project site. Critical habitat for desert tortoise (*Gopherus agassizii*), a state and federally threatened species, occurs approximately 17 miles to the east and critical habitat for California condor (*Gymnogyps californianus*), a state and federally endangered species, is roughly 16 miles to the west (WSP 2024d; WSP 2024v).

Wildlife Corridors, Special Linkages, and Important Bird Areas

Movement and dispersal corridors that connect large blocks of habitat are essential to the long-term viability of plant and wildlife populations. The California Essential Habitat Connectivity Project (Connectivity Project) was commissioned by the California Department of Transportation (Caltrans) and CDFW to create a statewide assessment of essential habitat connectivity to be used for conservation and infrastructure planning (Spencer et al., 2010). One of its goals was to create the Essential Connectivity Map, which depicts large, relatively natural habitat blocks that support native biodiversity (Natural Landscape Blocks) and areas essential for ecological connectivity between them (Essential Connectivity Areas). These maps do not reflect the needs of particular species but are based on overall biological connectivity and ecological integrity.

The project site consists of primarily undeveloped lands, which can provide opportunities for undisturbed localized wildlife movement. The project site broadly includes areas of sparsely to moderately high desert vegetation cover, intermixed with previously disturbed areas. Existing development associated with the area around Rosamond prevents any regional connectivity between the Tehachapi Mountains to the north and northwest and the San Gabriel Mountains to the south. There is a medium priority linkage identified along the west site of SR-14 (Penrod et al. 2001) with portions of the gen-tie alignment extending into that area.

Important Bird Areas. The Audubon Society has identified Important Bird Areas (IBAs) throughout the Western Hemisphere that provide essential habitat for birds (Audubon 2025). These IBAs include sites for breeding, wintering, and migrating birds and can range from only a few acres to thousands of acres in size.

The closest IBA to the project site is the Antelope Valley – Edwards AFB IBA, which surrounds the project area to the south, east, and west. This IBA encompasses approximately 687,000 acres and roughly extends from Palmdale along Highway 38 in the south to Highway 58 in the north and from Highway 395 in the east to Quail Lake in the west (Audubon 2025). The northeast portion of the Antelope Valley – Edwards AFB IBA at Edwards AFB supports some of the most extensive mesquite woodland in the region, as well as several massive dry lakes, including Buckhorn, Rosamond, and Rogers, that fill with water during wet winters. Piute Ponds, at the southern edge of the AFB feature extensive cattail and bulrush marshes. These features provide open water habitat for thousands of waterbirds in the fall and winter, including large numbers of eared grebes (*Podiceps nigricollis*), ruddy ducks (*Oxyura jamaicensis*), and phalaropes (*Phalaropus* spp.). Remnant Joshua tree woodlands in this IBA support one of the farthest west populations of Le Conte's thrasher (*Toxostoma lecontei*) in California.

Common Wildlife

Despite a history of previous disturbances in the general region, including agricultural practices, grazing, existing solar facilities, paved and unpaved roads, and urban development, the project site has the potential to support a variety of common wildlife that are specifically adapted to desert habitats or exhibit adaptations to survive along transitional zones between native habitats and urbanized areas.

This section describes common wildlife species that were documented during studies and/or surveys conducted by the applicant or have the potential to occur within or adjacent to the project site.

The applicant observed and/or otherwise detected (e.g., scat, bones, tracks, feathers, burrows, etc.) several wildlife species, all of which are common to the region, that were notably diverse and abundant (WSP 2024d; WSP 2024v). These included a variety of invertebrates, reptiles, birds, and mammals.

Invertebrates. As in all ecological systems, invertebrates play a crucial role in multiple biological processes. They serve as the primary or secondary food source to a number of wildlife species; they provide pollination vectors for numerous plant species; they act as efficient components in controlling pest populations; and they support naturally occurring maintenance of an area by consuming detritus and contributing to necessary soil nutrients.

The project site provides microhabitat conditions for a variety of terrestrial invertebrates. These microhabitats can be found at ground level within friable soils or under vegetation, woody debris, rocks, and trash piles. They can also occur within vegetation which provides refuge from predators, food resources for some species, and substrates for various invertebrate life stages.

Common invertebrates that were identified by the applicant during field surveys include pygmy blue (*Brephidium exilis*), western horse fly (*Tabanus punctifer*), digger bee (*Anthophora urbana*), yellow-faced bumble bee (*Bombus vosnesenskii*), and western honeybee (*Apis mellifera*) (WSP 2024d; WSP 2024v).

There are numerous additional common invertebrates known from the general region, including Lepidoptera (moths and butterflies), Hymenoptera (wasps, bees, and ants), Diptera (flies), Coleoptera (beetles), hemiptera (true bugs), Orthoptera (grasshoppers, crickets, and close relatives), Anisoptera (dragonflies), Araneae (spiders), Scorpiones (scorpions), among others. Some of the most widely found include sandhill skipper (*Polites sabuleti*), painted lady (*Vanessa cardui*), California harvester ant (*Pogonomyrmex californicus*), seven-spotted lady beetle (*Coccinella septempunctata*), armored stink beetle (*Eleodes armata*), desert ironclad beetle (*Asbolus verrucosus*), pallid-winged grasshopper (*Trimerotropis pallidipennis*), desert tarantula (*Aphonopelma iodius*), and giant desert hairy scorpion (*Hadrurus arizonensis*) (iNaturalist 2025).

Fishes and Amphibians. The project site does not support suitable aquatic habitat for common fishes or amphibians and none are expected to occur. No common fishes or amphibians were observed by the applicant during 2023 and 2024 surveys (WSP 2024d; WSP 2024v).

Reptiles. The number and type of reptiles that occur at a given site is related to a number of biotic and abiotic features. These include the diversity of plant communities, substrate, soil type, and presence of refugia such as rock piles, boulders, and native debris. These are crucial factors to support the survival and reproduction of various reptile species.

Most reptiles, even if present in an area, are difficult to detect because they are cryptic, and various life history characteristics (i.e., foraging, and thermoregulatory behavior) limit their ability to be observed during most surveys. Many species are active only within relatively narrow thermal limits, avoiding hot and cold conditions, and most take refuge in microhabitats that are not directly visible to the casual observer, such as rodent burrows, crevices, under rocks and boards, and in dense vegetation where they

are protected from unsuitable environmental conditions and predators. In some cases, they are observed when flushed from their refugia.

Common reptiles that were identified by the applicant during field surveys include long-nosed leopard lizard (*Gambelia wislizenii wislizenii*), western zebra-tailed lizard (*Callisaurus draconoides rhodostictus*), yellow-backed spiny lizard (*Sceloporus magister uniformis*), side-blotched lizard (*Uta stansburiana*), western whiptail (*Aspidoscelis tigris*), desert night lizard (*Xantusia vigilis*), Mojave glassy snake (*Arizona elegans candida*), Great Basin gopher snake (*Pituophis catenifer deserticola*), red coachwhip (*Masticophis flagellum piceus*), and Mojave green rattlesnake (*Crotalus scutulatus*) (WSP 2024d; WSP 2024v).

Other common reptiles that have been documented in the region include western fence lizard (*Sceloporus occidentalis*), southern alligator lizard (*Elgaria multicarinata*), desert horned lizard (*Phrynosoma platyrhinos*), California king snake (*Lampropeltis californiae*), Mojave shovelnose snake (*Sonora occipitalis*), and western rattlesnake (*Crotalus oreganus*) (iNaturalist, 2025).

Birds. The diversity of birds is a function of habitat characteristics, climate, land use, and relative disturbance. Habitat within and adjacent to the project site is broadly characterized by desert vegetation communities. Resident birds in these habitats are well-adapted to arid environments, low precipitation, seasonal extremes, and cycles of resource availability. The general region is within the Pacific Flyway and migrants and seasonal visitors may occur as they pass through during migratory movements between breeding and non-breeding grounds or establish non-breeding territories. The applicant did not conduct focused nesting bird surveys for the project but did record numerous incidental bird observations during habitat assessments and other biological surveys. Some of the common species observed include passerines, such as ash-throated flycatcher (*Myiarchus cinerascens*), western kingbird (*Tyrannus verticalis*), horned lark (*Eremophila alpestris*), cactus wren (*Campylorhynchus brunneicapillus*), northern mockingbird (*Mimus polyglottos*), black-throated gray warbler (*Dendroica nigrescens*), Wilson's warbler (*Wilsonia pusilla*), house finch (*Haemorhous mexicanus*), Say's phoebe (*Sayornis saya*), and blue-gray gnatcatcher (*Polioptila caerulea*) (WSP 2024d; WSP 2024v).

Non-passerine species that were recorded by the applicant include California quail (*Callipepla californica*), mourning dove (*Zenaida macroura*), ladder-backed woodpecker (*Dryobates scalaris*), rock pigeon (*Columba livia*), greater roadrunner (*Geococcyx californianus*), and common raven (*Corvus corax*).

The general region provides suitable nesting, perching, and foraging habitat for a variety of common raptors. Some that were observed by the applicant include red-tailed hawk (*Buteo jamaicensis*), turkey vulture (*Cathartes aura*), great horned owl (*Bubo virginianus*), and American kestrel (*Falco sparverius*).

Given the proximity to permanent water features at Piute Ponds, Apollo Community Regional Park, among other nearby features, common aquatic and wading birds are routinely observed flying over or migrating through the general region. Species incidentally observed by the applicant include great egret (*Ardea alba*), snowy egret (*Egretta thula*), and white-faced ibis (*Plegadis chihi*).

Mammals. The distribution of mammals in an area is associated with the presence of available water, suitable habitat and vegetation, foraging capacity, and topographical and structural components (e.g., rock piles, soil types, steepness of terrain). Structures that provide refugia and cover and the presence of suitable soils for digging and burrowing are important habitat features.

Common fossorial mammals observed by the applicant include white-tailed antelope squirrel (*Ammospermophilus leucurus*), California ground squirrel (*Otospermophilus beecheyi*), round-tailed ground squirrel (*Xerospermophilus tereticaudus*), and Merriam's kangaroo rat (*Dipodomys merriami*). Desert cottontail (*Sylvilagus audubonii*), black-tailed jackrabbit (*Lepus californicus*), and desert woodrat (*Neotoma lepida*) were also recorded (WSP 2024d; WSP 2024v).

Several mid-sized mammals are also known from the general region and coyote (*Canis latrans*) and bobcat (*Lynx rufus*) were identified during applicant surveys. Although expected in very small numbers, mule deer (*Odocoileus hemionus*) may infrequently traverse the area between more suitable habitat blocks.

The applicant did not observe any bat species during surveys and the project site does not support suitable roosting habitat; however, some common species, such as Mexican free-tailed bat (*Tadarida brasiliensis*), canyon bat (*Parastrellus hesperus*), and California myotis (*Myotis californicus*) range throughout the state and utilize a variety of foraging habitats, including those occurring in and around the project site.

Domestic animals, including dog (*Canis familiaris*) and sheep (*Ovis aries*) are common occurrences and were observed during surveys.

Sensitive Biological Resources

This section provides an overview of sensitive natural communities related to the project site. It also provides information on special-status plants and animals observed within or near the project site or with a potential to be present. The specific habitat requirements and the locations of known occurrences of each special-status species were the principal criteria used for inclusion in the lists of special-status species potentially occurring within or near the project site.

Staff Literature Review. To determine the potential for special-status species and other sensitive biological resources to occur, staff conducted a thorough literature review that included an evaluation of applicant reports and documents, coordination with the applicable resource agencies, and a database assessment. The database

assessment included a 10-mile buffer surrounding the project site and included the following resources:

- USFWS Information for Planning and Conservation (IPaC) Program (USFWS 2025a)
- CDFW California Natural Diversity Database, Rarefind Version 5 (CDFW 2025a)
- CDFW Special Animals List, January 2025 (CDFW 2025b)
- CDFW Special Vascular Plants, Bryophytes, and Lichens List, January 2025 (CDFW 2025c)
- California Native Plant Society Inventory of Rare and Endangered Plants of California (CNPS 2025b)
- iNaturalist citizen-based observation (iNaturalist 2025)
- eBird citizen-based observation network (eBird 2025)
- Calflora Information on California plants web application (Calflora 2025)

The applicant conducted a series of focused and protocol-level surveys for the proposed project. Each of these studies are referenced below and were included in the literature review and considered by staff during the analysis of potential impacts to biological resources. These include the following technical studies and/or survey reports.

Biological Assessments

- WRESC Biological Resources Assessment Report, WSP USA Environment and Infrastructure, Inc. (WSP 2024d)
- Willow Rock Biological Resources Report 2024 Addendum, WSP USA Environment and Infrastructure, Inc. (WSP 2024v)

Plant Studies

- WRESC Western Joshua Tree Report 1 of 2, WSP USA Environment and Infrastructure, Inc. (WSP 2024h)
- WRESC Western Joshua Tree Report 2 of 2, WSP USA Environment and Infrastructure, Inc. (WSP 2024i)
- Willow Rock Joshua Tree Census 2024 Addendum, WSP USA Environment and Infrastructure, Inc. (WSP 2024q)
- Willow Rock Sensitive Plant Survey 2024 Addendum, WSP USA Environment and Infrastructure, Inc. (WSP 2024s)

Invertebrate Studies

- Willow Rock Crotch's Bumble Bee Survey 2024 Addendum, WSP USA Environment and Infrastructure, Inc. (WSP 2024t)

Herpetology Studies

- 2023 Desert Tortoise Survey, WSP USA Environment and Infrastructure, Inc. (2024c)
- Willow Rock Desert Tortoise Survey 2024 Addendum, WSP USA Environment and Infrastructure, Inc. (WSP 2024o)

Avian Studies

- WRESC Burrowing Owl Focused Survey Report, WSP USA Environment and Infrastructure, Inc. (WSP 2024e)
- Willow Rock Swainson's Hawk Survey 2024 Addendum, WSP USA Environment and Infrastructure, Inc. (WSP 2024r)
- Willow Rock Burrowing Owl Survey 2024 Addendum, WSP USA Environment and Infrastructure, Inc. (WSP 2024u)

Mammal Studies

- Hydrostar MGS Habitat Assessment, Dipodomys Ecological Consulting, LLC (GA 2023f)
- WRESC Mohave Ground Squirrel Report, Aardvark Biological Services, LLC (WSP 2024f)
- Willow Rock Mohave Ground Squirrel Survey, Dipodomys Ecological Consulting, LLC (WSP 2024p)

Jurisdictional Delineation Documents

- Willow Rock Jurisdictional Waters Delineation Report, WSP USA Environment and Infrastructure, Inc. (WSP 2024n)
- Willow Rock Jurisdictional Waters Delineation Report Text, WSP USA, Inc. (WSP 2025n)
- Willow Rock Jurisdictional Drainages Additional Information, WSP USA, Inc. (WSP 2025p)
- Willow Rock Jurisdictional Drainages Additional Information Text, WSP USA, Inc. (WSP 2025q)

Reconnaissance Surveys and Habitat Assessments. Reconnaissance level biological surveys and habitat assessments were conducted within the study area by the applicant in 2023 and 2024. Onsite habitat for was assessed for suitability based on the presence of constituent habitat elements (e.g., vegetation, soils, and topography) that are characteristic of the potentially occurring special-status wildlife species identified during the literature review (WSP 2024d; WSP 2024v).

The study area, where accessible, was assessed on foot to record pertinent field data and current site conditions. Adjacent undeveloped areas within a 1,000-foot (305-

meter) buffer of the WRESC site and a 500-foot (152-meter) buffer along the gen-tie alignment that were unfenced and presented no signage (i.e., “No Trespassing” and/or “Private Property”) were also evaluated. Inaccessible areas were scanned for suitable habitat with binoculars. All onsite flora and fauna observed or otherwise detected (e.g., vocalizations, presence of scat, tracks, and/or bones) during the assessment were recorded in field notes. General weather and site conditions were also recorded at the beginning and end of assessments.

Sensitive Natural Communities

Sensitive natural communities have been previously defined by CDFW as “communities that are of limited distribution statewide or within a county or region and are often vulnerable to environmental effects of projects.” More recently, CDFW stated that sensitive natural communities with state ranks of S1–S3 should be addressed in the environmental review processes of CEQA and its equivalents (CDFW 2025d).

The literature review identified 10 CDFW sensitive natural communities within 10 miles of the project area (see **Table 5.2-4**). Based on vegetation mapping and focused rare plant surveys performed by the applicant in 2023 and 2024, however, it was determined that only one of these communities, Joshua tree woodland (S3), occurs within or immediately adjacent to the project area.

TABLE 5.2-4 SENSITIVE NATURAL COMMUNITIES

Community	Status	Habitat Description	Comments
Joshua Tree Woodland	Global Rank: G4 State Rank: S3	Occurs at low to moderate elevations in the Mojave Desert in broad valleys where soils are deep, on alluvial or rocky slopes, and on pediments with minimal runoff surrounding desert mountains and mesas.	Occurs along the northern portion of the gen-tie alignment.
Southern Cottonwood Willow Riparian Forest	Global Rank: G3 State Rank S3.2	Occurs on floodplains, low-gradient rivers, perennial or seasonally intermittent streams, springs, lower canyons of desert mountains, on alluvial fans, and in valleys with adequate subsurface waters.	Nearest record located at Lake Hughes more than 12 miles south of Project Area.
Southern Mixed Riparian Forest	Global Rank: G2 State Rank: S2.1	Comprised of winter-deciduous trees that require water near the soil surface. Willow (*Salix* spp.), cottonwood (*Populus* spp.), and western sycamore (*Platanus racemosa*) form a dense medium height woodland or forest in moist canyons and drainage bottoms.	Nearest record located approximately 18 miles southwest of project site.
Southern Riparian Forest	Global Rank: G4 State Rank: S4	Essentially a “broader brush” version of Southern Mixed Riparian Forest. Can include oaks in some cases.	Nearest records located along Pine Canyon Road approximately 12 miles southwest of project site.

TABLE 5.2-4 SENSITIVE NATURAL COMMUNITIES

Community	Status	Habitat Description	Comments
Southern Riparian Scrub	Global Rank: G3 State Rank: S3.2	An early seral type of riparian woodland on loose, sandy, or fine gravelly alluvium deposited near stream channels during flood flows. May be dominated by several willow species and mulefat (*Baccharis salicifolia*) with some emergent cottonwoods and sycamores.	Nearest records located at base of foothills south of the California Aqueduct and approximately 9.5 miles southwest of project site.
Southern Sycamore Alder Riparian Woodland	Global Rank: G4 State Rank: S4	A tall, open, broadleafed, winter-deciduous streamside woodland dominated by sycamores and alder (*Alnus rhombifolia*). Often grows along very rocky streambeds subject to seasonally high intensity flooding. Alders increase in abundance on more perennial streams, while sycamores favor more intermittent hydrographs. Stands seldom form closed canopy forests and even may appear as trees scattered in a shrubby thicket of sclerophyllous and deciduous species.	Nearest records located near Green Valley and Lake Hughes more than 12 miles southwest of project site.
Southern Willow Scrub	Global Rank: G3 State Rank: S2.1	Essentially, very similar to Southern Riparian Scrub though may require repeated flooding to prevent succession to Southern Cottonwood-Sycamore Riparian Forest.	Nearest record located along north edge of California Aqueduct approximately 11 miles south of project site.
Valley Needlegrass Grassland	Global Rank: G3 State Rank: S3.1	Occurs on valley floors and is dominated by needlegrass (*Stipa* spp.)	Nearest record located along 270th Street approximately nine miles west of project site.
Valley Oak Woodland	Global Rank: G3 State Rank: S2.1	An open, grassy-understory savanna rather than a closed woodland. Valley oak (*Quercus lobata*) is usually the only tree present. Occurs on deep, well-drained alluvial soils, usually in valley bottoms, and apparently with more moisture in summer than in Blue Oak Woodland.	Nearest record located in the vicinity of Three Points more than 12 miles southwest of project site.
Wildflower Fields	Global Rank: G2 State Rank: S2.2	Consists of open areas, usually in grasslands which, under favorable rainfall conditions, are dominated by native annual wildflower species.	Nearest record located along California Aqueduct Road approximately 10 miles south of project site.

TABLE 5.2-4 SENSITIVE NATURAL COMMUNITIES			
Community	**Status**	**Habitat Description**	**Comments**

STATUS DESIGNATIONS:
Global / State Ranks:
(G/S) 1 = Critically imperiled; at very high risk of extinction or elimination due to very restricted range, very few populations or occurrences, very steep declines, very severe threats, or other factors
(G/S) 2 = Imperiled; at high risk of extinction or elimination due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors
(G/S) 3 = Vulnerable; at moderate risk of extinction or elimination due to fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors
(G/S) 4 = Apparently secure; at fairly low risk of extinction or elimination due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors
(G/S) 5 = Secure; at very low risk of extinction or elimination due to a very extensive range, abundant populations or occurrences, and little to no concern from declines or threats
Source: WSP 2024d; WSP 2024v; CDFW 2025a; CDFW 2025d

Special-Status Plants

For the purposes of this report, special-status plants include:

- Listed, proposed for listing, or candidates for listing as threatened or endangered species (including designated or proposed critical habitat) under the federal ESA
- Listed, or candidates for listing as threatened or endangered under the California Endangered Species Act (CESA)
- Plants assigned a California Rare Plant Rank (CRPR) by the CNPS
- Plants listed as rare under the California Native Plant Protection Act
- Plants afforded protection under the California Desert Native Plants Act (CDNPA)
- Plants that meet the definition of rare or endangered under the California Environmental Quality Act (CEQA) section 15380 (b) and (d)

Focused Rare Plant Surveys. Focused rare plant surveys were conducted within the study area by the applicant from April to July 2023, and from April to June 2024 (WSP 2024d; WSP 2024v; WSP 2024s). Survey methods were based on the following resources: *Protocols for Surveying and Evaluating Impacts to Special-status Native Plant Populations and Natural Communities* (CDFW 2018); *Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed, and Candidate Plants* (USFWS 2000); and *General Rare Plant Survey Guidelines* (Cypher 2002). Due to the relatively flat nature of the study area, nearly all accessible areas were observed directly.

All plants observed were identified to species or subspecies level and recorded in field notes. For species that were not easily identifiable in the field, a sample was collected and later identified at an off-site location or sent to the Herbarium Collection Manager at the University of California, Riverside for further identification and confirmation. Taxonomy of plant species identified during surveys was based on *The Jepson Manual,*

2nd Edition (Baldwin et al. 2012). All special-status plant species observed during the surveys were recorded in Esri's Field Maps application.

Western Joshua Tree Census. Western Joshua tree census surveys were initially conducted by the applicant in 2023 and 2024 and field verified in 2024. All surveys were based on the census instructions provided by CDFW (CDFW 2024a). The survey area included the project site plus a 290-foot buffer except for the gen-tie alignments. Most of the area surveyed was accessible via public road ROWs, parcels owned by the applicant, or parcels with right-of-entry agreements. Portions of the gen-tie alignment were not accessible and therefore data could not be collected.

Pursuant to CDFW instructions, the area surveyed was systematically searched using parallel survey transects spaced approximately 16 feet (5 meters) apart. Each western Joshua tree stem or trunk growing independently from the ground was recorded with a Global Positioning System (GPS) device and assigned a unique identifier. Data were also collected electronically to gather information about each tree, including health, size, and flowering/fruiting status. Each recorded tree was photographed.

A tree was considered dead if it met one of the following conditions:

- It had not undergone burning and exhibited no green leaves, no recent growth on the main stem, and no sprouts at the base
- It had experienced partial or complete burning at least 18 months prior, lacking green leaves, showing no new growth on the main stem, and displaying no sprouts at the base
- It had fallen and was entirely detached from its roots, or it had fallen and its roots were no longer in contact with the soil

A tape measure or measuring pole was used to determine the height of each tree, measuring from the middle of the trunk's base to the top of the farthest leaf from the base. In cases where the main trunk followed an unusual path, two measurements were taken to accurately capture the tree's true growth, with a limit of no more than two measurements per tree. Mature trees were defined as those having produced flowers/fruits in the past, or that had at least one set of branches. All western Joshua trees were classified into one of three height categories:

- Class A: Less than 3.3 feet (1 meter) in height
- Class B: 3.3 feet (1 meter) or greater but less than 16.4 feet (5 meters) in height
- Class C: 16.4 feet (5 meters) or greater in height

Survey Results and Potential to Occur. A total of 53 special-status plants were identified within the general region during the literature review (see **Table 5.2-5**). Sixteen special-status plants were either observed during 2023 and 2024 focused rare plant surveys or determined to have some potential to occur in or near the project site based on the presence of suitable habitat and/or the proximity to known recorded

occurrences. The remaining 37 species were considered unlikely to occur due to a lack of suitable habitat, the project site being outside of known geographic or elevation ranges, and/or the lack of recorded occurrences near the project site.

Federal- and State-Listed Plants. Except for the state-listed as threatened western Joshua tree (*Yucca brevifolia*) which occurs throughout the project site (see discussion below), no other federal- or state-listed plant species are expected to be present in or near the project site. Three federal- and/or state-listed species including, San Fernando Valley spineflower (*Chorizanthe parryi* var. *fernandina*), spreading navarretia (*Navarretia fossalis*), and Bakersfield cactus (*Opuntia basilaris* var. *treleasei*), and one state rare species, Tracy's eriastrum (*Eriastrum tracyi*), are known from the region; however, these species are not likely to occur in the project site.

Other Special-Status Plants. In addition to federal- and state-listed plant species, several public and private agencies maintain lists of plants of conservation concern. The CDFW compiles these species, including those with CNPS California rare plant rankings (CRPR) of 1, 2, 3, or 4, in its compendium of *Special Vascular Plants, Bryophytes, and Lichens List* (CDFW, 2025c). Plants that are designated as CRPR List 1B.2 and 2 meet the criteria to require CEQA analysis. while CRPR 3 or 4 species may or may not be considered under CEQA. If a CRPR 3 or 4 species is locally rare, or the population is at an extreme end of the species range, it would be considered for impacts under CEQA.

Other special-status plants that were observed by the applicant during 2023 and 2024 focused rare plant surveys include alkali mariposa lily (*Calochortus striatus*) (CRPR 1B.2), sagebrush loeflingia (*Loeflingia squarrosa* var. *artemisiarum*) (CRPR 2B.2), and Mojave monardella (*Monardella exilis*) (CRPR 4.2). An additional 13 special-status plant species were determined to have some potential to occur in or near the project site.

TABLE 5.2-5 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS PLANTS, BRYOPHYTES, LICHENS, AND FUNGI WITHIN THE PROJECT AREA

Taxa		Status[1]	Habitat	Flowering Period	Potential to Occur[2]	Comments
Scientific Name	**Common Name**					
Allium howellii var. *clokeyi*	Mt. Pinos onion	ESA: None CESA: None CNPS: 1B.3 Global Rank: G3G4T2 State Rank: S2	Perennial bulbiferous herb found in meadows, seeps, pinyon-juniper woodland, great basin scrub; elev. 4,265 – 6,070 ft (1,300 – 1850 m)	Apr – Jun	Not likely to occur	Project site does not support typically suitable habitat and is outside the known geographic and elevation ranges of the species; no records within 10 miles; not observed during 2023 and 2024 focused plant surveys.

TABLE 5.2-5 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS PLANTS, BRYOPHYTES, LICHENS, AND FUNGI WITHIN THE PROJECT AREA

Taxa		Status[1]	Habitat	Flowering Period	Potential to Occur[2]	Comments
Scientific Name	Common Name					
Astragalus hornii var. *hornii*	Horn's milk-vetch	ESA: None CESA: None CNPS: 1B.1 Global Rank: GUT1 State Rank: S1	Annual herb found in alkaline sites (often associated with lake margins); elev. 195 – 2,790 ft (60 – 850 m)	May – Oct	Low	Project site does not support typically suitable alkaline or lake margin habitat; however, project site is within known geographic and elevation ranges of the species; nearest record occurs in the Willow Springs area immediately adjacent to the gen-tie line; not observed during 2023 and 2024 focused plant surveys.

TABLE 5.2-5 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS PLANTS, BRYOPHYTES, LICHENS, AND FUNGI WITHIN THE PROJECT AREA

Taxa		Status[1]	Habitat	Flowering Period	Potential to Occur[2]	Comments
Scientific Name	Common Name					
Astragalus preussii var. *laxiflorus*	Lancaster milk-vetch	ESA: None CESA: None CNPS: 1B.1 Global Rank: G4T2 State Rank: S1	Perennial herb found in chenopod scrub, saltbush scrub with low sandy hummocks, playa edges, alkali pans; elev. 2,295 ft (700 m)	Mar – May	Not likely to occur	Project site does not support typically suitable alkaline habitat; however, project site is within known geographic range and at the upper limit of the elevation range of the species; nearest record occurs in Lancaster approximately 11 miles south of project site.

TABLE 5.2-5 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS PLANTS, BRYOPHYTES, LICHENS, AND FUNGI WITHIN THE PROJECT AREA

Taxa		Status[1]	Habitat	Flowering Period	Potential to Occur[2]	Comments
Scientific Name	**Common Name**					
Calochortus clavatus var. *gracilis*	Slender mariposa lily	ESA: None CESA: None CNPS: 1B.2 Global Rank: G4T2T3 State Rank: S2S3	Perennial bulbiferous herb found in chapparal, coastal scrub, valley and foothill grassland; elev. 1,050 – 3,280 ft (320 – 1,000 m)	Mar – Jun (Nov)	Not likely to occur	Project site does not support typically suitable habitat and is outside the known geographic range for the species; no records within 10 miles.
Calochortus palmeri var. *palmeri*	Palmer's mariposa lily	ESA: None CESA: None CNPS: 1B.2 Global Rank: G3T2 State Rank: S2	Perennial bulbiferous herb found in mesic areas in chaparral, lower montane coniferous forest, meadows and seeps; elev. 2,330 – 7,840 ft (710 – 2,390 m)	Apr – Jul	Not likely to occur	Project site does not support suitable habitat; nearest recent record occurs approximately 2.5 miles south of project site.
Calochortus striatus	Alkali mariposa lily	ESA: None CESA: None CNPS: 1B.2 Global Rank: G3 State Rank: S2S3	Perennial bulbiferous herb found in alkaline and mesic soils in chaparral, chenopod scrub, Mojavean desert scrub, meadows and seeps; elev. 230 – 5,235 ft (70 – 1,595 m)	Apr – Jun	**Present**	Observed during 2023 surveys along Rosamond Boulevard within section of the gen-tie alignment.

TABLE 5.2-5 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS PLANTS, BRYOPHYTES, LICHENS, AND FUNGI WITHIN THE PROJECT AREA

Taxa		Status[1]	Habitat	Flowering Period	Potential to Occur[2]	Comments
Scientific Name	Common Name					
Calystegia peirsonii	Peirson's morning-glory	ESA: None CESA: None CNPS: 4.2 Global Rank: G4 State Rank: S4	Perennial rhizomatous herb found in chapparal, chenopod scrub, cismontane woodland, coastal scrub, lower montane coniferous forest, valley and foothill grassland; elev. 100 – 4,920 ft (30 – 1,500 m)	Apr – Jun	Low	Project site does not support typically suitable habitat; however, project site is within the known geographic and elevations ranges of the species; nearest recent record occurs less than 10 miles south of project site.
Camissonia kernensis ssp. *kernensis*	Kern County evening primrose	ESA: None CESA: None CNPS: 4.3 Global Rank: G4T3 State Rank: S3	Annual herb found in granitic and sometimes gravelly or sandy soils in chaparral, Joshua tree woodland, pinyon and juniper woodland; elev. 2,590 – 6,990 ft (790 – 2,130 m)	Mar – May	Not likely to occur	Project site supports typically suitable habitat but is outside the known geographic range of the species; no records within 10 miles of project site.

TABLE 5.2-5 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS PLANTS, BRYOPHYTES, LICHENS, AND FUNGI WITHIN THE PROJECT AREA

Taxa		Status[1]	Habitat	Flowering Period	Potential to Occur[2]	Comments
Scientific Name	Common Name					
Canbya candida	White pygmy-poppy	ESA: None CESA: None CNPS: 4.2 Global Rank: G3G4 State Rank: S3S4	Annual herb found in granitic, gravelly, and sandy soils in Joshua tree woodland, Mojavean desert scrub, pinyon and juniper woodland; elev. 1,970 – 4,790 ft (600 – 1,460 m)	Mar – Jun	High	Project site supports typically suitable habitat and is within the known geographic and elevation ranges for the species; nearest record just over one mile southeast of project site.
Chorizanthe parryi var. *fernandina*	San Fernando Valley spineflower	ESA: None CESA: SE CNPS: 1B.1 Global Rank: G3T1 State Rank: S1	Annual herb found in coastal scrub (sandy soils), valley and foothill grassland; elev. 490 – 4,005 ft (150 – 1,220 m)	Apr – Jul	Not likely to occur	Project site does not support typically suitable habitat and is outside the known geographic range for the species; no records within 10 miles of project site.

TABLE 5.2-5 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS PLANTS, BRYOPHYTES, LICHENS, AND FUNGI WITHIN THE PROJECT AREA

Taxa		Status[1]	Habitat	Flowering Period	Potential to Occur[2]	Comments
Scientific Name	Common Name					
Chorizanthe parryi var. *parryi*	Parry' spineflower	ESA: None CESA: None CNPS: 1B.1 Global Rank: G3T2 State Rank: S2	Annual herb found in sometimes rocky and sandy soils in openings in chaparral, cismontane woodland, coastal scrub, valley and foothill grassland; elev. 900 – 4,005 ft (275 – 1,220 m)	Apr – Jun	Not likely to occur	Project site does not support typically suitable habitat and is outside of the known geographic range for the species; no records within 10 miles of project site.
Chorizanthe spinosa	Mojave spineflower	ESA: None CESA: None CNPS: 4.2 Global Rank: G4 State Rank: S4	Annual herb found in sometimes alkaline soils in chenopod scrub, Joshua tree woodland, Mojavean desert scrub, playas; elev. 20 – 4,265 ft (6 – 1,300 m)	Mar – Jul	Moderate	Project site supports occasionally suitable habitat and is within the known geographic and elevation ranges of the species; nearest recent record occurs less than three miles north of project site.

TABLE 5.2-5 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS PLANTS, BRYOPHYTES, LICHENS, AND FUNGI WITHIN THE PROJECT AREA

Taxa		Status[1]	Habitat	Flowering Period	Potential to Occur[2]	Comments
Scientific Name	**Common Name**					
Cryptantha clokeyi	Clokey's cryptantha	ESA: None CESA: None CNPS: 1B.2 Global Rank: G3 State Rank: S3	Annual herb found in Mojavean desert scrub; elev. 2,380 – 4,480 ft (725 – 1,365 m)	Apr	Moderate	Project site supports typically suitable habitat and is within the known geographic and elevation ranges of the species; nearest record approximately 7.5 miles south of project site.
Cymopterus deserticola	Desert cymopterus	ESA: None CESA: None CNPS: 1B.2 Global Rank: G2 State Rank: S2	Perennial herb found in sandy soils in Joshua tree woodland, Mojavean desert scrub; elev. 2,065 – 4,920 ft (630 – 1,500 m)	Mar – May	Low	Project site supports typically suitable habitat and is within the known geographic and elevation ranges of the species; however, no records within 10 miles of project site.

TABLE 5.2-5 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS PLANTS, BRYOPHYTES, LICHENS, AND FUNGI WITHIN THE PROJECT AREA

Taxa		Status[1]	Habitat	Flowering Period	Potential to Occur[2]	Comments
Scientific Name	Common Name					
Delphinium recurvatum	Recurved larkspur	ESA: None CESA: None CNPS: 1B.2 Global Rank: G2? State Rank: S2	Perennial herb found in alkaline soils in chenopod scrub, cismontane woodland, valley and foothill grassland; elev. 10 – 2,590 ft (3 – 790 m)	Mar – Jun	Moderate	Project site supports occasionally suitable habitat and is within known geographic and elevation ranges of the species; nearest recent record occurs less than two miles north of project site.
Diplacus pictus	Calico monkeyflower	ESA: None CESA: None CNPS: 1B.2 Global Rank: G2 State Rank: S2	Annual herb found in disturbed areas or granitic soils in broadleafed upland forest, cismontane woodland; elev. 330 – 4,690 ft (100 – 1,430 m)	Mar – May	Not likely to occur	Project site does not support typically suitable habitat and is outside the known geographic range of the species; no records within 10 miles of project site.

TABLE 5.2-5 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS PLANTS, BRYOPHYTES, LICHENS, AND FUNGI WITHIN THE PROJECT AREA

Taxa		Status[1]	Habitat	Flowering Period	Potential to Occur[2]	Comments
Scientific Name	Common Name					
Eriastrum rosamondense	Rosamond eriastrum	ESA: None CESA: None CNPS: 1B.1 Global Rank: G1? State Rank: S1?	Annual herb found in alkaline hummocks and often sandy soils in openings of chenopod scrub and edges of vernal pools; elev. 2,295 – 3,855 ft (700 – 1,175 m)	Apr – May	Low	Project site does not support typically suitable habitat but is within the geographic and elevation ranges of the species; nearest recent record approximately six miles south of project site.
Eriastrum sparsiflorum	Few-flowered eriastrum	ESA: None CESA: None CNPS: 4.3 Global Rank: G5 State Rank: S4	Annual herb usually found in openings in granitic or sandy soils in chaparral, cismontane woodland, Great Basin scrub, Joshua tree woodland, Mojavean desert scrub, pinyon and juniper woodland; elev. 3,535 – 5,610 ft (1,075 – 1,710 m)	May – Sep	Not likely to occur	Project site supports occasionally suitable habitat but is outside the known geographic and elevation ranges for the species; no records within 10 miles of project site.

TABLE 5.2-5 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS PLANTS, BRYOPHYTES, LICHENS, AND FUNGI WITHIN THE PROJECT AREA

Taxa		Status[1]	Habitat	Flowering Period	Potential to Occur[2]	Comments
Scientific Name	**Common Name**					
Eriastrum tracyi	Tracy's eriastrum	ESA: None CESA: Rare CNPS: 3.2 Global Rank: G3Q State Rank: S3	Annual herb found in chaparral, cismontane woodland, valley and foothill grassland; elev. 1,035 – 5,840 ft (315 – 1,780 m)	May – Jul	Not likely to occur	Project site does not support typically suitable habitat and is outside the known range of the species; no records within 10 miles of project site.
Eriophyllum mohavense	Barstow woolly sunflower	ESA: None CESA: None CNPS: 1B.2 Global Rank: G2 State Rank: S2	Annual herb found in chenopod scrub, Mojavean desert scrub, playas; elev. 1,640 – 3,150 ft (500 – 960 m)	Mar – May	Low	Project site supports typically suitable habitat and is within the known geographic and elevation range for the species; however, nearest record is slightly more than 10 miles northeast of project site.

TABLE 5.2-5 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS PLANTS, BRYOPHYTES, LICHENS, AND FUNGI WITHIN THE PROJECT AREA

Taxa		Status[1]	Habitat	Flowering Period	Potential to Occur[2]	Comments
Scientific Name	**Common Name**					
Eschscholzia lemmonii ssp. *kernensis*	Tejon poppy	ESA: None CESA: None CNPS: 1B.1 Global Rank: G5T2 State Rank: S2	Annual herb found in chenopod scrub, valley and foothill grassland; elev. 525 – 3,280 ft (160 – 1,000 m)	Mar – May	Not likely to occur	Project site does not support typically suitable habitat and is outside the known geographic range of the species; nearest record located in foothills approximately 8.5 miles northwest of project site.
Eschscholzia minutiflora ssp. *twisselmannii*	Red Rock poppy	ESA: None CESA: None CNPS: 1B.2 Global Rank: G5T2 State Rank: S2	Annual herb found in volcanic tuff in Mojavean desert scrub; elev. 2,230 – 4,035 ft (680 – 1,230 m)	Mar – May	Not likely to occur	Project site does not support typically suitable habitat and is outside the known geographic range of the species; no records within 10 miles of project site.

TABLE 5.2-5 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS PLANTS, BRYOPHYTES, LICHENS, AND FUNGI WITHIN THE PROJECT AREA

Taxa		Status[1]	Habitat	Flowering Period	Potential to Occur[2]	Comments
Scientific Name	Common Name					
Fritillaria pinetorum	Pine fritillary	ESA: None CESA: None CNPS: 4.3 Global Rank: G4 State Rank: S4	Perennial bulbiferous herb found in sometimes granitic or metamorphic soils in chaparral, lower montane coniferous forest, pinyon and juniper woodland, subalpine coniferous forest, upper montane coniferous forest; elev. 5,695 – 10,825 ft (1,735 – 3,300 m)	May – Jul	Not likely to occur	Project site does not support typically suitable habitat and is outside the known geographic and elevation ranges of the species; no records within 10 miles of project site.
Gilia interior	Inland gilia	ESA: None CESA: None CNPS: 4.3 Global Rank: G4 State Rank: S4	Annual herb found in rocky soils in cismontane woodland, Joshua tree woodland, lower montane coniferous forest; elev. 2,295 – 5,580 ft (700 – 1,700 m)	Mar – May	Not likely to occur	Project site supports typically suitable habitat but is outside the known geographic range of the species; no records within 10 miles of project site.

TABLE 5.2-5 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS PLANTS, BRYOPHYTES, LICHENS, AND FUNGI WITHIN THE PROJECT AREA

Taxa		Status[1]	Habitat	Flowering Period	Potential to Occur[2]	Comments
Scientific Name	Common Name					
Goodmania luteola	Golden goodmania	ESA: None CESA: None CNPS: 4.2 Global Rank: G3 State Rank: S3	Annual herb found in sometimes alkaline or clay soils in Mojavean desert scrub, meadows and seeps, playas, valley and foothill grassland; elev. 65 – 7,220 ft (20 – 2,200 m)	Apr – Aug	Moderate	Project site supports occasionally suitable habitat and is within the known geographic and elevation ranges of the species; nearest record located approximately four miles north of project site.
Lasthenia glabrata ssp. *coulteri*	Coulter's goldfields	ESA: None CESA: None CNPS: 1B.1 Global Rank: G4T2 State Rank: S2	Annual herb found in coastal salt marshes and swamps, playas, vernal pools; elev. 5 – 4,005 ft (1 – 1,220 m)	Feb – Jun	Not likely to occur	Project site does not support typically suitable habitat and is outside the known geographic range of the species; no records within 10 miles of project site.

TABLE 5.2-5 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS PLANTS, BRYOPHYTES, LICHENS, AND FUNGI WITHIN THE PROJECT AREA

Taxa		Status[1]	Habitat	Flowering Period	Potential to Occur[2]	Comments
Scientific Name	Common Name					
Layia heterotricha	Pale-yellow layia	ESA: None CESA: None CNPS: 1B.1 Global Rank: G2 State Rank: S2	Annual herb found in sometimes alkaline or clay soils in cismontane woodland, coastal scrub, pinyon and juniper woodland, valley and foothill grassland; elev. 985 – 5,595 ft (300 – 1,705 m)	Mar – Jun	Not likely to occur	Project site does not support typically suitable habitat and is outside the known geographic range of the species; no records within 10 miles of project site.
Leptosiphon serrulatus	Madera leptosiphon	ESA: None CESA: None CNPS: 1B.2 Global Rank: G3 State Rank: S3	Annual herb found in cismontane woodland, lower montane coniferous forest; elev. 985 – 4,265 ft (300 – 1300 m)	Apr – May	Not likely to occur	Project site does not support typically suitable habitat and is outside the known geographic range of the species; no records within 10 miles of project site.

TABLE 5.2-5 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS PLANTS, BRYOPHYTES, LICHENS, AND FUNGI WITHIN THE PROJECT AREA

Taxa		Status[1]	Habitat	Flowering Period	Potential to Occur[2]	Comments
Scientific Name	**Common Name**					
Lilium humboldtii	Ocellated Humboldt lily	Fed: None CESA: None CNPS: 4.2 Global Rank: G4T4? State Rank: S4?	Perennial bulbiferous herb found in openings in chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, riparian woodland; elev. 100 – 5,905 ft (30 – 1,800 m)	Mar – Jul	Not likely to occur	Project site does not support typically suitable habitat and is outside the known geographic range of the species; several recent records located south of Hwy 158 more than 5 miles south of project site.
Loeflingia squarrosa var. *artemisiarum*	Sagebrush loeflingia	ESA: None CESA: None CNPS: 2B.2 Global Rank: G5T3 State Rank: S2	Annual herb found in sandy soils in desert dunes, Great Basin scrub, Sonoran desert scrub; elev. 2,295 – 5,300 ft (700 – 1,615 m)	Apr – May	**Present**	Observed during 2023 and 2024 surveys within western edge of P1 Site.

TABLE 5.2-5 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS PLANTS, BRYOPHYTES, LICHENS, AND FUNGI WITHIN THE PROJECT AREA

Taxa		Status[1]	Habitat	Flowering Period	Potential to Occur[2]	Comments
Scientific Name	Common Name					
Microseris sylvatica	Sylvan microseris	ESA: None CESA: None CNPS: 4.2 Global Rank: G4 State Rank: S4	Perennial herb found in chaparral, cismontane woodland, Great Basin scrub, pinyon and juniper woodland, valley and foothill grassland; elev. 150 – 4,920 ft (45 – 1,500 m)	Mar – Jun	Not likely to occur	Project site does not support typically suitable habitat and is outside the known geographic range of the species; nearest record approximately eight miles northwest of project site.
Monardella exilis	Mojave monardella	ESA: None CESA: None CNPS: 4.2 Global Rank: G3? State Rank: S3	Annual herb found in sandy soils in chenopod scrub, desert dunes, Great Basin scrub, Joshua tree woodland, lower montane coniferous forest, Mojavean desert scrub, pinyon and juniper woodland; elev. 1,970 – 6,725 ft (600 – 2,050 m)	Apr – Sep	**Present**	Observed during 2023 and 2024 surveys on sandy soils within the western portion of the project site.

TABLE 5.2-5 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS PLANTS, BRYOPHYTES, LICHENS, AND FUNGI WITHIN THE PROJECT AREA

Taxa		Status[1]	Habitat	Flowering Period	Potential to Occur[2]	Comments
Scientific Name	Common Name					
Monardella linoides ssp. *anemonoides*	Southern Sierra monardella	ESA: None CESA: None CNPS: 1B.3 Global Rank: G5T2 State Rank: S2	Perennial herb found in chaparral, cismontane woodland, lower montane coniferous forest; elev. 2,200 – 8,040 ft (670 – 2,450 m)	Jun – Aug	Not likely to occur	Project site does not support typically suitable habitat; no records within 10 miles of project site.
Monardella linoides ssp. *oblonga*	Tehachapi monardella	ESA: None CESA: None CNPS: 1B.3 Global Rank: G5T2 State Rank: S2	Perennial rhizomatous herb found in lower montane coniferous forest, pinyon and juniper woodland, upper montane coniferous forest; elev. 2,955 – 8,105 ft (900 – 2,470 m)	Jun – Aug	Not likely to occur	Project site does not support typically suitable habitat; no records within 10 miles of project site.
Muhlenbergia utilis	Aparejo grass	ESA: None CESA: None CNPS: 2B.2 Global Rank: G4 State Rank: S2S3	Perennial rhizomatous herb found in sometimes alkaline or serpentine soils in chaparral, cismontane woodland, coastal scrub, meadows and seeps, marshes and swamps; elev. 80 – 7,630 ft (25 – 2,325 m)	Mar – Oct	Not likely to occur	Project site does not support typically suitable habitat; nearest record approximately 8.5 miles northwest of project site.

TABLE 5.2-5 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS PLANTS, BRYOPHYTES, LICHENS, AND FUNGI WITHIN THE PROJECT AREA

Taxa		Status[1]	Habitat	Flowering Period	Potential to Occur[2]	Comments
Scientific Name	Common Name					
Muilla coronata	Crowned muilla	ESA: None CESA: None CNPS: 4.2 Global Rank: G3 State Rank: S3	Perennial bulbiferous herb found in chenopod scrub, Joshua tree woodland, Mojavean desert scrub, pinyon and juniper woodland; elev. 2,200 - 6,430 ft (670 – 1,960 m)	Mar – Apr	Low	Project site supports typically suitable habitat and is within the known geographic and elevation ranges of the species; nearest recent record approximately 13.5 miles northeast.
Navarretia fossalis	Spreading navarretia	ESA: FT CESA: None CNPS: 1B.1 Global Rank: G2 State Rank: S2	Annual herb found in chenopod scrub, shallow freshwater marshes and swamps, playas, vernal pools; elev. 100 – 2,150 ft (30 – 655 m)	Apr – Jun	Not likely to occur	Project site does not support typically suitable habitat and is outside the known geographic range of the species; nearest record located approximately 8 miles south of project site.

TABLE 5.2-5 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS PLANTS, BRYOPHYTES, LICHENS, AND FUNGI WITHIN THE PROJECT AREA

Taxa		Status[1]	Habitat	Flowering Period	Potential to Occur[2]	Comments
Scientific Name	**Common Name**					
Navarretia peninsularis	Baja navarretia	ESA: None CESA: None CNPS: 1B.2 Global Rank: G3 State Rank: S2	Annual herb found in mesic soils in chaparral openings, lower montane coniferous forest, meadows and sweeps, pinyon and juniper woodland; elev. 4,920 – 7,545 ft (1,500 – 2,300 m)	Jun – Aug	Not likely to occur	Project site does not support typically suitable habitat and is outside the known geographic and elevation ranges of the species; no records within 10 miles of project site.
Nemacladus secundiflorus var. *robbinsii*	Robbins' nemacladus	ESA: None CESA: None CNPS: 1B.2 Global Rank: G3T2 State Rank: S2	Annual herb found in openings in chaparral, valley and foothill grassland; elev. 1,150 – 5,580 ft (350 – 1,700 m)	Apr – Jun	Not likely to occur	Project site does not support typically suitable habitat and is outside the known geographic range of the species; no records within 10 miles of project site.

TABLE 5.2-5 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS PLANTS, BRYOPHYTES, LICHENS, AND FUNGI WITHIN THE PROJECT AREA

Taxa		Status[1]	Habitat	Flowering Period	Potential to Occur[2]	Comments
Scientific Name	Common Name					
Opuntia basilaris var. *brachyclada*	Short-joint beavertail	ESA: None CESA: None CNPS: 1B.2 Global Rank: G5T3 State Rank: S3	Perennial stem found in chaparral, Joshua tree woodland, Mojavean desert scrub, pinyon and juniper woodland; elev. 1,395 – 5,905 ft (425 – 1,800 m)	Apr – Jun	Not likely to occur	Project site supports typically suitable habitat but is outside the known geographic range for the species; nearest record located over six miles southwest of project site.
Opuntia basilaris var. *treleasei*	Bakersfield cactus	ESA: FE CESA: SE CNPS: 1B.1 Global Rank: G5T1 State Rank: S1	Perennial stem found in sometimes gravelly or sandy soils in chenopod scrub, cismontane woodland, valley and foothill grassland; elev. 330 – 4,755 ft (100 – 1,450 m)	Apr – May	Not likely to occur	Project area does not support typically suitable habitat and is outside the known geographic range of the species; no records within 10 miles of project site.

TABLE 5.2-5 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS PLANTS, BRYOPHYTES, LICHENS, AND FUNGI WITHIN THE PROJECT AREA

Taxa		Status[1]	Habitat	Flowering Period	Potential to Occur[2]	Comments
Scientific Name	Common Name					
Perideridia pringlei	Adobe yampah	ESA: None CESA: None CNPS: 4.3 Global Rank: G4 State Rank: S4	Perennial herb found in often clay and serpentine soils in chaparral, cismontane woodland, coastal scrub, pinyon and juniper woodland; elev. 985 – 5,905 ft (300 – 1,800 m)	Apr – Jun	Not likely to occur	Project site does not support typically suitable habitat; no records within 10 miles of project site.
Phacelia exilis	Transverse Range phacelia	ESA: None CESA: None CNPS: 4.3 Global Rank: G4Q State Rank: S4	Annual herb found in sometimes gravelly and sandy soils in lower montane coniferous forest, meadows and seeps, pebble (pavement) plains, upper montane coniferous forest; elev. 3,610 – 8,860 ft (1,100 – 2,700 m)	May – Aug	Not likely to occur	Project site does not support typically suitable habitat and is outside the known geographic and elevation ranges of the species; no records within 10 miles of project site.

TABLE 5.2-5 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS PLANTS, BRYOPHYTES, LICHENS, AND FUNGI WITHIN THE PROJECT AREA

Taxa		Status[1]	Habitat	Flowering Period	Potential to Occur[2]	Comments
Scientific Name	Common Name					
Puccinellia simplex	California alkali grass	ESA: None CESA: None CNPS: 1B.2 Global Rank: G2 State Rank: S2	Annual herb found in alkaline sinks, flats, lake margins, and vernally mesic soils in chenopod scrub, meadows and seeps, valley and foothill grassland, and vernal pools; elev. 5 – 3,050 ft (2 – 930 m)	Mar – May	Not likely to occur	Project site does not support typically suitable habitat; nearest record located approximately eight miles southeast of project site.
Saltugilia latimeri	Latimer's woodland-gilia	ESA: None CESA: None CNPS: 1B.2 Global Rank: G3 State Rank: S3	Annual herb often found in granitic soils and sometimes in rocky or sandy soils along washes in chaparral, Mojavean desert scrub, pinyon and juniper woodland; elev. 1,310 – 6,235 ft (400 – 1,900 m)	Mar – Jun	Low	Project site supports occasionally suitable habitat but is just outside of known geographic range of the species; nearest record located approximately 9.5 miles north of project site.

TABLE 5.2-5 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS PLANTS, BRYOPHYTES, LICHENS, AND FUNGI WITHIN THE PROJECT AREA

Taxa		Status[1]	Habitat	Flowering Period	Potential to Occur[2]	Comments
Scientific Name	Common Name					
Senna covesii	Cove's cassia	ESA: None CESA: None CNPS: 2B.2 Global Rank: G5 State Rank: S3	Perennial herb found along dry, sandy slopes and washes in Sonoran Desert scrub; elev. 740 – 4,250 ft (225 – 1,295 m)	Mar – Jun	Not likely to occur	Project site does not support typically suitable habitat and is outside the known geographic range of the species; species accidentally introduced in western Mojave Desert via habitat restoration in the region; no records within 10 miles of project site.

TABLE 5.2-5 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS PLANTS, BRYOPHYTES, LICHENS, AND FUNGI WITHIN THE PROJECT AREA

Taxa		Status[1]	Habitat	Flowering Period	Potential to Occur[2]	Comments
Scientific Name	Common Name					
Sidalcea neomexicana	Salt Spring checkerbloom	ESA: None CESA: None CNPS: 2B.2 Global Rank: G4 State Rank: S2	Perennial herb found in alkaline and mesic soils in chaparral, coastal scrub, lower montane coniferous forest, Mojavean desert scrub, playas; elev. 50 – 5,020 ft (15 – 1,530 m)	Mar – Jun	Not likely to occur	Project site supports occasionally suitable habitat but is slightly outside of known geographic range of the species; no records within 10 miles of project site.
Streptanthus campestris	Southern jewelflower	ESA: None CESA: None CNPS: 1B.3 Global Rank: G3 State Rank: S3	Perennial herb found in rocky soils in chaparral, lower montane coniferous forest, pinyon and juniper woodland; elev. 2,955 – 7,545 ft (900 – 2,300 m)	May – Jul	Not likely to occur	Project site does not support typically suitable habitat and is outside the known geographic and elevation ranges of this species; no records within 10 miles of project site.

TABLE 5.2-5 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS PLANTS, BRYOPHYTES, LICHENS, AND FUNGI WITHIN THE PROJECT AREA

Taxa		Status[1]	Habitat	Flowering Period	Potential to Occur[2]	Comments
Scientific Name	Common Name					
Streptanthus medeirosii	Tejon jewelflower	ESA: None CESA: None CNPS: 1B.1 Global Rank: G1 State Rank: S1	Perennial herb found in carbonate and granitic soils in cismontane woodland; elev. 4,460 – 6,170 ft (1,360 – 1,880 m)	Jun – Sep	Not likely to occur	Project site does not support typically suitable habitat and is outside the known geographic and elevation ranges of the species; no records within 10 miles of project site.
Stylocline masonii	Mason's neststraw	ESA: None CESA: None CNPS: 1B.1 Global Rank: G1 State Rank: S1	Annual herb found in sandy soils in chenopod scrub, pinyon and juniper woodland; elev. 330 – 3,935 ft (100 – 1,200 m)	Mar – May	Not likely to occur	Project site does not support typically suitable habitat; nearest recent record located approximately 6.5 miles southwest of project site.

TABLE 5.2-5 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS PLANTS, BRYOPHYTES, LICHENS, AND FUNGI WITHIN THE PROJECT AREA

Taxa		Status[1]	Habitat	Flowering Period	Potential to Occur[2]	Comments
Scientific Name	**Common Name**					
Syntrichopappus lemmonii	Lemmon's syntrichopappus	ESA None CESA: None CNPS: 4.3 Global Rank: G4 State Rank: S4	Annual herb found in sometimes gravelly or sandy soils in chaparral, Joshua tree woodland, pinyon and juniper woodland; elev. 1,640 – 6,005 ft (500 – 1,830 m)	Apr – May	Not likely to occur	Project site does not support typically suitable habitat; no known records within 10 miles of project site.
Viola pinetorum ssp. *grisea*	Grey-leaved violet	ESA: None CESA: None CNPS: 1B.2 Global Rank: G4G5T3 State Rank: S3	Perennial herb found in meadows and seeps, subalpine coniferous forest, upper montane coniferous forest; elev. 4,920 – 11,155 ft (1,500 – 3,400 m)	Apr – Jul	Not likely to occur	Project site does not support typically suitable habitat and is outside the known geographic and elevation ranges of the species; no records within 10 miles of project site.
Yucca brevifolia	Western Joshua tree	ESA: None CESA: ST CNPS: None Global Rank: G3G4 State Rank: None	Perennial tree found along desert flats and slopes in Mojavean desert scrub, Joshua tree woodland; elev. 1,300 – 7,545 ft (400 – 2,300 m)	Mar – May	**Present**	Observed throughout the project site during 2023 and 2024 surveys.

[1] STATUS DESIGNATIONS:

ESA (federal Endangered Species Act):
FE = Federally endangered
FT = Federally threatened
CESA (California Endangered Species Act):
SE = State endangered
ST = State threatened
Rare = State rare
CNPS (California Native Plant Society Rare Plant Rank:
List 1A = Plants presumed extirpated in California and either rare or extinct elsewhere
List 1B = Plants rare, threatened, or endangered in California and elsewhere
List 2A = Plants presumed extirpated in California but common elsewhere
List 2B = Plants rare, threatened, or endangered in California but more common elsewhere
List 3 = Plants about which more information is needed (review list)
List 4 = Plants of limited distribution (watch list)
CNPS Threat Ranks:
0.1 = Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)
0.2 = Moderately threatened in California (20 – 80% of occurrences threatened / moderate degree and immediacy of threat)
0.3 = Not very threatened in California (less than 20% of occurrences threatened / low degree and immediacy of threat or no current threats known)
NatureServe Global / State Ranks:
(G/S) 1 = Critically imperiled; at very high risk of extinction or elimination due to very restricted range, very few populations or occurrences, very steep declines, very severe threats, or other factors

[2] POTENTIAL TO OCCUR DEFINITIONS:

Present: Observed within or near project site during 2023 and/or 2024 focused rare plant surveys

High: Typically suitable habitat is present; project site is within known geographic and elevation ranges of species; and recent (within 10 years) record(s) within 10 miles of project site

Moderate: Occasionally suitable habitat is present; project site is within known geographic and elevation ranges of species; and recent (within 10 years) record(s) within 10 miles of project site OR typically suitable habitat is present; project site is within geographic and elevation ranges of species; and somewhat recent (within 20 years) record(s) within 10 miles of project site

Low: Typically or occasionally suitable habitat is present; project site is outside of known geographic and/or elevation ranges; and recent (within 10 years) record(s) within 10 miles of project site OR typically or occasionally suitable habitat is present; project site is within known geographic and elevation ranges; and recent (within 10 years) or somewhat recent (within 20 years) within 10 miles of project site

Not likely to occur: Typically or occasionally suitable habitat is not present and/or the project site is outside of the known geographic and/or elevation ranges of the species; no known records within 10 miles of project site.

Sources:

WSP 2024d; WSP 2024h; WSP 2024i; WSP 2024q; WSP 2024s; WSP 2024v; Calflora 2025; CDFW 2025a; CDFW 2025c; CNPS 2025b; iNaturalist 2025

TABLE 5.2-5 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS PLANTS, BRYOPHYTES, LICHENS, AND FUNGI WITHIN THE PROJECT AREA

Taxa		Status[1]	Habitat	Flowering Period	Potential to Occur[2]	Comments
Scientific Name	**Common Name**					
(G/S) 2 = Imperiled; at high risk of extinction or elimination due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors (G/S) 3 = Vulnerable; at moderate risk of extinction or elimination due to fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors (G/S) 4 = Apparently secure; at fairly low risk of extinction or elimination due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of recent local declines, threats, or other factors (G/S) 5 = Secure; at very low risk of extinction or elimination due to a very extensive range, abundant populations or occurrences, and little to no concern from declines or threats T = Subspecies/varieties receive a “T” rank attached to the “G” rank. With subspecies/varieties, the “G” rank reflects the condition of the entire species, whereas the “T” rank reflects the global situation of just the subspecies or variety. Q = Questionable taxonomy that may reduce conservation priority.						

Horn's milk-vetch. Horn's milk-vetch is an annual herb that is designated as a CRPR List 1B.1 species. It is known from scattered locations in Inyo, Kern, Kings, Los Angeles, Orange, and Riverside Counties where it typically occurs in alkaline and lake margin microhabitats within meadows, seeps, and playas at elevations from 195 to 2,790 feet (60 to 850 meters). The blooming period occurs between May and October. Populations of Horn's milk-vetch were significantly reduced in the early 1900s due to eradication efforts associated with its toxicity to sheep. Current threats include habitat alteration. This species was not observed during 2023 and 2024 focused rare plant surveys conducted by the applicant and the project site does not support typically suitable alkaline or lake margin microhabitats. However, the project site is within the known geographic and elevation ranges of the species and a historic CNDDB record is in the Willow Springs area immediately adjacent to the gen-tie component of the project site (CDFW 2025a). Therefore, there is a low potential for Horn's milk-vetch to occur within or adjacent to the project area.

Alkali mariposa lily. Alkali mariposa lily is a perennial bulbiferous herb that is designated as a CRPR List 1B.2 species. It is known from Inyo, Kern, Los Angeles, San Bernardino, and Tulare Counties where it typically occurs in alkaline and mesic microhabitats within chaparral, chenopod scrub, Mojavean desert scrub, meadows, and seeps at elevations from 230 to 5,235 feet (70 to 1,595 meters). The blooming period occurs between April and June. Primary threats to this species include urbanization, grazing, trampling, road construction, hydrological alterations and water diversions that result in the lowering of the water table. It may also be potentially threatened by non-native plants and horticultural collecting. A small population of approximately 20 alkali mariposa lily individuals was observed along Rosamond Boulevard at 95th Street and within a section of the gen-tie component of the project site during 2023 focused rare plant surveys conducted by the applicant (WSP 2024d).

Peirson's morning-glory. Peirson's morning-glory is a perennial rhizomatous herb that is designated as a CRPR List 4.2 species. It is known from Kern, Los Angeles, and Ventura Counties where it typically occurs in chaparral, chenopod scrub, cismontane woodland, coastal scrub, lower montane coniferous forest, and valley and foothill grassland communities at elevations from 100 to 4,920 feet (30 to 1,500 meters). The blooming period occurs between April and June. Primary threats to this species include grazing and development. It may also be potentially threatened by powerline construction. This species was not observed during 2023 and 2024 focused rare plant surveys conducted by the applicant and the project site does not support typically suitable habitat. However, the project site is within the known geographic and elevation ranges of the species and there are several recent iNaturalist records within 10 miles of the project site, with the nearest located at an existing solar facility approximately 6 miles to the southwest (iNaturalist 2025). Therefore, there is a low potential for Peirson's morning-glory to occur within or adjacent to the project area.

White pygmy-poppy. White pygmy-poppy is an annual herb that is designated as a CRPR List 4.2 species. It is known from Inyo, Kern, Los Angeles, and San Bernardino

Counties where it typically occurs in granitic, gravelly, and sandy microhabitats within Joshua tree woodland, Mojavean desert scrub, and pinyon and juniper woodland communities at elevations from 1,970 to 4,790 feet (600 to 1,460 meters). The blooming period occurs between March and June. White pygmy-poppy is currently threatened by development, vehicles, road maintenance, grazing, mining, and non-native plants. This species was not observed during 2023 and 2024 focused rare plant surveys conducted by the applicant. However, the project site supports typically suitable habitat and is within the known geographic and elevation ranges of the species. There are several scattered historic and recent CNDDB and Calflora records in the general region with the nearest located near Rosamond Dry Lake just over one mile southeast of the WRESC site (CDFW 2025a; Calflora 2025). Therefore, there is a high potential for white pygmy-poppy to occur within or adjacent to the project area.

Mojave spineflower. Mojave spineflower is an annual herb that is designated as a CRPR List 4.2 species. It is known from Kern, Los Angeles, San Bernardino, San Luis Obispo, and Sonoma Counties where it sometimes occurs in alkaline microhabitats within chenopod scrub, Joshua tree woodland, Mojavean desert scrub, and playas at elevations from 20 to 4,265 feet (6 to 1,300 meters). The blooming period occurs between March and July. Primary threats to this species include vehicles, road maintenance, development, and illegal dumping. It may also be potentially threatened by solar development. This species was not observed during 2023 and 2024 focused rare plant surveys conducted by the applicant; however, the project site supports occasionally suitable habitat and is within the known geographic and elevation ranges of the species. There are several recent iNaturalist and Calflora records scattered within 10 miles of the project site with the nearest located along West Avenue C approximately five miles south of the gen-tie component (iNaturalist 2025; Calflora 202. Therefore, there is a moderate potential for Mojave spineflower to occur within or adjacent to the project area.

Clokey's cryptantha. Clokey's cryptantha is an annual herb that is designated as a CRPR List 1B.2 species. It is known from Inyo, Kern, Los Angeles, and San Bernardino Counties where it occurs within Mojavean desert scrub at elevations from 2,380 to 4,480 feet (725 to 1,365 meters). The blooming period occurs in April. Clokey's cryptantha is currently threatened by military activities and alteration of fire regimes. This species was not observed during 2023 and 2024 focused rare plant surveys conducted by the applicant; however, the project site supports typically suitable habitat and is within the known geographic and elevation range of the species. The nearest CNDDB record is located at the Antelope Valley California Poppy Reserve approximately 7.5 miles south of the gen-tie component of the project site (CDFW 2025a). Therefore, there is a moderate potential for Clokey's cryptantha to occur within or adjacent to the project area.

Desert cymopterus. Desert cymopterus is a perennial herb that is designated as a CRPR List 1B.2 species. It is known from Kern, Los Angeles, San Bernardino Counties where it occurs in sandy microhabitats within Joshua tree woodland and Mojavean

desert scrub at elevations from 2,065 to 4,920 feet (630 to 1,500 meters). The blooming period occurs between March and May. Desert cymopterus is currently threatened by military activities, sheep grazing, vehicles, utility construction, and urbanization. This species was not observed during 2023 and 2024 focused rare plant surveys conducted by the applicant; however, the project site supports typically suitable habitat and is within the known geographic and elevation range of the species. Although there are no records within 10 miles of the projects site, this species has been documented at several scattered locations east of Edwards Air Force Base (iNaturalist 2025; Calflora 2025). Therefore, there is a low potential for desert cymopterus to occur within or adjacent to the project area.

Recurved larkspur. Recurved larkspur is a perennial herb that is designated as a CRPR List 1B.2 species. It is known from several counties in the state, including Kern County, where it occurs in alkaline microhabitats within chenopod scrub, cismontane woodland, and valley and foothill grasslands at elevations from 10 to 2,590 feet (3 to 790 meters). The blooming period occurs between March and June. Primary threats to this species include habitat being converted for agricultural use, grazing, and non-native plants. It may also be potentially threatened by vehicles. This species was not observed during 2023 and 2024 focused rare plant surveys conducted by the applicant; however, the project site supports occasionally suitable habitat and is within the known geographic and elevation ranges of the species. The nearest CNDDB record is located along Sierra Highway less than two miles north of the WRESC site (CDFW 2025a). Therefore, there is a moderate potential for recurved larkspur to occur within or adjacent to the project area.

Rosamond eriastrum. Rosamond eriastrum is an annual herb that is designated as a CRPR List 1B.1 species. It is known from the Rosamond and Rogers Dry Lake areas of Kern and Los Angeles Counties where it occurs in alkaline and often sandy microhabitats within openings of chenopod scrub and along edges of vernal pools at elevations from 2,295 to 3,855 feet (700 to 1,175 meters). The blooming period occurs between April and May but may extend into June and July. Rosamond eriastrum is currently threatened by development, agriculture, and non-native plants. This species was not observed during 2023 and 2024 focused rare plant surveys conducted by the applicant. Although the project site does not support typically suitable habitat, it is within the known geographic and elevation ranges of the species. There are several CNDDB, Calflora, and iNaturalist records scattered south of the project site with the nearest located off Highway 138 less than six miles away (Calflora 2025; CDFW 2025a; iNaturalist 2025). Therefore, there is a low potential for Rosamond eriastrum to occur within or adjacent to the project area.

Barstow woolly sunflower. Barstow woolly sunflower is an annual herb that is designated as a CRPR List 1B.2 species. It is known from Kern, Los Angeles, and San Bernardino Counties where it occurs within chenopod scrub, Mojavean desert scrub, and playas at elevations from 1,640 to 3,150 feet (500 to 960 meters). The blooming period occurs between March and May. Barstow woolly sunflower is currently

threatened by energy development, road improvements, vehicles, and grazing. This species was not observed during 2023 and 2024 focused rare plant surveys conducted by the applicant; however, the project site supports typically suitable habitat and is within the known geographic and elevation ranges of the species. The nearest CNDDB record is located near the Hyundai-Kia California Proving Ground just over 10 miles northeast of the project site (CDFW 2025a). Therefore, there is a low potential for Barstow woolly sunflower to occur within or adjacent to the project area.

Inland gilia. Inland gilia is an annual herb that is designated as a CRPR List 4.3 species. It is known from Kern, Los Angeles, San Bernardino, Tulare, and Ventura Counties where it occurs in rocky microhabitats within cismontane woodland, Joshua tree woodland, and lower montane coniferous forest communities at elevations from 2,295 to 5,580 feet (700 to 1,700 meters). The blooming period occurs between March and May. There are no current threats identified for this species. Inland gilia was not observed during 2023 and 2024 focused rare plant surveys conducted by the applicant and there are no records within 10 miles of the project site. However, the typically suitable habitat is present and the project site is within the known geographic and elevation ranges of the species. Therefore, there is a low potential for inland gilia to occur within or adjacent to the project area.

Golden goodmania. Golden goodmania is an annual herb that is designated as a CRPR List 4.2 species. It is known from Fresno, Inyo, Kern, Los Angeles, Madera, Mono, and Tulare Counties where it occurs in sometimes alkaline and clay microhabitats within Mojavean desert scrub, meadows, seeps, playas, and valley and foothill grasslands at elevations from 65 to 7,220 feet (20 to 2,200 meters). The blooming period occurs between April and August. Possible current threats to golden goodmania include non-native plants, groundwater lowering, trampling by cattle, and development. This species was not observed during 2023 and 2024 focused rare plant surveys conducted by the applicant; however, the project site supports typically suitable habitat and is within the known geographic and elevation ranges of the species. There are several scattered Calflora and iNaturalist records in the general region with the nearest located in the Silver Queen Mine area approximately four miles north of the WRESC site (Calflora 2025; iNaturalist 2025). Therefore, there is a moderate potential for golden goodmania to occur within or adjacent to the project area.

Sagebrush loeflingia. Sagebrush loeflingia is an annual herb that is designated as a CRPR List 2B.2 species. It is known from Inyo, Kern, Lassen, Los Angeles, Plumas, and San Bernardino Counties where it occurs in sandy microhabitats within desert dunes, Great Basin scrub, and Sonoran desert scrub communities at elevations from 2,295 to 5,300 feet (700 to 1,615 meters). The blooming period occurs between April and May. Current threats to sagebrush loeflingia include grazing and vehicles. Approximately 20 individual plants were observed within the western edge of the P1 site north of Dawn Road during 2023 focused rare plant surveys conducted by the applicant (WSP 2024d). It was also observed during surveys in 2024 near Felsite Avenue along disturbed access roads associated with the gen-tie component of the project area (WSP 2024v).

Mojave monardella. Mojave monardella is an annual herb that is designated as a CRPR List 4.2 species. It is known from Inyo, Kern, Los Angeles, San Bernardino, and Tulare Counties where it occurs in sandy microhabitats within chenopod scrub, desert dunes, Great Basin scrub, Joshua tree woodland, lower montane coniferous forest, Mojavean desert scrub, and pinyon and juniper woodland communities at elevations from 1,970 to 6,725 feet (600 to 2,050 meters). The blooming period occurs between April and September. Current threats to Mojave monardella include urbanization, habitat loss, energy development, vehicles, and grazing. This species was observed at scattered locations throughout the WRESC site during 2023 and 2024 focused rare plant surveys conducted by the applicant (WSP 2024d; WSP 2024v).

Crowned muilla. Crowned muilla is a perennial bulbiferous herb that is designated as a CRPR List 4.2 species. It is known from Inyo, Kern, Los Angeles, San Bernardino, and Tulare Counties where it occurs in chenopod scrub, Joshua tree woodland, Mojavean desert scrub, and pinyon and juniper woodland communities at elevations from 2,200 to 6,430 feet (670 to 1,960 meters). The blooming period occurs between March and April but may extend into May. Crowned muilla is possibly threatened by road widening, vehicles, illegal dumping, and development. This species was not observed during 2023 and 2024 focused rare plant surveys conducted by the Applicant; however, the project site supports typically suitable habitat and is within the known geographic and elevation ranges of the species. There are several scattered Calflora and iNaturalist records in the general region with the nearest located at Edwards Air Force Base approximately 13.5 miles to the northeast (Calflora 2025; iNaturalist 2025). Therefore, there is a low potential for crowned muilla to occur within or adjacent to the project area.

Latimer's woodland-gilia. Latimer's woodland-gilia is an annual herb that is designated as a CRPR List 1B.2 species. It is known from Inyo, Kern, Riverside, and San Bernardino Counties where it occurs in often granitic and sometimes rocky and sandy wash microhabitats within chaparral, Mojavean desert scrub, and pinyon and juniper woodland communities at elevations from 1,310 to 6,235 feet (400 to 1,900 meters). The blooming period occurs between March and June. Known from fewer than 20 occurrences, Latimer's woodland-gilia is possibly threatened by recreational activities. This species was not observed during 2023 and 2024 focused rare plant surveys conducted by the applicant; however, the project site supports occasionally suitable habitat and is just outside of the known geographic range of the species. The nearest CNDDB record is in the area of Twin Lakes approximately 10 miles northwest of the project site (CDFW 2025a). Therefore, there is a low potential for Latimer's woodland-gilia to occur within or adjacent to the project area.

Western Joshua tree. Western Joshua tree is a candidate for listing under CESA and is also protected under the Western Joshua Tree Conservation Act (WJTCA). It is characterized by its tall, spiky leaves that cluster at the ends of long, branching limbs.

This species is native to the southwestern United States, including California, Arizona, Nevada, and Utah, and northwestern Mexico. This range mostly coincides with the geographical reach of the Mojave Desert, where it is considered one of the major

indicator species for the desert. It occurs at elevations between 1,300 and 5,900 feet (400 and 1,800 meters).

Western Joshua trees are adapted to the arid conditions of their native desert habitats. The species exhibits a slow growth rate, with some trees taking several decades to reach maturity. Typically, they can grow to 15 to 40 feet (4.5 to 12 meters), and their lifespan can extend for centuries, making them one of the longest-living yucca species. The distinctive leaves have a waxy coating that helps reduce water loss through transpiration, and trees have an extensive root system that enables access to water deep within the soil. Western Joshua trees rely on a specialized pollination relationship with the yucca moth (*Tegeticula* spp.). The moth lays its eggs in the tree's flowers, and as the larvae develop, they consume some of the developing seeds, ensuring the tree's reproductive success.

Climate plays a crucial role in the distribution of western Joshua trees, as this species is well-suited to the extreme temperatures and low precipitation throughout its range. They are particularly vulnerable to environmental changes, including climate fluctuations and habitat disturbances. Wildfires, invasive grasses, and poor seed migration dispersal patterns are additional factors threatening the species.

A total of 3,970 western Joshua trees were recorded in the survey area during the 2024 verification census conducted by the applicant (WSP 2024q). Most of the trees documented were live (3,755 individuals or 95%). Class B was the most common recorded size (2,107 individuals or 53%), followed by Class A (1,642 individuals or 41%), and Class C (221 individuals or 6%). **Table 5.2-6** provides a summary of the western Joshua tree census results collected for the project. Note that not all trees summarized in **Table 5.2-6** will be removed or impacted during implementation of the project.

TABLE 5.2-6 SUMMARY OF WESTERN JOSHUA TREE CENSUS DATA

Attribute		WRESC Site	P1	P2 North and South	Villa Hains	Gen-Tie Alignment
Status	Alive	1,383 (93%)	477 (95%)	799 (95%)	996 (97%)	100 (97%)
	Dead	108 (7%)	24 (5%)	45 (5%)	35 (3%)	3 (3%)
Size Class	Class A	501 (34%)	200 (40%)	316 (37%)	569 (55%)	56 (54%)
	Class B	903 (61%)	278 (55%)	456 (54%)	424 (41%)	46 (45%)
	Class C	87 (5%)	23 (5%)	72 (9%)	38 (4%)	1 (1%)
Total		**1,491**	**501**	**844**	**1,031**	**103**

Source: WSP 2024q

Special-Status Wildlife

For the purposes of this report, special-status wildlife species include:

- Listed, proposed for listing, or candidates for listing as threatened or endangered species (including designated or proposed critical habitat) under the federal Endangered Species Act (ESA)
- Listed, or candidates for listing as threatened or endangered under the California Endangered Species Act (CESA)
- Bald and golden eagles protected under the Bald and Golden Eagle Protection Act (BGEPA)
- Designated as a Bird of Conservation Concern (BCC) by the USFWS
- Designated as Fully Protected (FP) by the CDFW (CDFW, 2020b)
- Designated as Species of Special Concern (SSC) by CDFW (CDFW, 2020b)
- Designated as a Special Animal (SA) by CDFW

In addition to the literature review, reconnaissance-level surveys, and habitat assessments described above, the applicant conducted several focused and protocol-level surveys for special-status wildlife species. **Table 5.2-7** summarizes the special-status wildlife surveys that were conducted by the applicant.

TABLE 5.2-7 SUMMARY OF SPECIAL-STATUS WILDLIFE SURVEYS CONDUCTED BY APPLICANT FOR THE PROJECT

Survey Focus	Survey Type	Dates	Parameters		
			WRESC Site	Gen-Tie Alignments	Additional Components
Habitat Assessments	Reconnaissance	March 28 – October 6, 2023	WRESC site and 1,000-foot buffer	Gen-tie alignment and 500-foot buffer	Additional gen-tie alignment and 1,000-foot buffer; P2 North/P2 South sites and 1-mile buffer
Crotch's Bumble Bee	Protocol	Apr 25, 26, May 10, Jun 8, 2023; Mar 26, 27, Apr 2, 3, 4, 29, 30, May 1, 2, 3, 2024	WRESC site only	Gen-tie alignment only	Additional gen-tie alignment and P2 North/P2 South sites only

TABLE 5.2-7 SUMMARY OF SPECIAL-STATUS WILDLIFE SURVEYS CONDUCTED BY APPLICANT FOR THE PROJECT

Western Burrowing Owl	Protocol	Apr 18, 19, 25, 26, 27, May 10, 11, 23, Jun 7, 21, 22, 23, Jul 5, 26, 2023; Apr 2, 3, 4, 8, 9, May 5, 6, 7, Jun 5, 6, 18, 19, 20, 2024	WRESC site and 500-foot buffer	Gen-tie alignment and 500-foot buffer	Additional gen-tie alignment, P2 North/P2 South sites, and 500-foot buffer
Swainson's Hawk	Protocol	March 28, 30, 31, Apr 3, 5, 19, 24, 26, May 9, 10, 12, 22, 23, Jun 8, 2023; Mar 18, 19, 25, 26, 27, Apr 1, 2, 3, 4, 12, 23, 24, May 7, 8, 15, 16, 17, 21, Jun 5, 12, 19, 2024	WRESC site and 0.5-mile buffer	Gen-tie alignment and 0.5-mile buffer	Additional gen-tie alignment, P2 North/P2 South sites, and 0.5-mile buffer
Desert Tortoise	Protocol	Apr 18, 19, 25, 26, 27, May 10, 11, 23, Jun 7, 21, 22, 23, Jul 5, 26, 2023; Apr 2, 3, 4, 8, 9, 2024	WRESC site and 500-foot buffer	Gen-tie alignment and 500-foot buffer	Additional gen-tie alignment, P2 North/P2 South sites only
Mojave Ground Squirrel	Protocol	Mar 15 – July 15, 2023; Apr 9, Apr 26 – May 1, May 26 – 31, July 1 – 5, 2024	WRESC site only	Gen-tie alignment only	Additional gen-tie alignment, P2 North/P2 South sites only

Source: WSP 2024d; WSP 2024v

Crotch's Bumble Bee Protocol-Level Surveys. Habitat for Crotch's bumble bee (*Bombus crotchii*) was assessed during the focused rare plant surveys conducted in 2023 and 2024 (WSP 2024d; WSP 2024v; WSP 2024t). These assessments included visually inspecting and noting all areas within and near the project area for suitable Crotch's bumble bee habitat and nectar sources. All patches of suitable habitat were mapped using a GPS unit and individual points were recorded at each nectar source. Once all nectar source data was collected, a larger polygon was developed to cover areas of suitable habitat for the subsequent protocol-level surveys.

The applicant submitted a memo to CDFW in March 2023 regarding the Crotch's bumble bee survey protocols recommended for the proposed project. The memo was reviewed and approved by CDFW prior to conducting surveys (CEC 2023e). Methods for the surveys conducted in 2023 were loosely based on protocols used on the High-Speed

Rail Project as provided by CDFW. Methods applied during 2024 protocol-level surveys were based on the *Survey Considerations for the California Endangered Species Act Candidate Bumble Bee Species* (CDFW 2023a).

The 2023 surveys were anticipated to occur between March and May but were postponed due to weather conditions and instead occurred between April and June, which still occurred during the peak nectar blooming season and colony active period (April 1 – June 30) (WSP 2024d). The 2024 surveys were initiated in late March due to the extended winter rain season; however, were still completed within the colony active period (WSP 2024t). All surveys were completed by walking transects within suitable habitat and within acceptable weather conditions. All bumble bee observations were recorded during surveys.

Western Burrowing Owl Protocol-Level Surveys. The survey methods implemented by the applicant were generally consistent with the guidelines outlined in *Appendix D of the Staff Report on Burrowing Owl Mitigation* (CDFG 2012). These methods require four focused surveys with the first survey conducted during the peak breeding season (February 15 to April 15) and the three subsequent surveys conducted at least three weeks apart thereafter. The final survey should be conducted between June 15 and July 15.

Pursuant to these methods, protocol-level breeding season surveys for burrowing owl (*Athene cunicularia hypugaea*) were conducted by the applicant between April and July 2023 for the WRESC site and the majority of the gen-tie alignment and between April and June 2024 for the additional project components (WSP 2024e; WSP 2024u). However, during the 2023 surveys, a prolonged winter rainy season required conducting the first survey on April 18, slightly after the guidelines recommended date. Additionally, the spacing of some of the surveys occurred within the recommended 3-week minimum survey spacing window. Nonetheless, these slight modifications were discussed with CDFW and all surveys were performed within the peak breeding season based on weather conditions, with the first survey conducted after most or all burrowing owl migrants were expected to have moved out of the area, but with any resident burrowing owls present.

All surveys included walking a maximum of 98-foot (30-meter) transects within the project site and a 500-foot (150-meter) buffer with the exception of the first 2024 survey which was conducted in concert with focused rare plant and desert tortoise surveys and included walking 33-foot (10-meter) transects. Data recorded during the surveys included observations of burrowing owl individuals or their sign (e.g., pellets, whitewash, feathers, tracks, nest adornments, and auditory cues), suitable natural burrows, complexes, and surrogate burrow structures. Binoculars were used to scan areas that could not be accessed due to safety or property restrictions. All burrowing owl locations and those burrows and surrogate structures identified as suitable were mapped using GPS software.

Swainson's Hawk Protocol-Level Surveys. The survey methods implemented by the Applicant were generally consistent with *Swainson's Hawk Survey Protocols, Impact Avoidance, and Minimization Measures for Renewable Energy Projects in the Antelope Valley of Los Angeles and Kern Counties, California* (CEC and CDFW 2010). These protocols require 10 surveys to be conducted over four survey periods to focus on capturing progressive nesting behavior and activities. The survey periods include:

- Survey Period I (Pre-Arrival): One survey performed between January and March 31; preliminary survey of potential nest locations (optional but recommended)
- Survey Period II: (Arrival: Nest Building): Three surveys performed between April 1 and April 30; targets initial occupancy of traditional nest territories and nesting behaviors
- Survey Period III (Egg Laying: Incubation): Three surveys performed between May 1 and May 30; direct monitoring of known/identified active nests to confirm incubation
- Survey Period IV (Fledging): Three surveys performed between June 1 and July 15; direct monitoring of known/identified active nests to confirm young rearing.

Pursuant to these protocols, Swainson's hawk (*Buteo swainsoni*) surveys were conducted by the applicant for all survey periods in 2023 for the WRESC site and most of the gen-tie alignment and in 2024 for the additional project components (ESHD 2024y; WSP 2024r). Surveys encompassed the project site and a 0.5-mile buffer and included the identification of individual Swainson's hawk individuals, all occupied Swanson's hawk nest trees, suitable nest trees, and documentation of nest competitors (e.g. common ravens, red-tailed hawks). Location data was recorded with GPS utilizing the Esri ArcGIS Field Maps application. Except for rural residential parcels with suitable nest trees, most of the developed parcels within the survey area were excluded during the surveys due to a lack of suitable habitat.

Desert Tortoise Protocol-Level Surveys. The survey methods implemented by the applicant followed the recommended protocols in the USFWS *General Ecology and Survey Protocol for Determining Presence/Absence and Abundance for the Desert Tortoise – Mojave Population Preparing for Any Action that May Occur within the Range of the Mojave Desert Tortoise (Gopherus agassizii*) (USFWS 2018). Protocol-level surveys for desert tortoise were conducted by the applicant between April and June 2023 for the WRESC site and most of the gen-tie alignment, and in April 2024 for the additional project components (WSP 2024c; WSP 2024o). All surveys were performed in concert with focused rare plant and burrowing owl surveys, which was considered appropriate since all surveys were terrestrial based and require 32-foot (10-meter) transects. All surveys included 100 percent visual coverage of the project site plus a 500-foot (152-meter) buffer. Pursuant to the USFWS protocols, all burrows were documented and classified and any desert tortoise sign (e.g., scat, tracks, shell remains, etc.) were recorded using the Esri ArcGIS Field Maps application. Due to the relatively flat nature of the project site and surrounding areas, nearly all accessible

areas were observed directly during surveys. Developed areas were excluded from the surveys as unsuitable habitat. Inaccessible areas were scanned using binoculars.

Mohave Ground Squirrel Protocol-Level Surveys. The survey methods implemented by the applicant were generally consistent with the *Mohave Ground Squirrel Survey Guidelines* (CDFW 2023b). The applicant received approvals from CDFW for slight variations to the guidelines, including a reduced number of traps in a sequential format rather than within a grid in 2023 and modifications to grid configurations and timing of the first survey window due to inclement weather conditions in 2024 (WSP 2024f; WSP 2024p). To assess presence, relative abundance, and activity, the guidelines include a combination of visual, live-trapping, and camera trapping surveys.

Visual surveys conducted by the applicant consisted of driving and walking throughout the project site to identify suitable habitat for Mojave ground squirrel (*Xerospermophilus mohavensis*) (GA 2023f). This included identifying known foreign plants, suitable soil types, and potential burrows and burrow complexes. Live-trapping and camera trapping surveys included a combination of installing Sherman live traps and cameras at strategic and pre-selected locations within the project site and a 500-foot (152-meter) buffer to maximize survey results. All guidelines' restrictions associated with timing, baiting, and weather were implemented.

Survey Results and Potential to Occur. The western Mojave Desert supports habitat for a variety of special-status wildlife species. A total of 79 (9 invertebrates, 2 amphibians, 7 reptiles, 49 birds, and 12 mammals) were identified within the general region during the literature review (see **Table 5.2-8**). Surveys conducted in 2023 and 2024 by the applicant identified 8 special-status wildlife species in or near the project site through direct observation. Species observed during surveys included Crotch's bumble bee, western burrowing owl, Swainson's hawk, northern harrier, prairie falcon, loggerhead shrike, Brewer's sparrow, and Le Conte's thrasher.

An additional 28 species were determined to have some potential to occur in or near the project site based on the presence of suitable habitat, the proximity to known recorded occurrences, or through coordination with CDFW. The remaining 43 species were considered unlikely to occur due to a lack of suitable habitat, the project site being outside of known geographic or elevation ranges, and/or the lack of recorded occurrences near the project site.

Federal- and State-Listed Wildlife. Three state-listed species, including Crotch's bumble bee (candidate for listing), western burrowing owl (candidate for listing), and Swainson's hawk (state threatened) were observed during 2023 and 2024 focused and protocol-level surveys conducted by the applicant. An additional six federal- and/or state-listed species were determined to have some potential to occur within or near the project site. These include monarch butterfly (*Danaus plexippus*) (proposed for federal listing as threatened), desert tortoise (federal and state threatened), tricolored blackbird (*Agelaius tricolor*) (state threatened), California condor (federal and state

endangered), mountain lion (*Puma concolor*) (state candidate for listing), and Mohave ground squirrel (state threatened). Several federal- and/or state-listed wildlife species are known from the region but were determined unlikely to occur as described above. These include vernal pool fairy shrimp (*Branchinecta lynchi*) (federal threatened), foothill yellow-legged frog (*Rana boylii*) (federal and state endangered), northwestern and southwestern pond turtle (*Actinemys marmorata* and *A. pallida*) (proposed for federal listing as threatened), southern rubber boa (*Charina umbratica*) (state threatened), western snowy plover (*Charadrius nivosus nivosus*) (federal threatened), willow flycatcher (*Empidonax traillii*) (state endangered), bald eagle (*Haliaeetus leucocephalus*) (state endangered), and least Bell's vireo (*Vireo bellii pusillus*) (federal and state endangered).

Fully Protected Wildlife. In addition to the federal- and state-listed California condor (discussed above), which is also a state fully protected species, three species which receive full protection under the California Fish and Game Code and/or California Code of Regulations, Title 14, section 460 have some potential to occur in or near the project site. These include golden eagle, which is also protected under the BGEPA, and ringtail (*Bassariscus astutus*), as well as desert kit fox (*Vulpes macrotis arsipus*) which is protected under Title 14, section 460.

Other Special-Status Wildlife. Five additional special-status species were incidentally observed by the applicant during 2023 and 2024 surveys, including northern harrier (BCC, SSC), prairie falcon (WL), loggerhead shrike (SSC), Brewer's sparrow (SA), and Le Conte's thrasher (BCC, SSC). An additional 19 special-status wildlife species were determined to have some potential to occur in or near the project site. The remaining 33 special-status species were determined unlikely to occur as described above.

TABLE 5.2-8 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS WILDLIFE WITHIN THE PROJECT AREA

Taxon		Status[1]	Range and Habitat	Occurrence Potential[2]	Comments
Scientific Name	**Common Name**				
INVERTEBRATES					
Bombus crotchii	Crotch's bumble bee	ESA: None CESA: SC CDFW: SA Global Rank: G2 State Rank: S2	Found between San Diego and Redding in a variety of habitats, including open grasslands, shrublands, chaparral, desert margins, and semi-urban settings; nests underground but nest characteristics not well documented; generalist forager with typical floral resources including plants in the Fabaceae, Apocynaceae, Asteraceae, Lamiaceae, Boraginaceae families; overwinter in soft, disturbed soils or under leaf litter or other debris, but very little is known about hibernacula characteristics.	Nesting: High Foraging: **Present** Overwintering: High	Project site supports suitable nesting, foraging, and overwintering habitat; several individual bees, including queens, were observed foraging in and near the project site during 2023 and 2024 focused surveys; however, no hives or overwintering sites were identified.
Branchinecta lynchi	Vernal pool fairy shrimp	ESA: FT CESA: None CDFW: SA Global Rank: G3 State Rank: S3	Range in 32 counties across the central valley, central coast and southern California; largely restricted to vernal pools, may also be found in other temporary waters; can be found from Nov-early May; eggs (cysts) remain viable for years, even if the pool dries.	Not likely to occur	Project site does not support suitable habitat and is outside the known geographic range of the species; no records within 10 miles of project site.
Danaus plexippus	Monarch butterfly – California overwintering population	ESA: FPT CESA: None CDFW: SA Global Rank: G4T1T2Q State Rank: S2	Overwinter in groves of trees scattered from Mendocino County south to Baja California; start to migrate inland in the spring feeding on flower nectar, mating and laying eggs on a variety of milkweed (*Asclepias* spp.) plants, the sole source of food for caterpillars.	Overwintering: Not likely to occur Breeding: Not likely to occur Migrating: Low	Project site does not support suitable overwintering habitat and is well outside the known overwintering grounds along the coast; project site does not support host plants for the species; several records located in general vicinity of project site with nearest occurring at Piute

TABLE 5.2-8 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS WILDLIFE WITHIN THE PROJECT AREA

Taxon		Status[1]	Range and Habitat	Occurrence Potential[2]	Comments
Scientific Name	**Common Name**				
					Ponds approximately 7.5 miles to the southeast; may occur as an infrequent migrant in or near project site.
Euphilotes glaucon comstocki	Comstock's blue butterfly	ESA: None CESA: None CDFW: SA Global Rank: G5T2 State Rank: S2	Currently known from the Piute and Greenhorn Mountains and historically from the Tehachapi Mountains. Utilizes sulpherflower buckwheat (*Eriogonum umbellatum*) as host plant.	Not likely to occur	Project site does not support suitable habitat and is outside the known geographic and elevation ranges of the species; host plant not present in or near project site; no records within 10 miles of project site.
Helminthoglypta concolor	Whitefir shoulderband	ESA: None CESA: None CDFW: SA Global Rank: G1G2 State Rank: S1S2	Known only (endemic) from the Tehachapi Mountains; found beneath logs and bark in white fir forest.	Not likely to occur	Project site does not support suitable habitat and is outside the known geographic range of the species; no records within 10 miles of project site.
Helminthoglypta fontiphila	Soledad shoulderband	ESA: None CESA: None CDFW: SA Global Rank: G1 State Rank: S1	Known from Little Rock Creek Canyon on north side of the San Gabriel Mountains to Soledad Canyon near Santa Clarita; most often in riparian habitats but also occurs in debris and rock piles.	Not likely to occur	Project site does not support suitable habitat and is outside the known geographic range of the species; no records within 10 miles of project site.

TABLE 5.2-8 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS WILDLIFE WITHIN THE PROJECT AREA

Taxon		Status[1]	Range and Habitat	Occurrence Potential[2]	Comments
Scientific Name	**Common Name**				
Helminthoglypta greggi	Mohave shoulderband	ESA: None CESA: None CDFW: SA Global Rank: G2 State Rank: S2	Known from the western region of the Mojave Desert with reports at Middle Butte, Standard Hill, and Soledad Mountain; occurs in rock outcrops and talus slopes found on volcanic formations composed primarily of rhyolite material	Not likely to occur	Project site does not support suitable habitat; nearest record located at Willow Springs Butte north of Rosamond Boulevard and approximately 1.5 miles north of the gen-tie alignment.
Pseudocopaeodes eunus eunus	Alkali skipper	ESA: None CESA: None CDFW: SA Global Rank: G3T2 State Rank: S2	Occurs from southern Nevada south through eastern and southern California to Baja California; prefers grassy spots on alkali flats; uses desert salt grass (*Distichlis spicata* var. *spicata*) as host plant.	Not likely to occur	Project site does not support suitable habitat; nearest record located at Piute Ponds approximately 7.5 miles southeast of project site.
Speyeria egleis tehachapina	Tehachapi Mountain silverspot butterfly	ESA: None CESA: None CDFW: SA Global Rank: G5T2 State Rank: S2	Found at high elevations of the Tehachapi and possibly Piute Mountains.	Not likely to occur	Project site does not support suitable habitat and is outside the known geographic range of the species; no records within 10 miles of project site.
AMPHIBIANS					
Ensatina eschscholtzii croceater	Yellow-blotched salamander	ESA: None CESA: None CDFW: WL Global Rank: G5T3 State Rank: S3	Occurs in the lower Kern River Canyon, Piute Mountains, Breckenridge Mountains, and Tehachapi Mountains; found under rocks, logs, and other surface debris is evergreen and deciduous forests. Seems to favor shaded, north-facing areas, especially near creeks or streams.	Not likely to occur	Project site does not support suitable habitat and is outside the known geographic range of the species; nearest record near Twin Lakes in Tehachapi Mountains nearly 10 miles

TABLE 5.2-8 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS WILDLIFE WITHIN THE PROJECT AREA

Taxon		Status[1]	Range and Habitat	Occurrence Potential[2]	Comments
Scientific Name	**Common Name**				
					northwest of project site.
Rana boylii pop. 6	Foothill yellow-legged frog – South Coast DPS	ESA: FE CESA: SE CDFW: SA Global Rank: G3T1 State Rank: S1	Current range of the DPS includes Coast Range west of Salinas River from Monterey Bay south to Transverse Range across to San Gabriel Mountains; frequents rocky streams and rivers with rocky substrate and open, sunny banks in forests, chaparral, and woodlands. Sometimes found in isolated pools, vegetated backwaters, and deep, shaded, spring-fed pools.	Not likely to occur	Project site does not support suitable habitat and is outside the known geographic range of the species; no records within 10 miles of project site.
REPTILES					
Actinemys marmorata	Northwestern pond turtle	ESA: FPT CESA: None CDFW: SSC Global Rank: G2 State Rank: SNR	Current range in California includes areas of the Coast Range from the Oregon-California border down to northern Monterey County, the lower elevation and foothills of the southern Cascades and Sierra Nevada Mountains, and areas within the Sacramento and San Joaquin Valleys; requires aquatic features, such as ponds, lakes, and streams, and adjacent upland features, for breeding, foraging, overwintering, basking, and dispersal.	Not likely to occur	Project site does not support suitable habitat; no recent records within 10 miles of project site.
Actinemys pallida	Southwestern pond turtle	ESA: FPT CESA: None CDFW: SSC Global Rank: G2G3 State Rank: SNR	Current range includes areas of central and southern California south into Baja California, range also includes areas of central Coast Range from near northern Monterey County, portions of the Transverse Range into the Mojave River watershed, and areas south into Baja California; requires aquatic features, such as ponds, lakes, and streams, and adjacent	Not likely to occur	Project site does not support suitable habitat; no recent records within 10 miles of project site.

TABLE 5.2-8 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS WILDLIFE WITHIN THE PROJECT AREA

Taxon		Status[1]	Range and Habitat	Occurrence Potential[2]	Comments
Scientific Name	Common Name				
			upland features, for breeding, foraging, overwintering, basking, and dispersal.		
Anniella pulchra	Northern legless lizard	ESA: None CESA: None CDFW: SSC Global Rank: G3 State Rank: S2S3	Known from scattered locations in the San Joaquin Valley, along the southern Sierra Nevada Mountains, and on the desert side of the Tehachapi Mountains and part of the San Gabriel Mountains; found in moist, warm, loose soils with plant cover, including sparsely vegetated areas of beach dunes, chaparral, pine-oak woodlands, desert scrub, sandy washes, and stream terraces.	High	Project site supports suitable habitat and is within the known geographic range of the species; several records located at scattered locations within 10 miles of project site with nearest occurring immediately adjacent to Whirlwind Substation.
Charina umbratica	Southern rubber boa	ESA: None CESA: ST CDFW: SA Global Rank: G2G3 State Rank: S2	Currently known from higher elevations within San Bernardino and San Jacinto Mountains; however, also may occur in Tehachapi Mountains where species is recognized as potentially *C. umbratica;* found in oak-conifer and mixed conifer forests at elevations between roughly 5,000 to 8,200 feet (1,524 – 2,500 meters); prefers areas that support rocks, logs, or other debris for shelter.	Not likely to occur	Project site does not support suitable habitat and is outside the known geographic and elevation ranges of the species; nearest records located roughly 10 miles to the northwest of project site.
Gopherus agassizii	Desert tortoise	ESA: FT CESA: ST CDFW: SA Global Rank: G3 State Rank: S2S3	Mojave population range includes north and west of the Colorada River in the Mojave Desert of California, Nevada, Arizona, and southwest Utah, and in the Sonoran (Colorado) desert in California; found in most desert habitats, but primarily in Joshua tree woodland, desert scrub, desert wash, and creosote scrub; friable soils required for burrows and nests; large wildflower blooms preferred for foraging.	Low	Project site supports suitable habitat and is within the known geographic range of the species; although not observed during 2023 and 2024 protocol-level surveys, there are several records located within 10 miles of the project site.

TABLE 5.2-8 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS WILDLIFE WITHIN THE PROJECT AREA

Taxon		Status[1]	Range and Habitat	Occurrence Potential[2]	Comments
Scientific Name	**Common Name**				
Phrynosoma blainvillii	Coast horned lizard	ESA: None CESA: None CDFW: SSC Global Rank: G4 State Rank: S4	Occurs in the Sierra Nevada foothills from Butte County to Kern County and throughout the central and southern California coast; found in grassland, scrubland, coniferous forest, woodland, and chaparral with open aeras and patches of loose soil; prefers areas with porous soils where native ant populations provide foraging resources.	Moderate	Project site supports occasionally suitable habitat and is within the known geographic range of the species; several recent records within 10 miles of project site particularly concentrated around western end of gen-tie alignment.
Thamnophis hammondii	Two-striped garter snake	ESA: None CESA: None CDFW: SSC Global Rank: G4 State Rank: S3S4	Distributed form the southeastern slope of the Diablo Range and the Salinas Valley along the South Coast and Transverse ranges to the Mexican border; associated with permanent or semi-permanent bodies of water bordered by dense vegetation in a variety of habitats.	Not likely to occur	Project site does not support suitable habitat; no records within 10 miles of project site.
BIRDS					
Accipiter striatus	Sharp-shinned hawk	ESA: None CESA: None USFWS: None CDFW: WL Global Rank: G5 State Rank: S4	Fairly common migrant and winter resident throughout California except in areas of deep snow; breeds in ponderosa pine, black oak, riparian deciduous, mixed conifer, and Jeffrey pine habitats; all habitats except alpine, open prairie, and bare desert used in winter.	Nesting: Not likely to occur Foraging: Low	Project site does not support suitable nesting habitat; may occur as an infrequent migrant or winter resident; several scattered records located within 10 miles of project site.

TABLE 5.2-8 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS WILDLIFE WITHIN THE PROJECT AREA

Taxon		Status[1]	Range and Habitat	Occurrence Potential[2]	Comments
Scientific Name	**Common Name**				
Agelaius tricolor	Tricolored blackbird	ESA: None CESA: ST USFWS: BCC CDFW: SSC Global Rank: G1G2 State Rank: S2	Yearlong resident that makes extensive migrations and movements within their range in California which includes local populations in the western Mojave desert; colonial breeding occurs near fresh water, preferably wetlands with tall cattails or tules, but also in thickets of willow, blackberry, wild rose, and tall herbs; often congregate in huge, mixed-species blackbird flocks that forage in grasslands and agricultural fields with low-growing vegetation during the winter.	Nesting: Not likely to occur Foraging: Low	Project site does not support suitable nesting habitat; however, may occur as an infrequent forager; nearest recent record located approximately 4.5 miles south of project site.
Aquila chrysaetos	Golden eagle	ESA: None CESA: None USFWS: BGEPA CDFW: FP, WL Global Rank: G5 State Rank: S3	Uncommon yearlong resident and migrant throughout California except center of Central Valley; nests in dense, even-aged single-layered forest canopy; usually in dense, pole, and small-tree stands of conifers, which are cool, moist, shaded, little groundcover, near water; forages in open habitats including grasslands, shrublands and desert areas.	Nesting: Not likely to occur Foraging: High	Project site does not support suitable nesting habitat; however, may occur as a forager; several recent records scattered within 10 miles of project site with nearest occurring along Rosamond Boulevard roughly 3.5 miles east of project site.
Ardea alba	Great egret	ESA: None CESA: None USFWS: None CDFW: SA Global Rank: G5 State Rank: S4	Common yearlong resident throughout California except for high mountains and deserts; rare to uncommon spring migrant in deserts; colonial nester in large trees, usually near permanent water and isolated from human activities; forages in shallow water and along shores of estuaries, lakes, ditches, and slow-moving streams.	Nesting: Not likely to occur Foraging: Not likely to occur	Project site does not support suitable nesting or foraging habitat; may occur flying over as an infrequent spring migrant; nearest recent records located at Piute Ponds approximately 7.5 miles southeast of project site.

TABLE 5.2-8 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS WILDLIFE WITHIN THE PROJECT AREA

Taxon		Status[1]	Range and Habitat	Occurrence Potential[2]	Comments
Scientific Name	**Common Name**				
Ardea Herodias	Great blue heron	ESA: None CESA: None USFWS: None CDFW: SA Global Rank: G5 State Rank: S4	Fairly common yearlong resident throughout most of California; colonial nester in tops of secluded large snags or live trees near shallow-water foraging areas, but foraging areas may be up to 10 miles away from nest sites.	Nesting: Not likely to occur Foraging: Not likely to occur	Project site does not support suitable nesting or foraging habitat; may infrequently occur flying over between nesting and foraging areas; nearest recent records located at Piute Ponds approximately 7.5 miles southeast of project site.
Asio flammeus	Short-eared owl	ESA: None CESA: None USFWS: BCC CDFW: SSC Global Rank: G5 State Rank: S2	Yearlong resident in certain areas within California; breeding in southern California is rare and limited to years of unusual incursions outside of established resident populations in the Great Basin region and the Sacramento-San Joaquin River Delta; nests in open country that supports concentrations of rodents and herbaceous cover sufficient to conceal ground nests from predators; habitats may include marshes, irrigated alfalfa or grain fields, ungrazed grasslands.	Nesting: Not likely to occur Foraging: Low	Project site does not support typical breeding habitat but may nest in surrounding grasslands or agricultural fields during years of exceptional incursions; may occur as an infrequent forager or winter resident; nearest recent record located less than four miles south of project site.

TABLE 5.2-8 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS WILDLIFE WITHIN THE PROJECT AREA

Taxon		Status[1]	Range and Habitat	Occurrence Potential[2]	Comments
Scientific Name	**Common Name**				
Asio otus	Long-eared owl	ESA: None CESA: None USFWS: BCC CDFW: SSC Global Rank: G5 State Rank: S3?	Uncommon yearlong resident distributed widely but locally over the Mojave Desert and throughout much of California; nests in conifer, oak, riparian, and desert woodlands that are open or adjacent to grasslands, shrublands, and meadows; requires dense cover for nesting and roosting, suitable nest platforms, and open habitats for foraging.	Nesting: Moderate Foraging: High	Project site supports suitable nesting habitat within tamarisk thickets, windrows, and tree stands along gen-tie alignment; may occur as a frequent forager; several recent records located within 10 miles of project site with most recent occurring less than one mile south of gen-tie line.
Astur cooperii	Cooper's hawk	ESA: None CESA: None USFWS: None CDFW: WL Global Rank: G5 State Rank: S4	Mostly a yearlong resident throughout most of the wooded portions of California; nesting and foraging usually occurs in dense stands of live oak, riparian deciduous, or other forest habitats near open water or riparian vegetation.	Nesting: Not likely to occur Foraging: Moderate	Project site does not support suitable nesting habitat; may occur as a forager from late fall through winter; several records within 10 miles of project site with nearest located just over one mile to the south.

TABLE 5.2-8 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS WILDLIFE WITHIN THE PROJECT AREA

Taxon		Status[1]	Range and Habitat	Occurrence Potential[2]	Comments
Scientific Name	**Common Name**				
Athene cunicularia hypugaea	Western burrowing owl	ESA: None CESA: SC USFWS: BCC CDFW: SSC Global Rank: G4 State Rank: S2	Mostly yearlong resident throughout much of California, but migrants from other parts of western North America may augment resident lowland populations in winter; nests in underground burrows in a variety of arid and semi-arid habitats characterized by sparse vegetation, such as grasslands, shrublands, and deserts; forages within proximity to nesting sites.	Nesting: High Foraging: **Present**	Project site supports suitable nesting and foraging habitat; numerous suitable burrows observed in and near project site during 2023 and 2024 protocol-level surveys; observations of individual owls included several within adjacent lands during 2023 surveys and a pair identified foraging within the 500-foot buffer at P2 North during 2024 surveys.
Aythya americana	Redhead	ESA: None CESA: None USFWS: None CDFW: SSC Global Rank: G5 State Rank: S3	Yearlong resident in California, though status varies regionally as fall and winter migrants augment breeding populations; breeding confirmed in Kern County at China Lake, near Cantil, and at Edwards Air Force Base; nests in freshwater emergent wetlands; forage in large, deep bodies of water.	Nesting: Not likely to occur Foraging: Not likely to occur	Project site does not support suitable nesting or foraging habitat; may infrequently occur flying over; nearest recent records located at Piute Ponds approximately 7.5 miles southeast of project site.

TABLE 5.2-8 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS WILDLIFE WITHIN THE PROJECT AREA

Taxon		Status[1]	Range and Habitat	Occurrence Potential[2]	Comments
Scientific Name	**Common Name**				
Aythya valisineria	Canvasback	ESA: None State: None USFWS: None CDFW: SA Global Rank: G5 State Rank: S2	Except for small breeding population in northeastern California, wintering population migrates to breeding grounds in northern continental United States and Canada; nests on mounds of aquatic vegetation over shallow water; prefers extensive areas of shallow water for foraging.	Nesting: Not likely to occur Foraging: Not likely to occur	Project site does not support suitable nesting or foraging habitat and is outside the known breeding range of the species; may occur as a very infrequent winter migrant flying over; nearest recent record located at Piute Ponds approximately 7.5 miles southeast of project site.
Botaurus lentiginosus	American bittern	ESA: None CESA: None USFWS: None CDFW: SA Global Rank: G5 State Rank: S3S4	Rare transient or local winter resident in Mojave Desert; nests are platforms of matted, emergent aquatic vegetation usually in shallow water and concealed in dense, tall vegetation; forages in tall, fresh or saline, emergent wetlands and, less often, in adjacent shallow water of lakes backwaters or estuaries.	Nesting: Not likely to occur Foraging: Not likely to occur	Project site does not support suitable nesting or foraging habitat; may occur as a transient or winter migrant flying over; nearest record located at Piute Ponds approximately 7.5 miles southeast of project site.

TABLE 5.2-8 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS WILDLIFE WITHIN THE PROJECT AREA

Taxon		Status[1]	Range and Habitat	Occurrence Potential[2]	Comments
Scientific Name	**Common Name**				
Branta bernicla	Brant	ESA: None CESA: None USFWS: None CDFW: SSC Global Rank: G5 State Rank: S2	Locally common winter resident along the coast with fewer found at inland estuaries; breeds in Alaska and northern Canada; wintering birds rely heavily on aquatic vegetation for foraging.	Nesting: Not likely to occur Foraging: Not likely to occur	Project site does not support suitable nesting or foraging habitat and is outside the known breeding range of the species; may occur as an infrequent winter resident flying over; nearest recent record located at Piute Ponds approximately 7.5 miles southeast of project site.
Branta hutchinsii leucopareia	Aleutian cackling goose	ESA: DEL CESA: None USFWS: None CDFW: WL Global Rank: G5T3 State Rank: S3	Winter migrant in most of California; breeds in northeastern California, several western states, Canada, and Alaska; winter populations in California mainly forage on green shoots and seeds of cultivated grains and wild grasses and forbs.	Nesting: Not likely to occur Foraging: Low	Project site does not support suitable habitat and is outside the known breeding range of the species; may occur is a very infrequent winter migrant and forager in nearby agricultural fields; nearest recent record located approximately 7 miles south of project site.

TABLE 5.2-8 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS WILDLIFE WITHIN THE PROJECT AREA

Taxon		Status[1]	Range and Habitat	Occurrence Potential[2]	Comments
Scientific Name	**Common Name**				
Buteo regalis	Ferruginous hawk	ESA: None CESA: None USFWS: None CDFW: WL Global Rank: G4 State Rank: S3S4	Fairly common winter resident of grasslands and agricultural areas in southwestern California; does not breed in California; frequents open grasslands, sagebrush flats, desert scrub, low foothills surrounding valleys, and fringes of pinyon juniper habitats.	Nesting: Not likely to occur Foraging: Moderate	Project site does not support suitable nesting habitat and is outside the known breeding range of the species; incidental observation within 5 miles of project site recorded by applicant in 2024; may occur as a winter migrant and forage within and near project site.
Buteo swainsoni	Swainson's hawk	ESA: None CESA: ST USFWS: None CDFW: SA Global Rank: G4 State Rank: S3S4	Known breeding resident in the Antelope Valley and migrant in the Mojave Desert; nests peripheral to riparian systems or in lone trees in agricultural fields or pastures and roadside trees when available and adjacent to suitable foraging habitat; forages in adjacent grasslands or suitable grain or alfalfa fields.	Nesting: Moderate Foraging: **Present**	Not detected on project site. Project site supports suitable nest sites, and an active nest was observed approximately 1.5 miles north of Rosamond Boulevard during 2023 protocol-level surveys; several observations of individuals foraging within and near the project site during 2023 and 2024 protocol-level surveys.

TABLE 5.2-8 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS WILDLIFE WITHIN THE PROJECT AREA

Taxon		Status[1]	Range and Habitat	Occurrence Potential[2]	Comments
Scientific Name	**Common Name**				
Calypte costae	Costa's hummingbird	ESA: None CESA: None USFWS: BCC CDFW: SA Global Rank: G5 State Rank: S4	Mostly common and widespread in southern California but also breeds locally along the western edge of the Sierra Nevada north through Inyo County; largely restricted to southern coast in winter but also winters in southern deserts; primarily breeds in desert wash, edges of desert riparian and valley foothill riparian, coastal scrub, desert scrub, desert succulent scrub, lower-elevation chaparral, and palm oasis; nests placed in a wide variety of trees, cacti, shrubs.	Nesting: Moderate Foraging: Moderate	Project site supports occasionally suitable nesting habitat; may occur as a permanent resident or throughout the year or migrant or resident in the winter; recent records located on either side of Rosamond Boulevard approximately two miles south of project site.
Chaetura vauxi	Vaux's swift	ESA: None CESA: None USFWS: BCC CDFW: SSC Global Rank: G5 State Rank: S3	Fairly common migrant throughout most of California in April and May, and August and September with a few winter migrants irregularly in southern coastal lowlands; does not breed in the Mojave Desert; preferred nesting sites include large hollow trees and snags in redwood and Douglas-fir habitats; forages high in the air in most habitats.	Nesting: Not likely to occur Foraging: Not likely to occur	Project site does not support suitable nesting habitat and is outside the known breeding range of the species; may infrequently fly over as a spring or fall migrant; nearest record located at Piute Ponds approximately 7.5 miles southeast of project site.

TABLE 5.2-8 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS WILDLIFE WITHIN THE PROJECT AREA

Taxon		Status[1]	Range and Habitat	Occurrence Potential[2]	Comments
Scientific Name	**Common Name**				
Charadrius montanus	Mountain plover	ESA: None CESA: None USFWS: BCC CDFW: SSC Global Rank: G3 State Rank: S2	Most birds breed in northern Montana and in southeastern Colorado and Wyoming; winters in central and southern California (very small numbers known to winter in the Antelope Valley area); strongly associated with short-grass prairie habitat or equivalents, agricultural fields.	Nesting: Not likely to occur Foraging: Low	Project site does not support suitable nesting habitat and is outside the known breeding range of the species; may occur as a very infrequent forager during winter; several older records located between project site and Hwy 138.
Charadrius nivosus nivosus	Western snowy plover	ESA: FT CESA: None USFWS: None CDFW: SSC Global Rank: G3T3 State Rank: S3	Breeds along the Pacific Coast of the United States and overwinters along the coasts of the Baja Peninsula, western Mexico, the Gulf of Mexico, and Guatemala; requires barren to sparsely vegetation sand beaches, dry salt flats in lagoons, beach and dune habitat, alkaline or saline lakes, or similar habitat for nesting and foraging.	Nesting: Not likely to occur Foraging: Not likely to occur	Project site does not support suitable nesting or foraging habitat; may occur as a very infrequent migrant; single older record located near Piute Ponds approximately 6.5 miles east of project site.
Circus hudsonius	Northern harrier	ESA: None CESA: None USFWS: BCC CDFW: SSC Global Rank: G5 State Rank: S3	Yearlong resident within its breeding range in California which includes the Antelope Valley; breed and forage in a variety of open (treeless) habitats that provide vegetative cover, including annual and perennial grasslands, weed fields, agricultural fields, sagebrush flats, and desert sinks, among others.	Nesting: Low Foraging: **Present**	Project site supports occasionally suitable nesting habitat and typically suitable foraging habitat; observed foraging along gen-tie alignment during 2024 surveys.

TABLE 5.2-8 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS WILDLIFE WITHIN THE PROJECT AREA

Taxon		Status[1]	Range and Habitat	Occurrence Potential[2]	Comments
Scientific Name	**Common Name**				
Contopus cooperi	Olive-sided flycatcher	ESA: None CESA: None USFWS: BCC CDFW: SSC Global Rank: G4 State Rank: S3	Uncommon to common resident in a wide variety of forest and woodland habitats throughout California, exclusive of the deserts, Central Valley, and other lowland valleys and basins; does not breed in the Mojave Desert; preferred nesting habitats include mixed conifer, montane hardwood-conifer, Douglas-fir, redwood, red fir, and lodgepole pine.	Nesting: Not likely to occur Foraging: Not likely to occur	Project site does not support suitable nesting habitat and is outside the known breeding range of the species; may occur as an infrequent migrant; nearest record located at Piute Ponds approximately 7.5 miles southeast of project site.
Cypseloides niger	Black swift	ESA: None CESA: None USFWS: BCC CDFW: SSC Global Rank: G4 State Rank: S4	Breeds very locally in the Sierra Nevada and Cascade Range, San Gabriel, San Bernardino, and San Jacinto Mountains, and in coastal bluffs and mountains form San Mateo County south to San Luis Obispo County; does not breed in the Mojave Desert; nests in moist location on sea cliffs or adjacent to waterfalls in deep canyons.	Nesting: Not likely to occur Foraging: Not likely to occur	Project site does not support suitable nesting habitat and is outside the known breeding range of the species; may occur flying over as rare and irregular migrant; nearest record located approximately two miles south of project site.
Elanus leucurus	White-tailed kite	ESA: None CESA: None USFWS: None CDFW: FP Global Rank: G5 State Rank: S3S4	Common to uncommon yearlong resident in coastal and valley lowlands; rarely found away from agricultural areas; nests placed near top of dense oak, willow, or other tree stands near open foraging areas.	Nesting: Not likely to occur Foraging: Not likely to occur	Project site does not support suitable nesting habitat; may occur as an infrequent forager in nearby agricultural fields; nearest records located at Piute Ponds approximately 7.5 miles southeast of project site.

TABLE 5.2-8 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS WILDLIFE WITHIN THE PROJECT AREA

Taxon		Status[1]	Range and Habitat	Occurrence Potential[2]	Comments
Scientific Name	**Common Name**				
Empidonax traillii	Willow flycatcher	ESA: None CESA: SE USFWS: None CDFW: SA Global Rank: G5 State Rank: S3	Rare to locally uncommon summer resident in wet meadow and montane riparian habitats in the Sierra Nevada and Cascade Range; may nest elsewhere in lowland California; common spring and fall migrant at lower elevations; prefers extensive thickets of low, dense willow edges on wet meadows, ponds, or backwaters.	Nesting: Not likely to occur Foraging: Not likely to occur	Project site does not support suitable nesting or foraging habitat; may occur as an infrequent migrant; nearest records located at Piute Ponds approximately 7.5 miles southeast of project site.
Eremophila alpestris actia	California horned lark	ESA: None CESA: None USFWS: None CDFW: WL Global Rank: G5T4Q State Rank: S4	Yearlong resident subspecies of common *E. alpestris* occurring along most of west coast of California and inland through the Central Valley; uncommon resident in most of Kern County; nests and forages in a variety of open habitats, usually where trees and large shrubs are absent.	Nesting: Not likely to occur Foraging: Not likely to occur	Project site supports suitable nesting and foraging habitat but is outside the known breeding range for the subspecies; numerous recent records of the common *E. alpestris* located within 10 miles of project site.
Falco columbarius	Merlin	ESA: None CESA: None USFWS: None CDFW: WL Global Rank: G5 State Rank: S3S4	Does not breed in California; rare winter migrant in the Mojave Desert; forages in open country, shrublands, forests, parks, grasslands, and prairies.	Nesting: Not likely to occur Foraging: High	Project site does not support suitable breeding habitat and is outside the known breeding range of the species; may occur as a winter migrant; several records located within 10 miles of project site with nearest recent record occurring approximately 2 miles to the south.

TABLE 5.2-8 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS WILDLIFE WITHIN THE PROJECT AREA

Taxon		Status[1]	Range and Habitat	Occurrence Potential[2]	Comments
Scientific Name	**Common Name**				
Falco mexicanus	Prairie falcon	ESA: None CESA: None USFWS: None CDFW: WL Global Rank: G5 State Rank: S4	Uncommon yearlong resident from southeastern deserts northwest throughout the Central Valley and along the inner Coast Ranges and Sierra Nevada; typically nests in a scrape on a sheltered ledge of a cliff overlooking large, open areas; forages in perennial grasslands, savannahs, rangelands, agricultural fields, and desert scrub.	Nesting: Not likely to occur Foraging: **Present**	Project site does not support suitable nesting habitat; may occur as a forager; incidental observations recorded by applicant during 2023 and 2024 surveys.
Falco peregrinus anatum	American peregrine falcon	ESA: DEL CESA: DEL USFWS: None CDFW: SA Global Rank: G4T4 State Rank: S3S4	Uncommon breeding resident and migrant; breeds mostly in woodland, forest, and coastal habitats on high cliffs, banks, dunes, man-made structures; usually forages near water.	Nesting: Not likely to occur Foraging: Low	Project site does not support suitable nesting habitat; may occur as an infrequent migrant or visitor; several scattered records in general region with nearest located at Piute Ponds approximately 7.5 miles southeast of project site.
Gymnogyps californianus	California condor	ESA: FE CESA: SE USFWS: None CDFW: FP Global Rank: G1 State Rank: S2	Reintroduced into southern California, Arizona, and Baja California; use vast expanses of varying habitats for nesting, roosting, and foraging; nests are located in caves and ledges of steep rocky terrain or in old growth conifers; forages in open grasslands, oak savanna foothills, and beaches adjacent to coastal mountains.	Nesting: Not likely to occur Foraging: Low	Project site does not support suitable nesting habitat; known as a very infrequent forager in the Antelope Valley; nearest record located in Tehachapi Mountains just over 10 miles northwest of project site.

TABLE 5.2-8 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS WILDLIFE WITHIN THE PROJECT AREA

Taxon		Status[1]	Range and Habitat	Occurrence Potential[2]	Comments
Scientific Name	**Common Name**				
Haliaeetus leucocephalus	Bald eagle	ESA: DEL CESA: SE USFWS: BGEPA CDFW: FP Global Rank: G5 State Rank: S3	Yearlong resident in northern California and scattered locations in central and southern Sierra Nevada Mountains and foothills, central coast range to inland southern California; uncommon to common winter migrant in southern California; nests in large, old-growth forests; requires large bodies of permanent water nearby for nesting and foraging.	Nesting: Not likely to occur Foraging: Not likely to occur	Project site does not support suitable nesting or foraging habitat; may occur as an infrequent migrant; nearest recent record of migrant individual located just under 8 miles southeast of project site.
Lanius ludovicianus	Loggerhead shrike	ESA: None CESA: None USFWS: None CDFW: SSC Global Rank: G4 State Rank: S4	Common yearlong resident in lowlands and foothills throughout California; prefers open habitats with scattered shrubs, trees, posts, fences, utility lines, or other perches; nests on stable branches in densely-foliaged shrub or tree.	Nesting: High Foraging: **Present**	Project site supports suitable nesting habitat, and the species is known to breed throughout the general region; numerous foraging individuals observed within and near the project site during 2023 and 2024 surveys.

TABLE 5.2-8 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS WILDLIFE WITHIN THE PROJECT AREA

Taxon		Status[1]	Range and Habitat	Occurrence Potential[2]	Comments
Scientific Name	**Common Name**				
Larus californicus	California gull	ESA: None CESA: None USFWS: BCC CDFW: WL Global Rank: G5 State Rank: S4	Fairly common nester at alkali and freshwater lacustrine habitats east of Sierra Nevada and Cascades, and an abundant visitor to coastal and interior lowlands in nonbreeding season; nests on islands in alkali or freshwater lakes and salt ponds; feeds on garbage, carrion, worms, and insects outside of breeding grounds.	Nesting: Not likely to occur Foraging: Moderate	Project site does not support nesting habitat and is outside known breeding range of the species; may occur as forager in and near project site during nonbreeding season; several records within 10 miles of project site, with several concentrated around wetland habitats at Apollo Park and Piute Ponds.
Leiothlypis luciae	Lucy's warbler	ESA: None CESA: None USFWS: None CDFW: SSC Global Rank: G5 State Rank: S3	Small, localized breeding populations known in the Mojave Desert from Big Morongo Canyon near Barstow, near Baker, on the Amargosa River, and around Klinefelter; nest almost exclusively in honey mesquite thickets but will also use riparian woodland, blue palo verde, ironwood, and tamarisk.	Nesting: Not likely to occur Foraging: Not likely to occur	Project site does not support suitable nesting habitat and is outside the known breeding range of the species; may occur as a very uncommon summer visitor and fall and winter migrant; nearest record located at Piute Ponds approximately 7.5 miles southeast of project site.

TABLE 5.2-8 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS WILDLIFE WITHIN THE PROJECT AREA

Taxon		Status[1]	Range and Habitat	Occurrence Potential[2]	Comments
Scientific Name	**Common Name**				
Melnerpes lewis	Lewis' woodpecker	ESA: None CESA: None USFWS: BCC CDFW: SA Global Rank: G4 State Rank: S4	Breeds locally along eastern slopes of the Coast Ranges, and in the Sierra Nevada, Warner Mountains, Klamath Mountains, and in the Cascade Range; uncommon, local winter resident occurring in open oak savannahs, broken deciduous, and coniferous habitats; tends to wander in the fall; usually nests in sycamore, cottonwood, oak, or conifer trees.	Nesting: Not likely to occur Foraging: Not likely to occur	Project site does not support suitable nesting or foraging habitat and is outside the known breeding range of the species; may occur as a very infrequent migrant or visitor; nearest record located outside of Mojave approximately 10 miles north or project site.
Nannopterum auritum	Double-crested cormorant	ESA: None CESA: None USFWS: None CDFW: WL Global Rank: G4 State Rank: S4	Yearlong resident along the entire coast of California and on inland lakes, in fresh, salt, and estuarine waters; requires undisturbed nest sites near water; forages within 5-10 miles (8-16 km) of roost or nest colonies feeding mainly on fish, crustaceans, and amphibians.	Nesting: Not likely to occur Foraging: Not likely to occur	Project site does not support suitable nesting or foraging habitat; may occur flying over as an uncommon visitor or migrant; nearest record located at Piute Ponds approximately 7.5 miles southeast of project site.
Nycticorax nycticorax	Black-crowned night heron	ESA: None CESA: None USFWS: None CDFW: SA Global Rank: G5 State Rank: S4	Fairly common yearlong resident in lowlands and foothills throughout most of California; nests and roosts in dense-foliaged trees and dens emergent wetlands; forages along the margins of lacustrine, large riverine, and fresh and saline emergent habitats.	Nesting: Not likely to occur Foraging: Not likely to occur	Project site does not support suitable breeding or foraging habitat; may occur as a local migrator; nearest records located at Piute Ponds approximately 7.5 miles southeast of project site.

TABLE 5.2-8 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS WILDLIFE WITHIN THE PROJECT AREA

Taxon		Status[1]	Range and Habitat	Occurrence Potential[2]	Comments
Scientific Name	**Common Name**				
Pandion haliaetus	Osprey	ESA: None CESA: None USFWS: None CDFW: WL Global Rank: G5 State Rank: S4	Breeds in northern California from Cascade Ranges south to Lake Tahoe, and along the coast south to Marin County; uncommon breeder along southern Colorado River; associated strictly with large, fish-bearing waters, primarily in ponderosa pine through mixed conifer habitats.	Nesting: Not likely to occur Foraging: Not likely to occur	Project site does not support suitable nesting or foraging habitat and is outside the known breeding range of the species; may fly over as an infrequent visitor or migrant; nearest records located at Piute Ponds approximately 7.5 miles southeast of project site.
Pelecanus erythrorhynchos	American white pelican	ESA: None CESA: None USFWS: BCC CDFW: SSC Global Rank: G4 State Rank: S1S2	Breeding in California limited to northeaster portion of the state; occurs widely during migration and may summer, or disperse to, nearly anywhere in the normal migrant and winter ranges; nests in colonies at remote sites with minimal disturbance; forage in shallow inland waters.	Nesting: Not likely to occur Foraging: Not likely to occur	Project site does not support suitable nesting or foraging habitat and is outside the known breeding range of the species; may fly over as an infrequent migrant; nearest records located at Piute Ponds approximately 7.5 miles southeast of project site.

TABLE 5.2-8 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS WILDLIFE WITHIN THE PROJECT AREA

Taxon		Status[1]	Range and Habitat	Occurrence Potential[2]	Comments
Scientific Name	**Common Name**				
Plegadis chihi	White-faced ibis	ESA: None CESA: None USFWS: None CDFW: WL Global Rank: G5 State Rank: S3S4	Uncommon summer resident but more widespread during migration; does not breed in the Mojave Desert; extensive marshes are required for nesting; feeds in mud or shallow water or on water surface.	Nesting: Not likely to occur Foraging: Not likely to occur	Project site does not support suitable nesting or foraging habitat and is outside the known breeding range of the species; may occur flying over during migration; nearest records located at Piute Ponds approximately 7.5 miles southeast of project site.
Pyrocephalus rubinus	Vermilion flycatcher	ESA: None CESA: None USFWS: None CDFW: SSC Global Rank: G5 State Rank: S2S3	Rare, local yearlong resident in suitable habitat throughout southern California; nests primarily occur in desert riparian habitat adjacent to irrigated fields and ditches, pastures, and other open, mesic areas; forages near water.	Nesting: Not likely to occur Foraging: Not likely to occur	Project site does not support suitable nesting or foraging habitat; may locally fly over; nearest records located at Piute Ponds approximately 7.5 miles southeast of project site.
Selasphorus rufus	Rufous hummingbird	ESA: None CESA: None USFWS: BCC CDFW: SA Global Rank: G5 State Rank: S1S2	Breeds primarily in Oregon, Washington, and northern California; common migrant and uncommon summer resident of California; most common in southern deserts during southward migration; nests in coniferous forest; uses a variety of habitats during migration but typically forages at higher elevations during southward migration.	Nesting: Not likely to occur Foraging: Not likely to occur	Project site does not support suitable nesting or foraging habitat and is outside of known breeding range of the species; may occur as an infrequent migrant during nonbreeding season; several records within 10 miles of project site.

TABLE 5.2-8 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS WILDLIFE WITHIN THE PROJECT AREA

Taxon		Status[1]	Range and Habitat	Occurrence Potential[2]	Comments
Scientific Name	**Common Name**				
Setophaga petechia	Yellow warbler	ESA: None CESA: None USFWS: None CDFW: SSC Global Rank: G5 State Rank: S3	Breeds in suitable habitat throughout California except for most of the Mojave Desert; generally occupy riparian vegetation close to water along streams and in wet meadows.	Nesting: Not likely to occur Foraging: Not likely to occur	Project site does not support suitable nesting or foraging habitat and is outside the known breeding range of the species; may occur as an infrequent migrant; nearest recent record located in ornamental trees off Rhyolite Avenue less than 1,000 feet north of project site.
Spinus lawrencei	Lawrence's goldfinch	ESA: None CESA: None USFWS: BCC CDFW: SA Global Rank: G3G4 State Rank: S4	Rather common along western edge of southern deserts; breeds in open oak or other arid woodland and chaparral, near water; most breeders migrate out of California between September and March; typically forages in nearby herbaceous habitats.	Nesting: Low Foraging: High	Project site supports occasionally suitable nesting habitat; may occur foraging in or near project site; several recent records located within 5 miles of project site.
Spizella breweri	Brewer's sparrow	ESA: None CESA: None USFWS: None CDFW: SA Global Rank: G5 State Rank: S4	Common summer resident and breeder east of the Cascade-Sierra Nevada crest, in mountains and higher valleys of Mojave Desert; nests in treeless shrub habitats with moderate canopy, especially in sagebrush; migrants in California occur mostly in September and October and April and May.	Nesting: Not likely to occur Foraging: **Present**	Project site does not support suitable nesting habitat; incidental observations made during 2023 and 2024 surveys; may occur as a common to uncommon migrant during nonbreeding season; several records located within a few miles of project site.

TABLE 5.2-8 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS WILDLIFE WITHIN THE PROJECT AREA

Taxon		Status[1]	Range and Habitat	Occurrence Potential[2]	Comments
Scientific Name	**Common Name**				
Strix occidentalis occidentalis	California spotted owl	ESA: None CESA: None USFWS: BCC CDFW: SSC Global Rank: G3G4T2T3 State Rank: S2	Yearlong resident occurring from the southern Cascade Range of northern California south along the west slope of the Sierra Nevada and in mountains of central and southern California nearly to the Mexican border; nests in forests and woodlands with large old trees and snags, dense canopies.	Nesting: Not likely to occur Foraging: Not likely to occur	Project site does not support suitable nesting or foraging habitat and is outside the known breeding range for the species; no records within 10 miles of project site.
Toxostoma lecontei	Le Conte's thrasher	ESA: None CESA: None USFWS: BCC CDFW: SSC Global Rank: G4 State Rank: S3	Uncommon to rare local resident in southern California deserts from Mono County south to the Mexican border; occurs primarily in open desert wash, desert scrub, alkali desert scrub, desert succulent shrub, and Joshua tree habitat with scattered shrubs; nests in dense, spiny shrub or densely branched cactus in desert wash habitat.	Nesting: High Foraging: **Present**	Project site supports suitable nesting and foraging habitat; several individuals observed within and adjacent to the project site during 2023 and 2024 surveys.
Vireo bellii pusillus	Least Bell's vireo	ESA: FE CESA: SE USFWS: None CDFW: SA Global Rank: G5T2 State Rank: S3	Breeds in only a few scattered areas of riparian habitat in southern California, primarily along the coast and the western edge of the Mojave Desert; require fairly dense riparian vegetation, where flowing water is typically present, but will inhabit dry watercourses in the desert.	Nesting: Not likely to occur Foraging: Not likely to occur	Project site does not support suitable nesting or breeding habitat; may occur as a very rare migrant; no records within 10 miles of project site.
Xanthocephalus xanthocephalus	Yellow-headed blackbird	ESA: None CESA: None USFWS: None CDFW: SSC Global Rank: G5 State Rank: S3	Occurs as a migrant and local breeder in deserts; nesting colonies located in dense emergent wetlands of cattails, tules, and other aquatic vegetation along border of lake or pond; most foraging occurs over water, near water, or on moist ground.	Nesting: Not likely to occur Foraging: Not likely to occur	Project site does not support suitable nesting or foraging habitat; nearest records located at Piute Ponds approximately 7.5 miles southeast of project site.

TABLE 5.2-8 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS WILDLIFE WITHIN THE PROJECT AREA

Taxon		Status[1]	Range and Habitat	Occurrence Potential[2]	Comments
Scientific Name	**Common Name**				
MAMMALS					
Bassariscus astutus	Ringtail	ESA: None CESA: None CDFW: FP Global Rank: G5T3 State Rank: S3	Widely distributed common to uncommon permanent resident; occurs in various riparian habitats, and in brush stands of most forest and shrub habitats at low to middle elevations; nests in rock recesses, hollow trees, logs, snags, abandoned burrows, or woodrat nests; usually not found more than 0.6 mile from permanent water.	Low	Project site supports occasionally suitable habitat; no recent records within 10 miles of project site, however, species not tracked by CNDDB; this is an elusive species and staff has observed an individual in similar habitat near Oak Creek Road less than 10 miles north of project site.
Corynorhinus townsendii	Townsend's big-eared bat	ESA: None CESA: None CDFW: SSC Global Rank: G4 State Rank: S2	Found throughout California but details of distribution not well known; requires caves, mines, tunnels, buildings, or other human-made structures for roosting; forages by gleaning from brush or trees or feeds along habitat edges.	Roosting: Not likely to occur Foraging: High	Project site does not support suitable roosting habitat; may occur during foraging; nearest records located in Rosamond within one mile west of project site.
Dipodomys panamintinus (*argusensis* and *panamintinus*)	Panamint kangaroo rat	ESA: None CESA: None CDFW: SA Global Rank: G5T3 State Rank: S3	Species found from the vicinity of Beckworth Pass in Plumas County, south through the Owens Valley to Lake Isabella, Walker Pass, and Mojave in Kern County, and Hesperia in San Bernardino County; preferred habitats include pinyon-juniper woodland, Joshua tree woodland, and sagebrush scrub.	Not likely to occur	Project site supports suitable habitat but is outside of the known ranges of these subspecies; nearby records are likely those of the more common *D. p. mohavensis*

TABLE 5.2-8 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS WILDLIFE WITHIN THE PROJECT AREA

Taxon		Status[1]	Range and Habitat	Occurrence Potential[2]	Comments
Scientific Name	**Common Name**				
Lasiurus cinereus	Hoary bat	ESA: None CESA: None CDFW: SA Global Rank: G3G4 State Rank: S4	May be found in suitable habitat at any location in California, although distribution patchy is southeastern deserts; roosts in dense woodland or forest foliage of medium to large trees; winters along the coast; migrates between summer and winter ranges; forages in open areas or habitat edges.	Roosting: Not likely to occur Foraging: Not likely to occur	Project site does not support suitable roosting habitat; may occur as a rare migrant; nearest record located at Piute Ponds approximately 7.5 miles southeast of project site.
Neotamias speciosus speciosus	Lodgepole chipmunk	ESA: None CESA: None CDFW: SA Global Rank: G4T3T4 State Rank: S2	Abundant in open-canopy lodgepole pine habitat in the Sierra Nevada from Lassen County to Tulare County; occurs in isolated populations in southern California mountains in open-canopy forests of mixed conifer, Jeffrey pine, lodgepole and limber pine, and occasionally in chaparral; nests in burrows, and in cavities in trees, logs, stumps, and snags.	Not likely to occur	Project site does not support suitable habitat and is outside known geographic range of the species; no records within 10 miles of project site.
Onychomys torridus tularensis	Tulare grasshopper mouse	ESA: None CESA: None CDFW: SSC Global Rank: G5T1T2 State Rank: S1S2	Current range includes the western margin of the Tulare Basin, including western Kern County, Carrizo Plain, along the Cuyama Valley side of the Caliente Mountains, San Luis Obispo County, and the Ciervo-Panoche region in Fresno and San Benito Counties; inhabit arid shrublands and grasslands.	Low	Project site supports occasionally suitable habitat and is within the known geographic range of the species; no records within 10 miles of project site.

TABLE 5.2-8 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS WILDLIFE WITHIN THE PROJECT AREA

Taxon		Status[1]	Range and Habitat	Occurrence Potential[2]	Comments
Scientific Name	**Common Name**				
Perognathus alticola inexpectatus	Tehachapi pocket mouse	ESA: None CESA: None CDFW: SSC Global Rank: G2T1T2 State Rank: S2S3	Poorly understood, but found in annual grasslands, pinyon and juniper woodland, Jeffrey pine forest, and sagebrush and rabbitbrush scrub; burrows in loose soil.	Low	Project site supports occasionally suitable habitat and is within the known geographic and elevation ranges of the subspecies; nearest record located approximately 4.5 miles north of project site.
Perognathus inornatus	San Joaquin pocket mouse	ESA: None CESA: None CDFW: SA Global Rank: G2G3 State Rank: S2S3	Occurs in dry, open grasslands or scrub areas on fine-textured soils in the western Mojave Desert; nests in burrows.	Moderate	Project site supports suitable habitat and is within the geographic range of the subspecies; nearest record located approximately two miles north of project site.
Puma concolor	Mountain lion – Southern California/Central Coast ESU	ESA: None CESA: SC CDFW: None Global Rank: G5 State Rank: SNR	ESU boundary includes areas east of the Pacific Ocean, south of the San Francisco Bay Area and I-80, west of I-5 to the intersection of I-5 and SR-58 at Bowerbank / Buttonwillow, south of SR-58 to I-15, south of the I-15 from the SR-58 intersection to the California-Nevada border, and north of the California Mexico border; transient or resident individuals may occur in the western Mojave Desert; utilize expansive home ranges for breeding, foraging, and dispersal.	Low	Project site is located just outside eastern boundary of ESU but some transient or resident individuals may occur; no records within 10 miles of project site.

TABLE 5.2-8 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS WILDLIFE WITHIN THE PROJECT AREA

Taxon		Status[1]	Range and Habitat	Occurrence Potential[2]	Comments
Scientific Name	**Common Name**				
Taxidea taxus	American badger	ESA: None CESA: None CDFW: SSC Global Rank: G5 State Rank: S3	Uncommon permanent resident found throughout most of California except along northern coast; most abundant in drier open stages of most shrub, forest, and herbaceous habitats; require friable soils for burrowing.	High	Project site supports suitable habitat and species is known to occur throughout the region; several records within five miles of project site.
Vulpes macrotis arsipus	Desert kit fox	ESA: None CESA: None CDFW: FP Global Rank: G4 State Rank: SNR	Uncommon to rare permanent resident that inhabits the Mojave and Colorado Deserts; primarily found in sparsely vegetated scrub habitat and closely associated with creosote scrub communities; require friable, well-drained soils for burrowing.	High	Project site supports suitable habitat and is within the known geographic range of the species; several recent records within five miles of project site and staff has observed several natal dens and individuals in the general region.
Xerospermophilus mohavensis	Mohave ground squirrel	ESA: None CESA: ST CDFW: SA Global Rank: G3 State Rank: S2	Endemic to western Mojave Desert; current range estimated to be Owens Lake to the north, Fort Irwin to the east, Hesperia and Palmdale to the south, and the foothills of the Tehachapi Mountains to the west, however, appears current distribution on west edge of range reduced to roughly SR-14; found in various desert scrub habitats including creosote scrub, saltbush scrub, Mojave mixed woody scrub, and Joshua tree woodland.	Low	Project site supports suitable habitat and is within the known geographic range, but just outside currently known distribution of the species; not observed during 2023 and 2024 protocol-level trapping surveys of the gen-tie alignment.

STATUS DESIGNATIONS:

ESA (Federal Endangered Species Act):
FE = Federally endangered
FT = Federally threatened
FPT = Federally proposed as threatened
DEL = Delisted

CESA (California Endangered Species Act):
SE = State endangered
ST = State threatened
SC = State candidate for listing
DEL = Delisted

USFWS (U.S. Fish and Wildlife Service)
BGEPA = Bald and Golden Eagle Protection Act
BCC = Bird of Conservation Concern

CDFW (California Department of Fish and Wildlife)
FP = Fully protected species
SSC = Species of special concern
SA = Special animal

NatureServe Global / State Ranks:
(G/S) 1 = Critically imperiled; at very high risk of extinction or elimination due to very restricted range, very few populations or occurrences, very steep declines, very severe threats, or other factors
(G/S) 2 = Imperiled; at high risk of extinction or elimination due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors
(G/S) 3 = Vulnerable; at moderate risk of extinction or elimination due to fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors
(G/S) 4 = Apparently secure; at fairly low risk of extinction or elimination due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of local recent declines, threats, or other factors
(G/S) 5 = Secure; at very low risk of extinction or elimination due to a very extensive range, abundant

POTENTIAL TO OCCUR DEFINITIONS:

The definitions provided below are general parameters used to establish a baseline potential for each species to occur. These may be slightly altered due to survey results, professional experience, and/or coordination with the applicable resource agencies.

Present: Observed within or near project site during 2023 and/or 2024 surveys

High: Typically suitable habitat is present; project site is within known geographic and elevation ranges of species; and recent (within 10 years) record(s) located within 10 miles of project site

Moderate: Occasionally suitable habitat is present; project site is within known geographic and elevation ranges of species; and recent (within 10 years) record(s) located within 10 miles of project site OR typically suitable habitat is present; project site is within geographic and elevation ranges of species; and somewhat recent (within 20 years) record(s) located within 10 miles of project site

Low: Typically or occasionally suitable habitat is present; project site is outside of known geographic and/or elevation ranges; and recent (within 10 years) record(s) located within 10 miles of project site OR typically or occasionally suitable habitat is present; project site is within known geographic and elevation ranges; and recent (within 10 years) or somewhat recent (within 20 years) located within 10 miles of project site

Not likely to occur: Typically or occasionally suitable habitat is not present and/or the project site is outside of the known geographic and/or elevation ranges of the species; no known records located within 10 miles of project site.

Sources:
WSP 2024c; WSP 2024d; WSP 2024e; WSP 2024f; WSP 2024o; WSP 2024p; WSP 2024r; WSP 2024t; WSP 2024u; WSP 2024v; CDFW 2025a; CDFW 2025b; iNaturalist 2025.

TABLE 5.2-8 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS WILDLIFE WITHIN THE PROJECT AREA

Taxon		Status[1]	Range and Habitat	Occurrence Potential[2]	Comments
Scientific Name	**Common Name**				
populations or occurrences, and little to no concern from declines or threats SNR = State not ranked T = Subspecies/varieties receive a “T” rank attached to the “G” rank. With subspecies/varieties, the “G” rank reflects the condition of the entire species, whereas the “T” rank reflects the global situation of just the subspecies or variety.					

Special-Status Invertebrates

Crotch's Bumble Bee. The Crotch's bumble bee is a state candidate for listing under the CESA. A member of the Apidae (the typical bee family), Crotch's bumble bee is a social insect. It can be distinguished by its square-shaped face and rounded ankle on the midleg. Queens and workers (females) have a black head, face, mid and bottom thorax, and are black between their wing bases. Drones (males) have yellow hair on their faces, a black stripe mid-thorax, and yellow on the front of their abdomen, while the rest of their abdomen is typically black and red (Los Padres Forest Watch 2023).

Crotch's bumble bee primarily occurs in California's Pacific coast, western desert, and adjacent foothills throughout most of the state's southwestern region. Little is known about specific habitat requirements of the species as it can be found in a variety of vegetation communities, including grasslands, scrub, chaparral, desert, and woodlands. This species can also persist in semi-natural habitats surrounded by intensely human modified landscapes (Love, 2010). Suitable habitats are typically those that provide native floral resources and suitable soils for nesting and overwintering sites. Crotch's bumble bee has been documented at a wide range of elevations from -120 feet below mean sea level to 8,500 feet above mean sea level.

Queens emerge from hibernation between February and March and may disperse between 1.6 and 6.2 miles (2.6 and 10.0 kilometers) to find a new nest site (Hatfield et al. 2015; Goulson 2010). Once the queen selects the hive location, the active colony is typically detectable between April and August. Nest sites are frequently found underground in abandoned rodent burrows but may also occur above ground within tufts of grass, bird nests, rock piles, or cavities in dead trees or logs. Overwintering occurs in burrows within loose soils or under leaf litter and debris. Foraging occurs on a variety of annual flowers including plants in the Fabaceae, Apocynaceae, Asteraceae, Lamiaceae, Boraginaceae, and Hydrophyllaceae, among others (Hatfield et al. 2018).

Crotch's bumble bee is absent from much of its historic range, with a relative species abundance decline of approximately 98 percent over the last decade. Bumble bees are threatened by a variety of factors including pesticide use, pathogens from managed pollinators, and competition with non-native bees (Hatfield et al., 2015). Crotch bumble bee preference of California native plants for foraging and natural habitats for nesting and overwintering makes them more sensitive to the threats posed by habitat loss and climate change, resulting in a shrinking occurrence range (Hatfield et al., 2015).

No active Crotch's bumble bee nests were identified during 2023 and 2024 protocol-level surveys conducted by the applicant (WSP 2024d; WSP 2024t; WSP 2024v). However, there were seven queen bee observations foraging amongst phacelia patches within the P2 North Site. A total of 35 Crotch's worker bee observations were also documented during protocol-level surveys and incidentally during other project surveys. Although no nesting or overwintering sites were observed, the project area supports suitable habitat and is within distance of several historic and current CNDDB and

iNaturalist records that queen bees will typically travel while searching for a new nest site (CDFW 2025a; iNaturalist 2025). Therefore, there is a high potential that Crotch's bumble bee nesting and overwintering sites could occur within or adjacent to the project site.

Monarch butterfly. Monarch butterfly was initially proposed for federal listing as threatened under the ESA in 2014. The USFWS published subsequent findings in 2014 and 2020 that listing the species may be warranted but precluded by higher priority actions. The USFWS most recently announced the proposal to list monarch butterfly and designate critical habitat for the species on December 12, 2024. This species is also a CDFW SA.

Adult monarch butterflies are large and conspicuous, with bright orange wings surrounded by a black border and covered with black veins. Wingspans average between 3 to 4 inches (7 to 10 centimeters). The black border has a double row of white spots, present on the upper side of the wings. Monarch caterpillars have black, yellow, and white stripes and reach lengths of two inches before metamorphosis.

Originally native to North America, the monarch butterfly has dispersed to other parts of the world and non-migratory populations are found from islands in the Pacific Ocean to the western edge of Europe (USFWS 2025b). North American migratory monarch butterflies are divided into eastern and western populations with the Rocky Mountains generally separating the two. There are also non-migratory monarchs that remain year-round at the southern end of their breeding range in parts of Florida, the Gulf Coast, and California.

The North American western population is generally found west of the Rocky Mountains and can migrate annually up to 300 to 1,000 miles (500 to 1,600 kilometers) (USFWS 2025b). Each fall, monarch butterflies go into diapause, a suspended state of reproduction, and begin their long migration to overwintering sites which consist of hundreds of tree groves along the California coast down into northern Baja California. In early spring, surviving individuals break diapause and mate at the overwintering sites before dispersing northward through the breeding grounds. These individuals then die, leaving their offspring to repeat the cycle. Several generations later, the last adults produced in late summer/fall begin the southward overwintering migration.

Flowering plants and milkweed plants are essential components in monarch butterfly habitat. Adult monarchs require the nectar from a variety of flowering plants while foraging during breeding and migration. Eggs are deposited on milkweed plants which are the sole resource that caterpillars can eat.

The primary threats affecting the health of North American migratory monarch butterfly populations include the loss and degradation of breeding, migratory, and overwintering habitat from past conversion of grasslands and shrublands to agriculture and urban development, exposure to herbicides and insecticides, and effects of climate change (CBD 2025).

The project site does not support suitable tree groves and is outside the known overwintering range for the species. No milkweed plants required for supporting caterpillars were observed by the applicant during focused rare plant surveys in 2023 and 2024 (WSP 2024d; WSP 2024s; WSP 2024v). However, there are several recent iNaturalist records indicating that the species occurs in the general region and the project site supports potential foraging resources (iNaturalist 2025). Therefore, monarch butterfly overwintering or breeding individuals are not likely to occur, but there is a low potential the species could be present as an infrequent migrant and forager within or adjacent to the project site.

Special-Status Fish

The project site does not support suitable habitat for special-status fish and none are expected to occur.

Special-Status Amphibians

The project site does not support suitable habitat for special-status amphibians and none are expected to occur.

Special-Status Reptiles

Northern legless lizard. California legless lizards were traditionally recognized as a single species prior to being split into five separate species due to extended population isolation and lack of gene flow between populations (Papenfuss and Parham 2013). The five species include northern legless lizard, Temblor legless lizard (*A. alexanderae*), Big Spring legless lizard (*A. campi*), Bakersfield legless lizard (*A. grinnelli*), and San Diegan legless lizard (*A. stebbinsi*). While each of these species, including northern legless lizard, is designated as a CDFW SSC, none are federally-listed and only Temblor legless lizard is recognized as a state candidate for listing.

The northern legless lizard is a cryptic species that is silvery or beige above, usually with a black dorsal line running along its body, and pale or bright yellow beneath. The scales are very smooth and adapted for burrowing in sandy soils. Adult lizards are small with short tails and typically reach a total length of between 6 to 9.3 inches (15.2 to 23.5 centimeters) (Stebbins 2003).

This species typically occurs approximately 60 miles (96.5 kilometers) from the coast and can be found in parts of the San Joaquin Valley, the western edge of the Sierra Nevada Mountains, and the western edge of the Mojave Desert (Jennings and Hayes 1994). Northern legless lizard frequents beaches, chaparral, woodlands, and desert habitats where it is usually restricted to moist, loose, and sandy streamside soils (Stebbins 2003).

Northern legless lizards are a burrowing species and has been found at soil depths from a few to 20 inches (50 centimeters) below the surface where adequate moisture content is present (Kuhnz 2000). Their feeding ecology is not well understood; however, they are known to be sit-and-wait predators that typically emerge on the

surface at dusk or at night, with peak activity patterns in the morning and evening. Northern legless lizards consume a variety of terrestrial invertebrates, including larval insects, beetles, termites, and spiders (Stebbins 2003).

Current threats to this species include alteration, fragmentation, and loss of habitat from urban and commercial development, plowing and agricultural expansion, and the introduction of non-native grasses and ice plants (*Carpobrotus edulis* and *Mesembryanthemum crystallinum*) which reduce soil moisture and insect prey base (Bettelheim 2005).

Although this species was not observed during any of the 2023 and 2024 surveys conducted by the applicant, the project site supports suitable habitat and is within the known range of the species. There are several historic and recent CNDDB and iNaturalist records within 10 miles of the project site with the nearest occurring immediately adjacent to the Whirlwind Substation at the western terminus of the gen-tie alignment (CDFW 2025a; iNaturalist 2025). Therefore, there is a high potential for northern legless lizards to occur within or adjacent to the project site.

Desert tortoise. Desert tortoise is federal- and state-listed as threatened under the ESA and CESA, respectively. The desert tortoise is a large, herbivorous species with a domed carapace (upper shell) and a relatively flat unhinged plastron (lower shell). Adult tortoises reach 8 to 15 inches (20 to 38 centimeters) in carapace length and 4 to 6 inches (10 to 15 centimeters) in shell height. Shells are greenish-tan to dark brown in color with tan scute (plate on shell) centers. The forelimbs have heavy, claw-like scales and are flattened for digging while hind limbs are more elephantine (Ernst and Lovich 2009).

The Mojave desert tortoise population incudes animals living north and west of the Colorado River in the Mojave Desert of California, Nevada, Arizona, and southwest Utah, and in the Sonoran (Colorado) Desert in California (USFWS 1994). Typical habitat for the desert tortoise in the Mojave Desert has been characterized as creosote bush scrub below 5,500 feet (1,677 meters), where precipitation ranges from 2 to 8 inches (5 to 20 centimeters), the diversity of perennial plants is relatively high, and production of ephemeral plants is high. Throughout most of the Mojave Desert, tortoises occur most commonly on gently sloping terrain with sandy-gravel soils and where there is sparse cover of low-growing shrubs. Soils must be friable enough for diffing of burrows, but firm enough so that burrows do not collapse.

Desert tortoises spend much of their lives in burrows, even during their seasons of activity. In late winter or early spring, they emerge from overwintering burrows and typically remain active through fall. Activity decreases in summer, but tortoises often emerge after summer rainstorms. Mating occurs during spring, summer, and fall (Rostal et al. 1994). The number of eggs (1 to 10) as well as the number of clutches (set of eggs laid at a single time) (0 to 3) that a female can produce in a season is dependent on a variety of factors including environment, habitat, availability of forage and drinking water, and physiological condition (Henen 1997; Mueller et al. 1998; McLuckie et al.

2002). Hatchlings emerge from eggs at about 2 inches (5 centimeters) in length. During activity periods, desert tortoises eat a wide variety of herbaceous vegetation, particularly grasses and the flowers of annual plants (Esque 1994).

This species requires 13 to 20 years to reach sexual maturity, has low reproductive rates during a long period of reproductive potential, and individuals experience relatively high mortality early in life. These factors make recovery of the species difficult. In addition, some of the current threats hindering the recovery of the species include the destruction, modification or curtailment of habitat, disease or predation, and mortality from vehicles.

No desert tortoise individuals, tortoise sign, or suitable burrows were identified during 2023 and 2024 protocol-level surveys conducted by the applicant (WSP 2024c; WSP 2024o). However, the project site supports suitable habitat, including vegetation and soils, and there are scattered historic and relatively current CNDDB records within 10 miles (CDFW 2025a). Therefore, there is a low potential for desert tortoise to occur within or adjacent to the project site.

Coast horned lizard. The coast horned lizard is designated as a CDFW SSC. This species is found along the Pacific coast from Baja California to the Bay Area, and inland to the Sierra foothills. Stebbins (2003) concluded that coast horned lizard is nearly always the only horned lizard where it occurs, which typically includes more upland areas of sage scrub, woodland and chaparral habitats. However, while the coast horned lizard and the desert horned lizard (*P. platyrhinos*) ranges are generally distinct, there is some overlap, particularly in desert canyons, foothills and along the edges of their respective habitats (Brattstrom 2013). Based on numerous recent iNaturalist records, it appears that current distributions between coast and desert horned lizard in the general region of the project site are separated at approximately SR-14 with the majority of coast horned lizard occurring to the west and desert horned lizard occurring to the east (iNaturalist 2025). Although, there are scattered records for each species that overlap those general distributions.

There are several morphological features that distinguish coast horned lizard from desert horned lizard. Coast horned lizard has a pronounced row of spikey, triangular scales along the margin of the lower jaw which are much less developed in desert horned lizard. The former also has two rows of fringe scales along the side of the body while desert horned lizard has only one. Coast horned lizard has a “warmer” coloration than desert horned lizard usually displaying a tan or yellowish to brown base with mirrored patches ranging from orange to dark maroon-brown.

Coast horned lizards typically display courtship behavior between April and May and females lay one clutch of 6 to 20 eggs in early summer. Eggs are laid underground in a nest dug out by the female over several days (Pianka and Parker 1975). Hatchlings begin to appear in late July to early August. Like other horned lizards, this species are specialist predators of native ant species, particularly harvester ants (*Pogonomyrmex* spp. and *Messor* spp.).

Habitat degradation, caused by conversion to agriculture, urban, and suburban uses, continues to be the biggest threat to coast horned lizards. Fragmentation of habitat due to this development had been accompanied by the introduction of non-native ants, displacing native prey resources, and an increased density of mesoopredators (i.e., medium sized predators including racoons, cats, and skunks) that thrive in altered landscapes.

Although coast horned lizard was not observed during any of the 2023 and 2024 surveys conducted by the applicant, the project site occurs within a transitional area between the foothills of the Tehachapi Mountains and the western Mojave Desert. Coast horned lizard is known to occur within these habitat edges and there are several recent iNaturalist records located within 10 miles of the project site and particularly concentrated at the west end of the gen-tie alignment (iNaturalist 2025). Therefore, there is a moderate potential for coast horned lizard to occur within or adjacent to the project site.

Special-Status Birds

Sharp-shinned hawk. Sharp-shinned hawk is a CDFW WL species. This species is a small hawk with long-tails and relatively short rounded wings. The tail tends to be square-tipped and may show a notch at the tip. Adults are slaty blue-gray above, with narrow, horizontal red-orange bars on the breast. Dark bands are present across the tail. Sharp-shinned hawks have small heads that do not always project beyond the front of the wings while in flight (Cornell Lab 2025).

This species is a common migrant and winter resident throughout California, except in areas with deep snow. Their breeding distribution is poorly documented and it may no longer breed in the southern Sierra Nevada Mountains. Within its known breeding range, sharp-shinned hawks utilize ponderosa pine, black oak, riparian deciduous, mixed conifer, and Jeffrey pine habitats. During winter, all habitats, except for alpine, open prairie, and bare desert, are frequented, however, riparian areas are mostly preferred (Polite and Pratt 1990a).

Breeding occurs between April and August and typically peaks in late May to July. Nests are typically constructed near water in dense, pole and small-tree stands of conifers. Fledging is timed to coincide with fledging of prey birds, providing a food supply for young, inexperienced chicks. Adult hawks are agile birds that cruise rapidly with a distinct flap-and-glide flight style during hunting flights. This species often forages in opening at edges of woodlands and brushy pastures. Prey resources primarily include small birds, but small mammals, reptiles, amphibians, and insects are also consumed.

The primary threat to sharp-shinned hawk is the loss of suitable breeding habitat from deforestation and development. The loss of habitat is mostly significant on the southern periphery of the breeding range, where habitat is marginal or scarce, and human populations are larger.

Sharp-shinned hawks were not observed or detected during any of the 2023 and 2024 surveys conducted by the applicant. The project site does not support suitable breeding habitat so nesting birds are unlikely to occur. The project site is along the edge of the known wintering range of the species and there are several recent iNaturalist and eBird records scattered within 10 miles of the project site (eBird 2025; iNaturalist 2025). Therefore, there is a low potential that sharp-shinned hawks could occur as an infrequent migrant or winter resident within or adjacent to the project site.

Tricolored blackbird. Tricolored blackbirds are listed as threatened under CESA. This species is also a USFWS BCC and CDFW SSC. Very similar in appearance to the common red-winged blackbird (*A. phoeniceus*), the male tricolored blackbird is glossy black with a red shoulder patch. However, the shoulder patch is bordered by white rather than yellow as seen in the common species. Females are dark brown and streaky, lacking warm tones to the plumage, unlike female red-winged blackbirds. The tricolored blackbird song is nasal and low-pitched, not as complex or as musical as red-winged blackbird (Cornell Lab 2025).

Except for small nesting colonies found locally in Oregon, Washington, Nevada, and Coastal Baja California, this species is native to California where they are permanent residents. The known historic breeding range in California included the Sacramento and San Joaquin Valleys, the foothills of the Sierra Nevada Mountains south to Kern County, the coastal slope from Sonoma County south to the Mexican border, and sporadically, the Modoc Plateau (Shuford and Gardali 2008a). The overall range of the species is little changed since the 1930s; however, local populations along the periphery of the range, including within the western Mojave Desert have been more recently documented. Wintering populations move extensively throughout their range in the nonbreeding season.

Tricolored blackbird forms the largest breeding colonies of any North American landbird (Cook and Toft 2005). The basic requirements for selecting breeding sites include open accessible water; a protected nesting substrate, including either flooded or thorny or spine vegetation; and a suitable foraging space providing adequate insect prey within a few kilometers of the nesting colony (Beedy and Hamilton 1999). This species usually breeds between mid-April into late July. Wintering birds often congregate in huge, mixed-species blackbird flocks that forage in grasslands and agricultural fields with low-growing vegetation.

The greatest threat to tricolored blackbirds is the direct loss and degradation of habitat from human activities (Beedy and Hamilton 1999). Due to its colonial nature, tricolored blackbirds is also highly susceptible to predation, disease, and poisoning.

Tricolored blackbirds were not observed or detected during any of the 2023 and 2024 surveys conducted by the applicant. The project site does not support suitable breeding habitat so nesting colonies are unlikely to occur. The project site is within the foraging distance of suitable breeding colony habitat, particularly near Piute Ponds approximately 7.5 miles (12 kilometers) to the southeast and is also within the known wintering range

for the species. There are several recent and historic CNDDB, iNaturalist, and eBird records scattered throughout the general region with many occurring within 10 miles of the project site (CDFW 2025a; eBird 2025; iNaturalist 2025). Therefore, there is a low potential that tricolored blackbird could occur as an infrequent forager within or adjacent to the project site at any time of year.

Golden eagle. The golden eagle receives federal protection under the BGEPA and is a state fully protected species. It is also designated as a CDFW WL species. This species is one of the largest birds in North America with a wingspan of up to 7 feet (2.1 meters) and weighing as much as 14 pounds (Cornell Lab 2025). Adult birds are brown all over with golden feathers on the back of the head and neck. Juveniles also have brown bodies, but with white flecking and patches in the wings and white on the base half of the tail feathers. The legs are feathered all the way down and the feet are yellow. The bills are dark tipped and yellow at the base. Although considered a quiet species and not frequently heard by people, golden eagles do make a wide variety of calls for various purposes.

Golden eagles are found worldwide and are known to nest in the Mojave Desert. Breeding occurs between late January and August peaking in March through July. Nests are constructed on cliffs or in the largest trees of forested stands that often afford an unobstructed view of the surrounding habitat. This species typically avoids nesting near urban habitats and may abandon nests in early incubation if disturbed (Thelander 1974). Old nests are frequently reused and alternative nest sites are maintained.

Foraging requires open terrain and grasslands, deserts, savannahs, and early successional stages of forest and shrub habitats are most often used. Golden eagles are aerial predators but will hunt by both flying and while perched. Small mammals such as rabbits, hares, and ground squirrels are their preferred prey, but they may also prey on reptiles, birds, and other small mammals (Polite and Pratt 1990b). They are also known to scavenge and consume carrion.

Golden eagles are extremely susceptible to powerline electrocutions because the wings can span phase-to-phase or phase-to-ground wires (Biosystems Analysis 1989). Other threats to the species include habitat loss from conversions to agriculture, suburban land uses, and energy development; ingestion of poisonous food and water supplies; loss of potential food resources from habitat degradation or rodent control; and collisions with structures and vehicles along roadways.

Golden eagle was not observed or detected during any of the 2023 and 2024 surveys conducted by the applicant. The project site does not support suitable breeding habitat so nesting birds are unlikely to occur. Suitable foraging habitat is present throughout the general region and there are extensive CNDDB, iNaturalist, and eBird records located within 10 miles of the project site (CDFW 2025a; eBird 2025; iNaturalist 2025). Therefore, there is a high potential for golden eagle to forage within and adjacent to the project site.

Short-eared owl. The short-eared owl is a USFWS BCC and a CDFW SSC. This species is a medium-sized owl that grows to a height of 16 inches (41 centimeters) (Cornell Lab 2025). As its name suggests, it has very short ears that are difficult to distinguish atop its rounded head. Males and females have similar plumage with patches of brown and buff occurring mostly on the back side while the underside is colored more lightly, being mostly white. Distinguishing physical characteristics include a gray white facial disc and black coloring round yellow eyes. Juveniles have similar plumage to adults, but upper parts of the head are darker in color, and the facial features of the adult are often lacking with the disc being almost entirely black. Short-eared owls are usually silent but will sometimes exhibit a variety of barks, hisses, and squeals within breeding territories.

The overall range of short-eared owl generally spans the entire United States while breeding occurs in areas of northern California across to central Missouri and then up to the Great Lakes area and all areas north. Breeding in mainland southern California is considered exceptional and limited to years of unusual incursions resulting from episodic events. For example, recent incursions were documented from 1983 through 1984 and from 1987 through 1992 after El Nino winter rains produced bumper crops of herbaceous cover that coincided with peak cycles of vole productivity (Shuford and Gardali 2008b). Conversely, the breeding range of the species retracts dramatically in drought conditions and during prey reductions. Nesting was most recently suspected in the Antelope Valley in the spring of 1992. All areas in the United States south of the breeding range are within the wintering or non-breeding range of short-eared owl.

Breeding typically occurs between March and July and nesting birds require open country that supports concentrations of microtine rodents (i.e., voles) and herbaceous cover sufficient to conceal their ground nests from predators (Holt and Leasure 1993). Suitable breeding habitats include salt- and freshwater marshes, irrigated alfalfa or grain fields, and ungrazed grasslands and pastures. Influxes of birds from northern breeding grounds occur between late October and early March (Fisler 1960; Garrett and Dunn 1981). In the winter, this species can be most often found in open grasslands, stubble fields, small meadows, coastal dunes, and shrubby areas where there is a higher abundance of prey resources. Short-eared owls are primarily crepuscular hunters meaning they typically hunt during the twilight hours of dawn and dusk (Holt and Leasure 1993). Their diet is greatly weighted towards small mammals, and in California, the species is particularly attuned to the three-to-four year cycle of the California vole (*Microtus californicus*) (Krebs 1966). However, short-eared owls will resort to other prey when vole numbers are diminished (Fisler 1960).

Current threats to short-eared owls include habitat loss and degradation, aggravated to an unknown extent by grazing, invasive exotic weeds, water management, and disease.

Short-eared owls were not observed or detected during any of the 2023 and 2024 surveys conducted by the applicant. With rare exceptions, the project site is outside of the known breeding range of the species and only supports marginally suitable habitat so nesting birds are not likely to occur. Suitable foraging habitat is present and there are several historic and recent CNDDB, iNaturalist, and eBird winter records within 10

miles of the project site (CDFW 2025a; eBird 2025; iNaturalist 2025). Therefore, there is a low potential for short-eared owl to occur as a migrant or winter resident in or adjacent to the project site.

Long-eared owl. The long-eared owl is a USFWS BCC and a CDFW SSC. This species is a medium-sized, slender owl that reaches a height of approximately 16 inches (40 centimeters) (Cornell Lab 2025). Long-eared owls are fairly dark birds with buff or orange faces and intricate black, brown, and buff patterning on the feathers. The distinctive ear tufts are black with buff or orange fringes and sit atop a roughly squarish head. Facial discs are long and narrow and two vertical white lines are located between the yellow eyes. These owls are seldom heard except during breeding time or while communally roosting during the winter.

In North America, the breeding range of this species is broadly distributed across central Canada and south through northern Baja California in the west and Virginia in the east (Marks et al. 1994). Occurring year round in California, long-eared owl is considered an uncommon permanent resident distributed widely but locally over the Mojave and Colorado Deserts (Garrett and Dunn 1981).

The long-eared owl breeding season is between February and July and typically occurs in conifer, oak, riparian, pinyon-juniper, and desert woodlands that are either open or are adjacent to grasslands, meadows, and shrublands (Marks et al. 1994). In the Antelope Valley and Mojave Desert, these owls nest both in planted trees in ranch yards and elsewhere in natural desert woodlands. Long-eared owls typically use stick nests abandoned by other bird species, such as common raven or red-tailed hawk, but will less often use tree cavities, old squirrel nests, or nest on the ground. Foraging primarily occurs at night by flying low over open ground, including grasslands, meadows, active or fallow agricultural fields, sagebrush scrub, and desert scrub (Marti et al. 1986; Bloom 1994; Marks et al. 1994). In the desert regions, kangaroo rats (*Dipodomys* spp.) and pocket mice (*Perognathus* spp.) are the primary prey (Bloom 1994; Marks et al. 1994).

The primary threat to this species is loss and degradation of breeding and foraging habitat (Marks et al. 1994). This is especially evident in the arid west where riparian woodlands and isolated tree groves are already in limited supply. Nest predation, particularly by increasing species such as raven and other corvids, may be contributing to local and regional declines (Marks 1986).

Long-eared owls were not observed or detected during any of the 2023 and 2024 surveys conducted by the applicant. However, the project site and adjacent lands provide some suitable nesting opportunities, particularly in windrows and other planted trees associated with properties along Rosamond Boulevard and in the general vicinity. There are several scattered CNDDB, iNaturalist, and eBird records within 10 miles of the project site (CDFW 2025a, eBird 2025, iNaturalist 2025). Therefore, there is a moderate potential for long-eared owls to nest and a high potential for foraging within and adjacent to the project site.

Cooper's hawk. Cooper's hawk is a CDFW WL species. This species is a medium-sized hawk with broad, rounded wings and a very long tail. Adults are steely blue-gray above with warm reddish bars on the underparts and thick dark bands on the tail. Juveniles are brown above and crisply streaked with brown on the upper breast. Outside of the breeding season, Cooper's hawks tend to be silent. A series of calls will be exhibited during courtship and while at the nest, either for communication between mates or in defense (Cornell Lab 2025).

Cooper's hawk is a breeding resident throughout most of the wooded portions of California and is known to breed in the southern Sierra Nevada foothills, New York Mountains, the Owens Valley, and other local areas in the southern part of the state (Polite 1990a).

Breeding occurs between March and August with peak activity from May through July. Dense stands of live oak, riparian deciduous, or other forest habitats near water are used most frequently. This species is increasingly found in suburbs and cities where some tall trees are present for nest sites. Higher elevation breeders will routinely move downslope and south from areas of heavy snow in the autumn. Foraging typically occurs in riparian vegetation and broken woodland habitats, but also along habitat edges usually near open water. Prey items consist of small birds, especially young during nesting season, and small mammals, reptiles, and amphibians.

Cooper's hawk has exhibited a stable and positive population trend over the past several years. However, some of the threats continue to include collisions with human-made structures and predation of young by ravens, northern goshawks (*Accipiter gentilis*), and great horned owls (*Bubo virginianus*) (Beebe 1974).

Cooper's hawk was not observed or detected during any of the 2023 and 2024 surveys conducted by the applicant. The project site does not support suitable breeding habitat and nesting birds are not likely to occur. This species may occur as a local migrant and forager, especially in the fall and winter. There are several recent iNaturalist and eBird records located within 10 miles of the project site with most documented during the non-breeding season (eBird 2025; iNaturalist 2025). Therefore, there is a moderate potential for Cooper's hawk to forage within and adjacent to the project site.

Western burrowing owl. The western burrowing owl is a state candidate for listing under CESA. It is also designated as a USFWS BCC and a CDFW SSC. This species has a distinct appearance and is not easily confused with any other owl due to its ground-dwelling nature. Burrowing owls are small, with brown and white mottling, have long, almost bare, stilt-like legs and a stubby tail. They have a round head lacking ear tufts, white eyebrows, yellow eyes, and a distinct oval facial ruff. Adults are a rich sandy-brown color on the head, back, and upper parts of the wings, and are thickly spotted with whites and buffs on the underparts. Juveniles are distinguishable from adults by their solid buff colored breast and wings (USFWS 2025c). This bird is not especially vocal but is capable of producing a variety of sounds. The most commonly heard sound is a quail-like two-note cooing made by males during mating and territorial defense.

Western burrowing owls range from the Mississippi River to the Pacific Ocean, north into Canada, and south to Mexico and western Panama. In California, they are found throughout the Central Valley and in the northeastern and southern parts of the state. Most burrowing owls in California are yearlong residents but some may move away from breeding areas during the nonbreeding season (Shuford and Gardali 2008c).

Burrowing owls use a variety of arid and semi-arid habitats, with well-drained, level to gently sloping topography, characterized by sparse vegetation, low-stature vegetation, and bare ground (Haug et al. 1993; Dechant et al. 1999). They are also sometimes found nesting in ruderal grassy fields, fallow agricultural fields, roadsides, rural parks, and other open developed areas. Primary habitat requirements include the presence of burrows for roosting and nesting and vegetation structure that is relatively short and sparse. Burrows used in California are usually excavated by California ground squirrels (*Otospermophilus beecheyi*), but in southern deserts owls may use desert tortoise or American badger burrows (Conway 2018). This species breeds between February and August and owls may change burrows several times during the breeding season. Burrowing owls are most active at night but hunting activities have been observed over 24 hours (Coulombe 1971; Marti 1974). Open fields or grasslands are required to access abundant prey resources which primarily include large insects and small rodents. As an opportunistic predator, however, a wide variety of other prey items will be consumed (Thomsen 1971).

The most important threats facing burrowing owls in California are direct mortality and permanent habitat loss caused by urbanization, and reduction or elimination of their primary burrow excavators, California ground squirrels, from grazing and agricultural lands.

Although no burrowing owls were observed within the project site during 2023 and 2024 protocol-level surveys conducted by the applicant, one pair was observed foraging within 500 feet north of the P2 North area in 2024 (WSP 2024e). Three individual owls were also incidentally observed in the general region of the project site in 2023 (WSP 2024u). These include one foraging in desert scrub habitat roughly one mile southeast of the intersection of Dawn Road and Sierra Highway, one along Hamilton Road near 110th Street approximately 2 miles north of the gen-teil alignment, and one located near the intersection of 75th Street West and Hamilton Road. Additionally, 40 unoccupied suitable burrows (29 in 2023 and 11 in 2024) were identified within or adjacent to the project site. However, no burrowing owl sign or indication of use was observed at any of the burrows. Nonetheless, there is a high potential that western burrowing owl could nest and forage within and adjacent to the project site.

Aleutian cackling goose. The Aleutian cackling goose (formerly known as the Aleutian Canada goose) was formally delisted as a threatened or endangered species under the ESA in 2001. However, it is currently designated as a CDFW WL species. This is the only subspecies of *B. hutchinsii* that occurs in California. This subspecies is a small, compact goose with a short neck, rounded crown, rather long wings, and short legs. Its plumage is brown overall with a black neck and head, white cheek and

distinctive neck ring, white under the tail (Cornell Lab 2025). It has a short, steep, black bill and black legs and feet. These geese are most commonly heard during flight calls.

Breeding in California is limited to the northeastern part of the state where the population occurs year-round unless water freezes and then most birds will depart in mid-winter. Wintering populations elsewhere in California migrate north and east to the breeding grounds in northeast California, several other western states, Canada, and Alaska. During winters in California, Aleutian cackling geese are primarily found on agricultural fields near open water where they feed on grass and waste grain (Woolington et al. 1979; Springer and Lowe 1998).

Historically, hunting through its range in the Pacific Flyway, especially on the migration and wintering range in California, and the loss and alteration of habitat on its migration and wintering range contributed to the decline of this subspecies.

Aleutian cackling goose was not observed during any of the 2023 and 2024 surveys conducted by the applicant. The project site is outside of the known breeding range for this subspecies and nesting birds are not likely to occur. There are several recent eBird records for this subspecies within 10 miles of the project site (eBird 2025). Most of these are associated with permanent water features at Piute Ponds, Apollo Community Regional Park, and flood control basins adjacent to Sierra Highway; however, there are also occurrences of foraging geese near the western portion of the gen-tie alignment. Therefore, there is a low potential that Aleutian cackling goose could occur in or adjacent to the project site as an infrequent migrant and/or winter forager.

Ferruginous hawk. The ferruginous hawk is a CDFW WL species. This species is a sizeable hawk with a large head and relatively large wings exhibiting a span of up to roughly 56 inches (142 centimeters). The wings narrow to form more pointed tips than is typical for other hawks in this genus. Light-morph individuals are distinguished by their strikingly white underparts with intermingled gray or brownish speckling, and a dark brownish V on the underside directly in front of the tail. Rarer dark-morph ferruginous hawks are mostly deep rufous-chocolate colored with light tails and upper and lower primary feathers (Cornell Lab 2025).

Although the ferruginous hawk has the smallest breeding range of any North American *Buteo*, it is widely distributed throughout western North America during the breeding season, from southern Canada, between the Great Plains and Rocky Mountains, to northern Arizona and New Mexico, and in the Columbia River Basin of eastern Oregon and southeastern Washington (Semenchuk 1992; Olendorff 1993; Gilligan et al. 1994). It is a common winter resident in southwestern California where it generally arrives in California in September and departs by mid-April. During winter, ferruginous hawk frequents open grasslands, sagebrush flats, desert scrub, low foothills surrounding valleys, and fringes of pinyon-juniper woodlands. It searches for prey, which primarily includes rabbits and hares, ground squirrels, and mice, from low flights over open, treeless areas.

Urban development may contribute to loss of suitable ferruginous hawk wintering habitat in California.

Ferruginous hawks were not observed within or adjacent to the project site during any of the 2023 and 2024 surveys conducted by the applicant. However, the applicant reported an incidental observation within 5 miles of the project site in 2024 (CDFW 2024v). The project site is outside of the known breeding range for this species and nesting birds are not likely to occur. The project site supports suitable wintering habitat and there are several recent CNDDB, iNaturalist, and eBird records located within 10 miles (CDFW 2025a; eBird 2025; iNaturalist 2025). Therefore, there is a moderate to high potential for ferruginous hawks to occur as a winter resident and forager within and adjacent to the project site.

Swainson's hawk. Swainson's hawk is a state-listed as threatened species under the CESA. This species is a medium-sized hawk that is less hefty than many other *Buteo* species. It is slimmer and longer-winged, with its wings typically held in a shallow V when soaring. Though they can be quite variable, most Swainson's hawks are light-bellied birds with a dark or reddish-brown chest and brown or gray upperparts (Cornell Lab 2025). They have distinctive underwings with white wing linings that contrast strongly with blackish flight feathers. Most males have gray heads while females tend to have brown heads. Dark individuals also occur varying from reddish to nearly all black, with reduced contrast on the underwings.

The Swainson's hawk breeds in the western United States and Canada. Its winter range occurs in isolated areas of California, Mexico, and Central America, through South America and as far south as Argentina (Bechard et al. 2010; Kochert et al. 2011). Generally, this species is found in wintering areas from early November through mid-March (England et al. 1997; Kochert et al. 2011). In California, Swainson's hawk is an uncommon breeding resident and migrant in the Central Valley, Klamath Basin, Northeastern Plateau, Lassen County, the western Mojave Desert, and the Antelope Valley.

Breeding occurs from late March to late August with peak activity in late May through July. Suitable breeding habitat typically includes trees within mature open riparian forests or corridors, lone oak trees and oak groves, and mature roadside trees in sparsely vegetated flatlands. In the western Mojave Desert, Joshua trees, ornamental trees, and lone trees along roadsides or on private property are commonly used as nesting sites (Bloom 1980). Large open areas of suitable foraging habitat with abundant and available prey base in association with suitable nesting habitat are basic requirements for successful reproduction (Estep 2009). Much of the original foraging habitat in California has been converted to either urban landscapes or agricultural production. Consequently, the species has shifted its foraging strategy to rely more heavily on agricultural crops (Bloom 1980; Estep 2009).

Swainson's hawks face a variety of current threats. These include the ongoing conversion of breeding and foraging habitat to unsuitable urban and other land uses,

the development of renewable energy facilities, disease, exposure to contaminants, and climate change. This species exhibits high nest site fidelity, meaning they return to the same site year after year (Woodbridge 1991). This may limit the exchange of individual birds between distant breeding groups (Hull et al. 2008). Hull et al. (2008) found evidence suggesting that the Central Valley population has had little recent genetic exchange with other populations east of the Sierra Nevada Mountains. Due to the geographical isolation of the Antelope Valley Swainson's hawk population from other breeding populations, together with the species' high site fidelity, the rapid recolonization of the Antelope Valley would be unlikely if nesting pairs were lost.

One active Swainson's hawk nest was documented within approximately 1.8 miles (2.9 kilometers) north of the gen-tie alignment along Rosamond Boulevard during previous surveys conducted in 2021 (ESHD 2024y). The nest was within a Joshua tree surrounded by open creosote bush scrub habitat with other scattered Joshua trees. The nest was confirmed to have ultimately failed. This pair and territory had not been previously documented in the long-term studies of the Antelope Valley Swainson's hawk population. The same nest location was revisited and monitored by the applicant during 2023 protocol-level surveys (ESHD 2024y). It was determined to be successful, producing two fully fledged offspring in 2023. Two additional Swainson's hawk observations were recorded by the applicant during the 2023 surveys. One was just south of an existing water tank on a rocky outcrop north of Dawn Road and between 20th Street West and 30th Street West. The second was recorded south of Rosamond Boulevard and east of 140th Street West. Each of these observations were recorded within the survey area. The applicant suggested that these sightings may be the same nesting pair previously discussed above. The 2023 surveys also resulted in identifying 78 potentially suitable nest sites within a half-mile of the project site. Of the potential nest sites, Swainson's hawk was only observed at one with two occupied by red-tailed hawk and 57 occupied by common raven. These competitors were observed in trees and on electrical transmission line distribution poles, lattice towers, and other structures within the survey area.

The previously identified nest was not monitored during the 2024 surveys as it was not in the survey area for the additional project components (WSP 2024r). However, the applicant reported incidentally observing a pair of Swainson's hawks near the nest and suggested it is the same pair identified during the previous surveys. An additional five Swainson's hawk observations were recorded during the 2024 surveys with each of these observed flying overhead or perched on rocks and trees. As there was no other recorded nesting activity during the 2024 surveys, the applicant suggested that these observations may be the same nesting pair foraging within the survey area. The 2024 surveys yielded the identification of 119 potential Swainson's hawk nest sites within 0.5-mile of the additional components of the project site. Two of these were occupied by red-tailed hawks and 83 by common ravens. The occupants of the remaining nest sites were unknown.

Costa's hummingbird. Costa's hummingbird is a USFWS BCC and a CDFW SA. This species is a small and compact hummingbird with a hunched posture. The short tail barely meets their short wings while perched. Adult males have an iridescent purple crown and throat patch, a green back, and a green breast. Females and juveniles are greenish above with a white eyebrow strep and whitish underparts (Cornell Lab 2025).

Costa's hummingbird is most common and widespread in southern California, but also breeds locally along the western edge of the San Joaquin Valley and the eastern edge of the Sierra Nevada north through Inyo County. In winter, this species is largely restricted to the southern coast, but may also occur in southern deserts (Garrett and Dunn 1981).

In desert regions, Costa's hummingbird breeds from March through May. Occurring in more arid habitats than other hummingbird species in California, its primary habitats include desert wash, edges of desert riparian and valley foothill riparian, coastal scrub, desert scrub, desert succulent scrub, lower-elevation chaparral, and palm oases. Nests are placed in a wide variety of trees, cacti, shrubs, woody forbs, and vines (Bent 1940). Costa's hummingbird feeds on various herbs and woody plants that provide flower nectar but it will also take small insects and spiders. During the winter, exotic or introduced shrubs such as bottlebrush (*Callistemon* spp.) are important resources (Garret and Dunn 1981).

Although the species' population is currently stable, threats include the loss of habitat and competition from Anna's hummingbird (*C. anna*) which results in edging Costa's hummingbird from some of its former habitat, especially coastal areas and desert scrub.

Costa's hummingbird was not observed during any of the 2023 and 2024 surveys conducted by the applicant. However, the project site supports some suitable breeding, foraging, and wintering habitat for the species. There are several recent iNaturalist and eBird records located within 10 miles of the project site with the nearest occurring approximately 1.4 miles southeast of the WRESC site (eBird 2025; iNaturalist 2025). Therefore, there is a moderate potential for Costa's hummingbird to occur within and adjacent to the project site.

Mountain plover. Mountain plover is a USFWS BCC and a CDFW SSC. Mountain plover is a small shorebird with a short, straight bill, round head, and long wings and legs. Adult birds are tan above with a warm fawn-brown at the nape. They have blackish tails, a black bill, and pale legs. Breeding adults exhibit a black patch at the front of the head and black stripes between the eyes and bill. Juveniles are similar to nonbreeding adults but darker above, with a scaly appearance on the upperparts created by pale feather edges (Cornell Lab 2025).

The breeding range for this species includes the high plains east of the Rocky Mountains from Montana to New Mexico and in western Texas and western Oklahoma south to central Mexico; however, most birds breed in northern Montana and in southeastern Colorado and Wyoming. Mountain plover does not breed in California.

Rather, it occurs as a winter visitor, primarily from September to mid-March, with peak numbers from December through February (Garrett and Dunn 1981; Knopf and Rupert 1995; Knopf 1996). This species is known to winter in the Antelope Valley.

During all seasons, mountain plover is strongly associated with short-grass prairie habitats or their equivalents, that are flat and nearly devoid of vegetation (Graul and Webster 1976; Knopf 1996). In California, they are most frequently found in fallow fields, burn sites, and grasslands heavily grazed by domestic livestock or fossorial mammals.

Habitat loss and degradation of wintering and breeding grounds appear to be the main factors responsible for mountain plover population declines (Knopf 1996). Loss of traditional wintering sites on grasslands and suitable agricultural croplands to urban development, vineyards, or other incompatible land uses could continue to reduce plover populations (Roberson 2002; Wunder and Knopf 2003).

Mountain plover was not observed during any of the 2023 and 2024 surveys conducted by the applicant. This project site is outside of the known breeding range for this species so nesting birds are not likely to occur. The project site does support suitable wintering and foraging habitat and there are several recent eBird records scattered within 10 miles south of the project site (eBird 2025). Therefore, there is a low potential that mountain plover could forage as a migrant or winter resident within or adjacent to the project site.

Northern harrier. Northern harrier is a USFWS BCC and a CDFW SSC. Northern harriers are slender, medium-sized raptors with long, fairly broad wings and a long, rounded tail. They exhibit a flat, owl-like face and a small, sharply hooked bill. Adult males are gray above and whitish below with black wingtips, a dark trailing edge to the wing, and a black banded tail. Females and juveniles are brown with black bands on the tail. Adult females have whitish undersides with brown streaks while juveniles are buffy with less streaking. All northern harriers have a white rump patch that is distinctive in flight (Cornell Lab 2025).

This species breeds widely but locally in North America from northern Alaska and Canada south to mid- and lower latitudes of the United States and northern Baja California. It occurs year-round within its breeding range in California with some breeding populations being resident. Most of the breeding within the state occurs in wetlands and other reserves, agricultural fields, and pastures of the Central Valley. Suitable breeding habitat in the southern deserts of California is extremely limited yet the center of abundance occurs within northern Los Angeles County, more specifically in the Antelope Valley near Lancaster (Shuford and Gardali 2008d).

The northern harrier breeding season extends from March through August; however, this species occurs more broadly and in much greater numbers during migration and winter than during the breeding season (Loughman and McLandress 1994). Northern harriers breed and forage in a variety of open treeless habitats that provide adequate

vegetative cover, an abundance of suitable prey, and scattered hunting plucking, and lookout perches such as shrubs or fence posts. In California, such habitats include freshwater marshes, wet meadows, weedy borders of lakes, rivers and streams, grasslands, weed fields, pastures, croplands, sagebrush flats, and desert sinks (MacWhirter and Bildstein 1996). Harriers nest on the ground, mostly within patches of dense, often tall, vegetation in undisturbed areas. They feed on a broad variety of small- to medium-sized vertebrates, primarily rodents and passerine birds.

The primary threat to breeding northern harriers are the degradation of nesting and foraging habitat, nest failure from human disturbance, predator-control projects, agricultural practices, and unnatural predation pressure. Their ground nests are highly vulnerable to trampling by livestock, destruction by agricultural equipment, and predation of eggs by natural or domestic species.

Although no northern harrier nesting was identified during any of the 2023 and 2024 surveys conducted by the applicant, this species was observed foraging within the gen-tie alignment north of Dawn Road in 2024 (WSP 2024v). There are several recent CNDDB, iNaturalist, and eBird breeding and non-breeding season records scattered within 10 miles of the project site; however, suitable breeding habitat is extremely limited in the general region (CDFW 2025a; eBird 2025; iNaturalist 2025). Therefore, there is a low potential for breeding northern harrier to occur within and adjacent to the project site.

Merlin. Merlin is a CDFW WL species. Merlin is a small falcon with a relatively powerful build. This species has sharply pointed wings, a broad chest, and a medium length tail. Merlins are generally dark and streaky, though their coloration varies geographically and by gender (Cornell Lab 2025). Adult males are slaty gray to dark gray while females and juveniles are browner. The chest is usually heavily streaked and the underwings are dark. The dark tail has narrow white bands, and the face often lack a prominent malar, or “mustache” stripe.

The breeding range for this species is limited to the very northern United States and north into Canada and southern Alaska. Merlin does not breed in California; however, it is a rare winter migrant in the state, including the Mojave Desert, typically between September and May (Polite 1990b). During this time, the species is seldom found in heavily wooded areas or open deserts and more frequently occurs along coastlines, open grasslands, savannahs, woodlands, lakes, wetlands, habitat edges, and early successional stage habitats.

The primary threat to merlins within their wintering range has previously been identified as a reduction of the species and their avian prey resources from pesticides. However, winter populations have appeared to have stabilized over the past few decades due to pesticide limitations, an increase in the overall wintering range, and the species’ ability to colonize urban areas.

Merlin was not observed during any of the 2023 and 2024 surveys conducted by the applicant. This project site is outside of the known breeding range for this species so nesting birds are not likely to occur. The project site does support suitable wintering and foraging habitat and there are several historic and recent CNDDB, iNaturalist, and eBird winter records scattered within 10 miles of the project site (CDFW 2025a; eBird 2025; iNaturalist 2025). Therefore, there is a high potential for merlin to occur as a winter resident and migrant within and adjacent to the project site.

Prairie falcon. Prairie falcon is a CDFW WL species. This species is a large falcon with pointed wings and medium-to-long tails. Prairie falcons are brown on the upperparts with pale with brown markings on the breast and belly. While soaring, they exhibit dark under the wing from the body to the wrist. They have a pale stripe above the eye and a brown malar (Cornell Lab 2025).

Prairie falcon breeds from central and southern Canada south to Baja California. Their wintering range primarily overlaps the breeding range but extends south to central Mexico and east to the Mississippi River. In California, this species is an uncommon permanent resident that ranges from the southeastern deserts northwest throughout the Central Valley and along the inner Coast Ranges and Sierra Nevada Mountains (Polite and Pratt 1990c).

The prairie falcon breeding season varies depending on geographic area but typically occurs between mid-February and mid-September in California. Nests are usually constructed in a scrape on a sheltered cliff overlooking a large, open area. Sometimes, however, this species will utilize old raven or eagle stick nests under similar conditions. Typical foraging habitat includes grasslands, savannahs, rangeland, agricultural fields, and desert scrub areas. These falcons will dive from searching flights or from a perch with rapid pursuit, preying on mostly small mammals, some small birds, and reptiles.

The loss of breeding habitat is likely the most important factor threatening prairie falcon populations. Alteration of foraging habitat has also had an impact because of agricultural conversion, water impoundments, or heavy grazing, which reduces suitable habitat for many prey species.

Prairie falcon was documented as an incidental observation during the 2023 and 2024 surveys conducted by the applicant (WSP 2024d; WSP 2024v). Although no additional information was provided, the project site does not support suitable breeding habitat so nesting birds are not likely to occur. The project site does support suitable foraging habitat for the species and there are several historic and recent CNDDB, iNaturalist, and eBird records scattered within 10 miles of the project site (CDFW 2025a; eBird 2025; iNaturalist 2025). Therefore, prairie falcon is considered present as a forager or migrant within and adjacent to the project site at any time of year.

American peregrine falcon. American peregrine falcon was delisted under the ESA in 1999 and under CESA in 2009 because of its recovery following restrictions on certain pesticides in the United States and Canada, successful reintroduction efforts, and

improved management. It remains designated as a CDFW SA. The peregrine falcon is a crow-sized bird with a wingspan of approximately 3 feet (1 meter). Adults have a dark gray back and crown, dark bars or streaks on a pale chest and abdomen, and heavy malar stripes on the sides of the face. Juveniles are buff colored in front and have dark brown backs. All peregrine falcons have yellow legs and feet (Cornell Lab 2025).

The current range of American peregrine falcon includes most of California during migration and in winter. The California breeding range, which has been expanding, now includes the Channel Islands, the southern and central coast, inland north coastal mountains, the Klamath Mountains and Cascade Range, and the Sierra Nevada Mountains. Wintering occurs in the northern limits of their range and this species is widespread during migration (Polite and Pratt 1990d).

While greater densities may occur along coastal habitats, many terrestrial habitats are inhabited by peregrine falcons, and none seem to be preferred. Nesting and wintering habitats are varied and include wetlands, woodlands, forests, and agricultural fields, among others. Occupied habitats may also include urban environments (Polite and Pratt 1990d). Nests are typically located on high ledges of rocks or human-made structures and consist of a scrape on the surface. Peregrine falcons feed on birds that are caught in flight.

Degradation of habitat, collisions with stationary or moving objects, exposure to pesticides, and shooting were previously identified threats to peregrine falcon populations. However, populations appear to have stabilized over the past several decades.

American peregrine falcon was not observed or identified during any of the 2023 and 2024 surveys conducted by the applicant. The project site does not support suitable breeding habitat so nesting birds are not likely to occur. The project site supports suitable foraging habitat and there are recent iNaturalist and eBird records scattered within 10 miles of the project site with most of these associated with Piute Ponds approximately 7.5 miles to the southeast (eBird 2025; iNaturalist 2025). Therefore, there is a low potential that American peregrine falcon could forage within or adjacent to the project site.

California condor. California condor is federal and statelisted as endangered under the ESA and CESA, respectively. It is also a CDFW FP species. The California condor is the largest bird in North America with a standing height of up to 3.5 feet (1 meter) and a wingspan of up to approximately 9.5 feet (2.9 meters) (USFWS 2025d). Males and females are similar in appearance. Adult condors have a mostly bald head and neck colored in shades of pink, red, orange, yellow, and light blue. This shading becomes more intensely pinkish orange during the breeding season or at times of excitement. The feathers are mostly black except for white underwing linings. Juvenile birds have dusky black feathered heads and bodies with limited white underwing linings.

By 1987, the entire California condor population consisted of 27 individuals, and all were housed in two captive breeding facilities in southern California. As of December 2024, the total population consists of 566 birds with 214 being captive and 369 being wild (USFWS 2024). Reintroduced populations are currently centered around central California (the Big Sur area and Pinnacles National Park), southern California, northern Arizona, southern Utah, and Baja, Mexico.

This species uses vast expanses of varying habitats for nesting, roosting, and foraging. Nests typically occur in caves or on ledges of cliff faces or on broken tops of old growth conifers in mountains up to 6,000 feet (1,828 meters) in elevation (Polite 1990c). Due to their large size, high perches are preferred for easier take-offs during flight. California condors are known to fly up to 250 miles (402 kilometers) per day over various open habitats in search of food which includes carrion of large terrestrial and marine mammals such as deer and whales.

California condors face many ongoing threats in the wild, including habitat loss, oil and gas drilling, shooting, and collisions with power lines. They are constantly contracting lead poisoning from bullet-killed carcasses that are scavenged and must be regularly recaptured for monitoring and treatment.

The California condor was not observed or detected during any of the 2023 and 2024 surveys conducted by the applicant. The project site does not support suitable breeding habitat so nesting birds are not likely to occur. However, this species is known to nest in mountain ranges to the west and the general region provides suitable foraging habitat. There are several historic and recent CNDDB, iNaturalist, and eBird records concentrated around the foothills and higher elevations of the Tehachapi Mountains west of the project site (CDFW 2025a; eBird 2025; iNaturalist 2025). Because of the wide-ranging habits of this species, there is a low potential for California condor to forage within or adjacent to the project site.

Loggerhead shrike. Loggerhead shrike is a CDFW SSC. Loggerhead shrikes are thick-bodied songbirds with large, blocky heads and a thick bill with a small hook. The tail is relatively long and rounded. Adult birds are gray with a black mask and white flashes in the black wings. Juveniles have darker barring above and below. Both males and females utter a variety of muttered trills, stutters, and scolding calls.

This species breeds widely throughout the United States except portions of the northwest, northeast and at higher elevations. It is present year-round throughout most of its California range. Shrikes are generally much more numerous in the southern deserts than toward the southern coast and are relatively common in the Mojave Desert (Shuford and Gardali 2008e).

In southern California, loggerhead shrike breeds from as early as January or February to July (Unitt 2004). Breeding in the southeast deserts occurs primarily in desert scrub, sparse riparian woodland, and occasionally in rural and agricultural hedgerows (Rosenberg et al. 1991). Nests are placed in shrubs or trees at variable heights above

ground, generally between 3 to 6 feet (1 to 2 meters). Tall structures, including vegetation, fences, or power lines) are required for hunting perches as well as cache sites for impaling, manipulating, or storing prey. The loggerhead shrike diet varies seasonally and includes arthropods, reptiles, amphibians, small rodents, and birds (Craig 1978; Yosef 1996).

The threats responsible for shrike declines in California are poorly understood (Pruitt 2000). Habitat loss from conversion to agriculture or urbanization, increased fire frequency, or the introduction of invasive weeds and grasses have been identified as likely threat to the species (Lovich 1998).

Several loggerhead shrikes were observed throughout the project site during the 2023 and 2024 surveys conducted by the applicant (WSP 2024d; WSP 2024v). Although the applicant did not identify if any active nests were found during surveys, the project site supports suitable breeding habitat and there is a high potential for nesting shrikes to occur.

California gull. California gull is a USFWS BCC and a CDFW WL species. This species is a medium-sized gull with a round head and a relatively slender bill compared to other gull species. The appearance varies depending on age with first year birds exhibiting mottled brown and white plumage and often a paler face, a pink bill with a black tip, and pinkish legs (Cornell Lab 2025). Second-year birds are also mottled brown but begin to show gray on the back. They have a dark eye and bluish legs. By the third-year, gulls look very similar to adults with a medium gray back, white heads, yellow legs, and dark eyes. Adults have a yellow bill with a small black ring and a red spot on the lower mandible.

California gull is common and widespread in western North America, inland and along the coast. In California, breeding is limited to the northeastern plateau region of the state, east of the Sierra Nevada and Cascade Mountains. Nesting occurs on sparsely vegetated islands and levees in inland lakes and rivers, and less frequently, salt ponds. This species is an abundant visitor to coastal and interior lowlands during the nonbreeding season and is often the most abundant species throughout its winter range (McCaskie et al. 1979; Garrett and Dunn 1981). Inland habitats include lacustrine and riverine areas, croplands, landfill dumps, and open lawns in cities. Omnivores that eat just about anything, including fish, garbage, insects, fruits, and grains, California gulls may forage up to 40 miles (64.3 kilometers) away from breeding colonies.

The primary threat for California gull has been identified as water diversions, particularly around Mono Lake where diversions resulted in easier access to the colony by predators.

The California gull was not observed or detected during any of the 2023 and 2024 surveys conducted by the applicant. The project site does not support suitable breeding habitat and is outside of the known breeding range for the species so nesting birds are unlikely to occur. The general region supports suitable wintering and foraging habitat

and there are several recent iNaturalist and eBird records scattered within 10 miles with most of these concentrated around aquatic features at Piute Ponds and Appollo Community Park (eBird 2025; iNaturalist 2025). However, there are additional records located around Rosamond Boulevard. Therefore, there is a moderate potential for California gulls to occur as a winter resident and forager within and adjacent to the project site.

Lawrence's goldfinch. Lawrence's goldfinch is a USFWS BCC and a CDFW Special Animal (SA). This species is a small songbird with a small, conical bill, a short tail with a slight fork, and broad wings. Breeding adult males are mostly gray with yellow on the breast, upper belly, wings, and back. The chin and forecrown are black. Nonbreeding adult males are similar but browner above and less extensively yellow below. Females are also similar to breeding males but brown above, with no black in the face, and less yellow in the plumage. Juveniles are mostly brown but with much less yellow in the wings and breast (Cornell Lab 2025).

Lawrence's goldfinch is highly erratic and localized in occurrence. It is a nomadic to short-distance migrant throughout its overall range which extends up to northern California during the breeding season and as far south as Baja California year-round. The wintering range extends into southern Ariona and southwest New Mexico, south into northern Baja California and Mexico. It is rather common along the western edge of the southern deserts in California where breeding individuals are present from April to September (Granholm 1990). This species becomes more irregular throughout its breeding range during the winter.

This species typically breeds in open oak or other arid woodland and chaparral habitats, generally near water. However, it can also be found in desert riparian, palm oasis, pinyon-juniper woodland, and lower montane habitats in southern California (Garrett and Dunn 1981; McCaskie et al. 1979). Nearby herbaceous habitats are often used for foraging for mostly seeds and sometimes insects.

Due to the nomadic nature of this species and the remoteness of some nesting areas, population trends can be difficult to gauge. Development and degradation of habitat, including overgrazing and the introduction and proliferation of non-native plants have been identified as potential threats.

Lawrence's goldfinch was not observed or identified during any of the 2023 and 2024 surveys conducted by the applicant. However, the project site supports occasionally suitable breeding habitat and suitable foraging habitat. There are several recent iNaturalist and eBird records located within 5 miles of the project site (eBird 2025; iNaturalist 2025). Therefore, there is a low potential for Lawrence's goldfinch to nest within or near the project site and a high potential for the species to occur as a forager or local migrant.

Brewer's sparrow. Brewer's sparrow is designated as a CDFW Special Animal (SA). This species is the smallest overall sparrow in North America, although its size varies

somewhat by region and gender. It shares characteristics typical of the genus, including a slim build, a long notched tail, short rounded wings, and a small, sharply conical bill (Cornell Lab 2025). Brewer's sparrows are dusky gray-brown, with grayish underparts and a streaked back and nape. A faint gray stripe over the eye contrasts with a darker eye line and white eye ring.

The Brewer's sparrow breeding range extends from the western provinces of Canada south across the western United States down to southern California and northern Arizona and New Mexico. Wintering grounds include the southwestern deserts of the United States south into Mexico. In California, this species is a common summer resident and breeder east of the Cascade-Sierre Nevada crest, in mountains and higher valleys of the Mojave Desert, and in the southern end of the San Joaquin Valley (Dobkin and Granholm 1990). Nests are usually in the center of a small sagebrush or other shrub up to 3.9 feet (1.2 meters) above the ground. In winter, Brewer's sparrow is commonly found in open desert scrub and cropland habitats of the southern Mojave and Colorado Deserts, usually in areas with some herbaceous understory.

Potential threats to Brewer's sparrow include habitat degradation and fragmentation throughout western North America, and more specifically, overgrazing, energy development, agricultural conversion, and invasive species, within arid ecosystems.

Brewer's sparrow was documented as an incidental observation during the 2023 and 2024 surveys conducted by the applicant (WSP 2024d; WSP 2024v). Although no additional information was provided, the project site does not support suitable breeding habitat so nesting birds are not likely to occur. However, the project site is within the known wintering range of the species. There are several iNaturalist and eBird records scattered throughout the region with some occurring within just a few miles of the project site (eBird 2025; iNaturalist 2025). Therefore, Brewer's sparrow is considered present as a winter resident or migrant within and adjacent to the project site at any time of year.

Le Conte's thrasher. Le Conte's thrasher is designated as a USFWS BCC and a CDFW SSC. This species is a large songbird with a very long tail and a very long, curved bill. Overall, the plumage is pale sandy grayish brown, darker on the tail, and rusty under the tail. A thin dark malar stripe borders the throat. Eyes, legs, and bills are dark.

Le Conte's thrashers are year-round residents within their range which includes some of the hottest and driest habitats in the southwestern United States and northwestern Mexico. The primary range is the deserts of southeastern California, southern Nevada, extreme southwestern Utah south into southwestern Arizona, northeastern Baja California, and northwestern Sonora, Mexico (AOU 1998).

This species occurs primarily in open desert wash, desert scrub, alkali desert scrub, desert succulent, and Joshua tree woodland habitats. The breeding season extends from late January into early June with a peak from mid-March to mid-April. Nests are commonly located in dense, spiny shrubs or densely branched cacti in desert wash

habitat. Most foraging occurs on the ground by probing and digging for terrestrial arthropods, small vertebrates, and seeds (Sheppard 1970).

Habitat loss and degradation continue to be the major population-level threat to Le Conte's thrasher with habitat conversion to agriculture appearing to be the single biggest factor (Laudenslayer et al. 1992). Conversions of suitable habitat to non-native grasslands resulting from fire and overgrazing have also been identified threats.

Le Conte's thrasher was documented as an incidental observation during the 2023 and 2024 surveys conducted by the applicant; however, no nesting was reported (WSP 2024d; WSP 2024v). The project site supports suitable breeding habitat and there is a high potential that this species could nest within or adjacent to the project site. Multiple detections of this species were recorded within native saltbush scrub and creosote-white bursage series habitat during each year of surveys.

Special-Status Mammals

Ringtail. The ringtail, formerly referred to as the ring-tailed cat, is a CDFW FP species. The ringtail is a seldom seen relative of the racoon with a similar bushy, ringed tail. They have a yellowish gray back, a gray belly, and a prominent white eye ring. The tail is ringed black and white with the tip ending in black. Half of the animal's length is tail, which helps keep their balance.

Ringtails can be found from southern Mexico north to Kansas, southern Wyoming, and Oregon. In California, this species is a widely distributed permanent resident that occurs in various riparian habitats and in brush stands of most forest and shrub habitats from sea level up to 9,500 feet (2,895 meters) but is most common below 4,600 feet (1,402 meters) (NatureServe 2025). Ringtails are seldomly found more the 0.6 miles (1.0 kilometer) from permanent water (Ahlborn 1990a). Denning sites typically occur in rock recesses, hollow trees, logs, snags, abandoned burrows, or woodrat nests. This nocturnal species is primarily carnivorous, mainly feeding on rodents and rabbits, birds and eggs, and reptiles and invertebrates; however, it will also consume fruits, nuts, and carrion.

Very little is known about the overall distribution of this animal in California and it is not tracked by CDFW in the CNDDB. There are no identified threats for ringtail but, as a reclusive and secretive species, it is likely vulnerable to loss of habitat from urbanization and disturbance to denning sites from human activities.

Ringtail was not observed or detected during any of the 2023 and 2024 surveys conducted by the applicant. However, the project site supports occasionally suitable habitat and is within the known range of the species. Although ringtail is not tracked by the CNDDB and there are no known additional records within 10 miles of the project site, staff has recently observed this species within similar habitat near Oak Creek Road less than 10 miles from the project site. Therefore, there is a low potential for ringtail to occur within or near the project site.

Townsend's big-eared bat. Townsend's big-eared bat is a CDFW SSC. This species is a medium-sized bat with very long ears that grow up to 1.5 inches (3.8 centimeters) (NPS 2025). Their fur is pale gray or brown above and buff colored on the underside. The face is marked by two large glandular lumps on either side of the nose.

This species occurs throughout western North America from southern British Columbia south along the Pacific coast to central Mexico and east into the Great Plains (NPS 2025). Townsend's big-eared bat is found throughout California, but the details of its distribution are not well known (Harris 2000). It is known to occur in a variety of habitats throughout the state at elevations between sea level and 10,826 feet (3,300 meters) but they are most associated with desert scrub, mixed conifer forest, and pinyon-juniper woodlands (Harris 2000; NPS 2025).

During hibernation, which usually occurs between October and April, Townsend's big-eared bats typically prefer habitats with relatively cold (but above freezing) temperatures in quiet, undisturbed sites often in more interior, thermally stable portions of caves and mines (Barbour and Davis 1969; Humphrey and Kunz 1976). During spring and summer, males are solitary while females establish maternity colonies in the warm parts of caves, mines, and buildings (Pierson et al. 1991). Night roosts may include buildings or other structures, such as bridges. Townsend's big-eared bats feed primarily on small moths but also take other insects.

This species is extremely sensitive to disturbance of roosting sites and a single visit may result in the abandonment of a roost. Activities that can result in significant disturbance or loss of habitat include mine reclamation, renewed mining, water impoundment, recreational caving, and loss of building and bridge roost sites (Kunz and Martin 1982; Pierson et al. 1999). Pesticide contamination may also threaten this species in agricultural areas (Geluso et al. 1976).

Townsend's big-eared bat was not observed or detected during any of the 2023 and 2024 surveys conducted by the applicant. The project site does not support suitable roosting habitat for this species so day roosting or maternal or hibernating colonies are not likely to occur. There are a few scattered CNDDB records within the Rosamond area immediately adjacent to the eastern edge of the project site (CDFW 2025a). Therefore, there is a high potential for Townsend's big-eared bat to forage within and adjacent to the project site.

Tulare grasshopper mouse. Tulare grasshopper mouse is designated as a CDFW SSC. It is one of 10 currently recognized subspecies of southern grasshopper mouse (*O. torridus*). In general, mice of the genus *Onychomys* have stout bodies with short, relatively thick tails. The pelage is sharply bicolored with pale-brown to grayish or pinkish head, back, and upper sides and a white underside. The tail is usually bicolored with a white tip. The total body length ranges from 4.7 to 6.4 inches (11.9 to 16.3 centimeters) with tail length usually comprising more of the overall length of the animal (Brown and Williams 2025).

This subspecies historically ranged from about western Merced and eastern San Benito Counties east to Madera County and south to the Tehachapi Mountains. They are more recently known from along the western margin of the Tulare Basin, including western Kern County, the Carrizo Plain Natural Area, along the Cuyama Valley side of the Caliente Mountains, San Luis Obispo County, and the Ceirvo-Panoche Region in Fresno and San Benito Counties (Williams and Kilburn 1992).

There is little information regarding the habitat requirements of Tulare grasshopper mouse, but it typically inhabits hot, arid shrubland and grassland associations (Williams and Kilburn 1992). Some have been reported in alkali sink habitat, dominated by one or more saltbush species. This subspecies is nocturnal and active year-round. Mating and reproduction details are not well known although most southern grasshopper mice litters are born from May through July, with a sharp decline in August (Taylor 1968). Members of this genus mostly eat small animals with insects forming the bulk of their diets (Horner et al. 1964; Chew and Chew 1970).

Habitat reduction, fragmentation, and degradation accompanied by development and agricultural conversion throughout the range are the principal causes of the decline of Tulare grasshopper mouse. The naturally low reproductive rate, low population density, and large home range characteristic of this subspecies make it particularly vulnerable to loss and fragmentation of habitat (Williams and Kilburn 1992).

Tulare grasshopper mouse was not observed or identified during any of the 2023 and 2024 surveys conducted by the applicant. Although the nearest record is limited to a historic occurrence located near SR-58 approximately 12.5 miles north of the project site, the overall distribution of this subspecies is not well understood.

Tehachapi pocket mouse. Tehachapi pocket mouse is a CDFW SSC. This subspecies was first discovered near Mount Pinos in 1926. It has an orange-brown back, white underside, and white patch at the base of the ear. The tail is black at the end and slightly exceeds the overall head and body length. Like all pocket mice, fur-lined external cheek pouches are used to collect seeds. Compared to its closest relative, the white-eared pocket mouse (*P. a. alticola*), the Tehachapi pocket mouse is larger and has a darker tail.

White-eared and Tehachapi pocket mice are geographically separated with the former being restricted to the San Bernardino Mountains. Tehachapi pocket mouse is known from a few scattered locations from Tehachapi Pass on the northeast to the area of Mount Pinos on the southwest, and around Elizabeth, Hughes, and Quail Lakes on the southeast. Known localities range between 3,500 and 6,000 feet (1,066 and 1,829 meters) in elevation.

Specific habitat requirements for this subspecies are not well defined. It has been reported in small numbers from fallow grain fields dominated by Russian thistle (*Salsola tragus*), grassy flats among scattered pine trees, arid annual grasslands, desert shrub, pinyon-juniper woodland, and Joshua tree woodland communities. Pocket mice burrows

are constructed in loose soils where nests of dried grasses are built in a chamber of the underground burrow. They forage on open ground and beneath shrubs, feeding on various seeds and perhaps small insects.

Limited information on this subspecies highlights the need for further research. It persists in populations that are small, dispersed, and vulnerable to habitat loss. These populations are likely declining due to threats that alter land surfaces, such as logging, agriculture, grazing, mineral extractions, energy development, and road building.

Tehachapi pocket mouse was not observed or detected during any of the 2023 and 2024 surveys conducted by the applicant. The project site supports suitable habitat and there are scattered CNDDB records located in the general region with the nearest occurring within 5 miles (CDFW 2025a). Therefore, staff established a low potential for Tehachapi pocket mouse to occur within or adjacent to the project site.

San Joaquin pocket mouse. San Joaquin pocket mouse is designated as a CDFW SA. This species is a small pocket mouse with a head and body length of about 2.5 to 3 inches (6.3 to 7.2 centimeters). The tail is slightly longer than the body, faintly bicolored, and tufted. These mice have buffy to pinkish, soft fur with black hairs on the back, and are white below.

San Joaquin pocket mouse is endemic to California where it occupies arid grassland, savanna, and desert scrub habitats in the Sacramento, San Joaquin, and Salinas Valleys and contiguous areas, the foothills of the western Sierra Nevada, the Tehachapi Mountains, and the western Mojave Desert (Best 1993; Williams et al. 1993). It is comprised of three subspecies (*P. i. inornatus*, *neglectus,* and *psammophilus*). These subspecies differ in size of body, length of tail, coloration, and skull characteristics (Best 1993; Reid 2006). Little information is currently available regarding distribution in the Mojave Desert and the region is not included in published range maps (Ingles 1965; Jameson and Peeters 1988; Best 1993; Kays and Wilson 2002). Individuals recorded from the western Mojave Desert are similar in external and cranial characteristics to the subspecies *neglectus.*

The species breeds from March to July. Young are born and raised in a nest built in an underground burrow usually dug in sandy soils near the bases of bushes. As a nocturnal species, it spends that day in underground burrows and forages at night mainly on seeds of grasses, shrubs, and forbs.

Much of this species overall range has undergone extensive agricultural development and most of the original occupied habitat has been destroyed. Although much of the range within the western Mojave Desert is relatively undeveloped, agricultural conversion and energy development projects have increased dramatically, thus further threatening the species.

San Joaquin pocket mouse was not observed or detected during any of the 2023 and 2024 surveys conducted by the applicant. Although the region encompassing the

project site is not included in published range maps for the species, it is known to occur in the western Mojave Desert and suitable habitat occurs. There are two CNDDB records located approximately 2 miles north of the Whirlwind Substation at the western end of the project site (CDFW 2025a). Therefore, there is a moderate potential for San Joaquin pocket mouse to occur.

Mountain lion. In 2020, the Southern California/Central Coast Mountain lion evolutionarily significant unit (ESU) was designated as a candidate species for listing under the CESA. An ESU is a population of mountain lions that are at risk of extinction.

Adult mountain lions are large, slender cats with short, muscular limbs and a long tail that is about one third of the animal's total length. They have tawny pelage that can be lighter/whitish on their belly and the undersides of their legs and they have areas of white around the muzzle, throat, and chest. Black fur is present on the backs of their rounded ears, the tip of their tail, and outlining their muzzle.

The Southern California/Central Coast ESU is comprised of six genetically distinct mountain lion populations and includes mountain lions that occur south of the San Francisco Bay and I-80, west of I-5 to the intersection of I-5 and SR-58, south of SR-58 to I-15, south of I-15 from the SR-58 intersection to the California-Nevada border, and as far south as the California-Mexico border (Gustafson et al. 2018). Although discrete populations have been identified throughout these boundaries, other mountain lions have been regularly observed outside of defined core areas, including transient and resident individuals in the Mojave and Colorado Deserts.

Mountain lions require large areas of relatively undisturbed habitats with adequate connectivity to allow for dispersal and gene flow. They have large home ranges that include heterogeneous habitats. In the United States, these often consist of pine forests, riparian and oak woodlands, stream corridors, chaparral, and grasslands, though they are also known to occur in desert habitats (Yap and Rose 2019). They can typically be found wherever native or introduced ungulates such as mule deer, elk, bighorn sheep, or feral hogs are present. Most often, caves, other natural cavities, and dense thickets of vegetation are used for denning.

While mountain lions in this ESU face a multitude of threats, the greatest stem from habitat loss and fragmentation and the consequent impact on their genetic health. Fragmentation of habitats from human developments and associated roads, power transmission corridors, and other support facilities, restricts movements and increases association with humans which are detrimental to mountain lion populations (Yap and Rose 2019).

Mountain lions were not observed or detected during any of the 2023 and 2024 surveys conducted by the applicant. The general region surrounding the project site does not support suitable denning habitat for the species. Although some prey resources, including domestic sheep and small numbers of mule deer may be present, the region does not support an ample prey base for sustained occupancy by mountain lion. There

are numerous recent iNaturalist records from the foothills of the Tehachapi Mountains and Angeles National Forest to the northwest and southwest of the project site, respectively (iNaturalist 2025). Therefore, there is a low potential that mountain lion could occur as a very infrequent transient within or adjacent to the project site, moving between more suitable habitats in these foothill areas.

American badger. American badger is a CDFW SSC. This species is mid-sized with a stout, compact, and heavy body. The fur on the back and flanks ranges from grayish to reddish. The face is distinct with a white stripe on their forehead and white cheeks. Their partially webbed toes and long claws are adapted for burrowing and pursuing prey.

The American badger overall range includes the central western provinces of Canada, throughout the western United States, and south throughout the mountainous regions of Mexico (Shefferly 1999). It occurs as an uncommon permanent resident throughout most of California, except along the northern coast (Grinnell et al. 1937). American badger is most abundant in drier open stages of most shrub, forest, and herbaceous habitats with friable soils for burrowing (Ahlborn 1990b).

This species is active year-round but may experience variable periods of torpor during the winter (Long 1973). Badgers mate in summer and early fall with young born mostly in March and April due to an extended gestation period varying from 183 to 265 days (Long 1973). Young are born in burrows dug in relatively dry, often sandy, soil, usually in areas with a sparse overstory. A typical burrow may be as far as 9.8 feet (3 meters) below the surface, contain over 30 feet (9 meters) of tunnels, and have an enlarged chamber for sleeping. This species will use multiple burrows throughout its home range and may not use the same burrow more than once a month. In the summer months, a new burrow may be constructed each day (Long 1999). Badgers are carnivores that stalk their prey in open country and catch most of their food by digging. Dominant prey include rats, mice, chipmunks, and especially ground squirrels and pocket gophers. They also consume reptiles, insects, earthworms, eggs, birds, and carrion.

Current threats to American badger include the conversion of native scrub habitat to agricultural uses and animal control activities involving direct removal of badgers as well as the poisoning of rodent prey.

American badger was not observed during any of the 2023 and 2024 surveys conducted by the applicant. However, suitable habitat occurs throughout the general region and several large burrows suitable for the species were documented within and adjacent to the project site during each year of surveys. There are several historic and recent CNDDB and iNaturalist records scattered within 10 miles of the project site (CDFW 2025a; iNaturalist 2025). Therefore, there is a high potential for American badger to occur within or adjacent to the project site.

Desert kit fox. Desert kit fox is a CDFW FP species. This subspecies of kit fox is a small fox of slender build, exceptionally large ears, heavy underfur, hair on the foot

pads, and a long tail with a black tip. Pelage is pale bleached gray on top, whitish underneath, and white in the ears.

In California, desert kit fox occurs in the Mojave and Colorado Deserts from Inyo County to the Mexican border. The range also extends into southern Nevada, western Arizona, the southwest tip of Utah, and Mexico. It is primarily found in flat, arid desert habitats with sparse vegetation, such as creosote bush scrub, creosote-white bursage scrub, desert washes, and Joshua tree woodland, among others.

Kit foxes dig dens in open, level areas within loose-textured, sandy and loamy soils. Dens typically have several entrances, and a fox or family group of foxes may have several dens or den complexes within their home range. The dens are used for birthing and rearing young, cover during the daytime, and refuge from predators. The natal season (period covering the birth, rearing, and dispersal of young) for desert kit fox can begin as early as January and continue through October with variations depending on local conditions and individual populations. Desert kit foxes hunt primarily at night by searching, meandering, circling clumps of brush, and wandering back and forth between patches of vegetation. Their principal prey consists of rabbits, kangaroo rats, ground squirrels, reptiles, some birds and eggs, insects, and vegetation.

This subspecies is primarily threatened by large-scale industrial energy development projects, which result in habitat loss, degradation, and fragmentation. It is also vulnerable due to increased non-native plant cover, urbanization, mortality from collisions with vehicles, and climate change.

Desert kit fox was not observed during any of the 2023 and 2024 surveys conducted by the applicant. However, the applicant did acknowledge suitable burrows and desert kit fox scat within the project site during each year of surveys. Therefore, there is a high potential for desert kit fox to occur within and adjacent to the project site.

Mojave ground squirrel. Mohave ground squirrel is listed as threatened under CESA. This species is a medium-sized ground squirrel about 9 inches (22 centimeters) in length, including a tail of about 2.4 inches (6.2 centimeters), with relatively short legs (Grinnell and Dixon 1919; Ingles 1965). The upper body pelage is grayish-brown with tinges of pinkish cinnamon, and the lower body is creamy white, including the underside of the tail (Ingles 1965). The eyes are large and set high in the head, and the ears are small relative to other ground squirrel species in California.

The genus, *Xerospermophilus*, includes Mojave ground squirrel and round-tailed ground squirrel (*X. tereticaudus*). The two species are distinct based on morphological, chromosome, and genetic characteristics; however, occasional hybridization occurs in contact zones between the species (Hafner and Yates 1983; Bell and Matocq 2011; Leitner et al. 2017). Round-tailed ground squirrel ranges throughout much of the southwest United States and the western edge of its geographic range abuts the eastern edge of the Mohave ground squirrel range. The Mojave ground squirrel has one of the smallest geographic ranges of all North American ground squirrels (Hoyt 1972). It

occurs only within the western part of the Mojave Desert in portions of Inyo, Kern, Los Angeles, and San Bernardino Counties, although the current distribution is an ongoing subject of study. For example, the western Antelope Valley (west of SR-14) is included in some published range maps and excluded from others (Gustafson 1993). Nonetheless, the distribution of Mojave ground squirrel within its geographic range is patchy, even within seemingly suitable habitat (Gustafson 1993). This species has been documented or is expected in all Mojave Desert scrub communities within its range, including desert sink, desert saltbush, desert greasewood, Mojave creosote bush, Mohave wash, shadscale, blackbush, Mohave mixed woody scrub communities, as well as Joshua tree woodland (Gustafson 1993).

The Mohave ground squirrel active season is generally five to six months out of the year, but the length for individuals may vary depending on age, sex, reproductive status, and the availability of food resources. Individuals in the Antelope Valley are generally active from March to August, but may be as early as January (Bartholomew and Hudson 1960; Leitner and Leitner 1998; Harris and Leitner 2004). During the active season, the species reproduces, forages, and prepares for the remaining inactive part of the year. During the inactive season, Mohave ground squirrels are secluded in their burrows and exist in a state of torpor much of the time. Adult squirrels mate soon after emergence from hibernation and mating typically extends from February to mid-March (Best 1995; Harris and Leitner 2004). Reproductive success depends on the amount of fall and winter rainfall. As their diet is heavily composed of shrub and forb materials, seasons of heavier precipitation provide a more abundant and diverse foraging base.

Major threats identified for Mojave ground squirrel include range contraction, habitat loss, habitat degradation, fragmentation, and climate change, including increased severity and persistence of drought. Additionally, direct mortality from human activities, predation, disease, and competition with other species threaten population size.

No Mohave ground squirrels were observed or detected during live- and camera-trapping components of the 2023 and 2024 protocol-level surveys conducted by the applicant (WSP 2024f; WSP 2024p). The applicant suggests that, although the project area has an ample supply of food resources, supports sympatric species typically found alongside Mojave ground squirrel, and provides suitable habitat for the species, it is likely absent from the project site and is not anticipated to occur for at least the next 5 years (WSP 2024f; WSP 2024p). The likely reasons for this provided by the applicant include the lack of recolonization potential from nearby populations as the species' range continues to contract to only those parts of the desert east of California City and north of Mojave, the location of the project site being outside of any previously identified potential gene flow corridors, and large-scale development and other causes of disturbance, such as illegal dumping, throughout the southern and western portions of the species' range have likely degraded suitable habitat and resulted in extirpation of Mohave ground squirrel from these areas.

Staff recognize that the overall potential for Mojave ground squirrel to occur within or adjacent to the project area is extremely low based on the evidence provided by the

applicant. Staff also notes that, although 2023 and 2024 protocol-level surveys resulted in negative results, they were conducted in years that were preceded by extended drought conditions. Staff concur with the applicant that multiple surveys performed over the last few decades have yielded negative results for the species south of Highway 58 and west of SR-14, but also agrees that the western and southern margins of the generally accepted range for the species is an under-sampled region likely due to the large amount of private land. Staff are aware of a recently documented (2025) occurrence of Mohave ground squirrel located in the Sanborn area, south of Highway 58 and approximately 6.5 miles northeast of the project area (K. Simon, pers. communication). Therefore, staff does not concur with the applicant that the species is absent from the project site with certainty. Rather, through coordination with CDFW, staff determined there is a low potential for Mohave ground squirrel to occur. However, staff concurs that the survey coverage for the project site is adequate to provide a not present call for a period of one year following the last surveys which were in the survey season of 2024. At this time additional camera trapping has been scheduled by the applicant on the WRESC project site for summer 2025. Given, the limited time to perform surveys, and the expected start of construction to be early 2026, if the project is approved, it is recommended that the applicant perform new surveys at the first opportunity to confirm and extend the not present finding. Condition of Certification (COC), **BIO-23** has requirements in advance of the start of ground-disturbance if surveys for Mohave ground squirrel have expired.

Regulatory

Federal

Endangered Species Act (16 U.S.C. § 1531 et seq., and 50 C.F.R., part 17.1 et seq.). The Endangered Species Act (ESA) designates and provides for protection of threatened and endangered plant and animal species, and their critical habitat. Its purpose is to protect and recover imperiled species and the ecosystems for which they depend. It is administered by the USFWS and the NMFS. The USFWS is responsible for terrestrial and freshwater organisms while NMFS is responsible for marine wildlife such as whales and anadromous fish (such as salmon). Species may be listed as endangered or threatened. All species of plants and animals, except pest insects, are eligible for listing. Species are defined to include subspecies, varieties, and for vertebrates, distinct population segments. The ESA protects endangered and threatened species and their habitats by prohibiting the “take” of listed animals and the interstate or international trade in listed plants and animals, including their parts and products, except under federal permit. “Take” is broadly defined in ESA to include “harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct” (16 U.S.C., §1532(19)). Take can also include significant habitat modification or degradation that directly results in death or injury to a listed wildlife species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering (50 C.F.R., §17.3). Take of federally listed species as defined in the ESA is prohibited

without incidental take authorization, which may be obtained through Section 7 consultation (between federal agencies) or a Section 10 Habitat Conservation Plan.

The Bald and Golden Eagle Protection Act (16 U.S.C. § 668-668c). This Act—enforced through regulations written by the USFWS—prohibits the "taking" of bald and golden eagles, including their parts, nests, or eggs. To take is defined as to "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, destroy, molest, or disturb" any bald or golden eagle, whether "alive or dead...unless authorized by permit". The administering agency is USFWS.

Migratory Bird Treaty Act (16 U.S.C §§ 703-711). The Migratory Bird Treaty Act (MBTA) makes it illegal to take, possess, import, export, transport, sell, purchase, barter, or offer for sale, any migratory bird, or the parts, nests, or eggs of such a bird except under the terms of a valid federal permit. The USFWS has authority and responsibility for enforcing the MBTA. The administering agency is USFWS.

Clean Water Act Sections 401 and 404 (33 U.S.C., §§ 1251—1376). The Clean Water Act requires the permitting and monitoring of all discharges to surface water bodies. Section 404 (33 U.S.C. § 1344) requires a permit from the USACE for a discharge from dredged or fill materials into a water of the United States, including wetlands. Section 401 (33 U.S.C. § 1341) requires a permit from the regional water quality control board for the discharge of pollutants. By federal law, every applicant for a federal permit or license for an activity that may result in a discharge into a California water body, including wetlands, must request state certification that the proposed activity will not violate state and federal water quality standards. The administering agency is the USACE (Section 404) and the State or Regional Water Quality Control Board (Section 401).

State

California Endangered Species Act (Fish and Game Code [CFGC] §§ 2050-2098). The California Endangered Species Act (CESA) of 1984 states that all native species of fish, amphibians, reptiles, birds, mammals, invertebrates, and plants, and their habitats, threatened with extinction and those experiencing a significant decline which, if not halted, would lead to a threatened or endangered designation, will be protected and preserved. CESA prohibits the take of any species of wildlife designated by the California Fish and Game Commission as endangered, threatened, or candidate species. The CDFW may authorize the take of any such species if certain conditions are met. These criteria are listed in Title 14 of the California Code of Regulations, Section 783.4 subdivisions (a) and (b). For purposes of CESA "take" means to hunt, pursue, catch, capture, or kill (Fish and G. Code, § 86). For projects under the jurisdiction of the CEC, the certification authorizing the construction and operation of the facility issued by

the CEC acts as the incidental take permit and includes all required mitigation and avoidance measures.

Fully Protected Species (CFGC §§ 2081.15 3511, 4700, 5050, and 5515). These sections designate certain species as fully protected and prohibit the take of such species or their habitat unless for scientific purposes (see also Cal. Code Regs., tit. 14, §670.7). The incidental take of fully protected species may also be authorized in an approved natural community conservation plan (Fish and G. Code § 2835) or more recently by state legislation related to some renewable energy projects. The administering agency is CDFW. Under the Warren-Alquist Act, the CEC has in-lieu permitting authority to issue the incidental take authorization if project activities would impact state-listed species.

California Fish and Game Code. The following sections of the Fish and Game Code designate protections for birds and/or their nests or eggs. The administering agency is CDFW.

- Section 3503: This section makes it unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto.
- Section 3503.5: This section makes it unlawful to take, possess, or destroy any birds in the orders Falconiformes and Strigiformes or to take, possess, or destroy the nest or eggs of any such bird.
- Section 3513: This section protects California's migratory birds by making it unlawful to take or possess any migratory nongame bird as designated in the MBTA or any part of such migratory nongame birds.
- Section 3800: All birds occurring naturally in California that are not resident game birds, migratory game birds, or fully protected birds are nongame birds. It is unlawful to take any nongame bird except as provided in this code or in accordance with regulations of the commission or, when relating to mining operations, a mitigation plan approved by the department.

Furbearing and Mammal Protection. Additional regulations are in place protecting furbearing mammals as follows:

- Fish and Game Code section 251.1 prohibits the harassment of any furbearing mammal. Harass is defined as an intentional act that disrupts an animal's normal behavior patterns, which includes, but is not limited to, breeding, feeding, or sheltering.
- California Code of Regulations, Title 14, section 460 states that fisher, marten, river otter, desert kit fox and red fox may not be taken at any time.

Native Plant Protection Act (Fish and G. Code, § 1900 et seq.). The Native Plant Protection Act was enacted in 1977 and designates state rare and endangered plants and provides specific protection measures for identified populations. Those laws prohibit

the take of endangered or rare native plants but include some exceptions for agricultural and nursery operations; for emergencies; after properly notifying CDFW, for vegetation removal from canals, roads, and other sites; due to changes in land use; and in certain other situations. The administering agency is CDFW.

California Desert Native Plant Act (California Food and Agricultural Code §§ 80001 – 80201). The California Desert Native Plant Act (CDNPA) affords protection to certain native desert plant species to make the harvest, transport, sale, or possession of these species unlawful unless a permit is first obtained. It restricts harvesting of the following plants, except for educational or scientific purposes under a permit issued by the commissioner of the county in which the native plants are growing:

- All species of the Burseraceae family (such as elephant tree [*Bursera microphylla*], saguaro cactus [*Carnegiea gigantean*], barrel cactus [*Ferocactus acanthodes*], and Panamint dudleya [*Dudleya saxosa*])

The CDNPA also restricts harvesting of the following species, except under a permit issued by the commissioner or the sheriff of the county in which the native plants are growing:

- All species of the cacti family (Cactaceae), besides saguaro and barrel cactus, which are protected as described above
- All species of the agave family (Agavaceae)
- All species of the ocotillo and candlewood family (Fouquieriaceae)
- All species of the genera *Prosopis* and *Cercidium*
- Catclaw (*Acacia greggii*), desert-holly (*Atriplex hymenelytra*), smoke tree (*Dalea spinosa*), and desert ironwood (*Olneya tesota*)

Section 80017 states that the CDNPA does not apply to publicly or privately owned public utilities, when acting in the performance of its obligation to provide service to the public.

Western Joshua Tree Conservation Act (Fish and G. Code § 1927). The WJTCA was enacted in July 2023 and prohibits the importation, export, take, possession, purchase, or sale of any western Joshua tree in California unless otherwise authorized by CDFW. The WJTCA authorized CDFW to issue permits for the incidental take of one or more western Joshua trees if the permittee meets certain conditions. Permittees may pay specified fees in lieu of conducting mitigation activities. The act also authorizes CDFW to issue permits for the removal of dead western Joshua trees and the trimming of live trees under certain circumstances. By adopting this approach and collecting mitigation fees, the WJTCA aims to offset the negative impacts of authorized project in western Joshua tree habitat, contributing to the broader conservation of the species at a landscape scale. All fees collected as alternatives to mitigation activities are directed

to the Western Joshua Tree Conservation Fund, exclusively used by CDFW for acquiring, conserving, and managing western Joshua tree conservation lands.

California Lake and Streambed Alteration Notification/Agreement (Fish and G. Code § 1602 et seq.). These sections stipulate that an entity shall not substantially divert or obstruct the natural flow of, or substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake. Under the Warren-Alquist Act, the CEC has in-lieu permitting authority to issue the Lake and Streambed Alteration for the proposed project.

Porter-Cologne Water Quality Control Act (California Water Code Division 7). The State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards (RWQCBs) have jurisdiction over all surface water and groundwater in California, including wetlands, headwaters, and riparian areas. For projects under the jurisdiction of the CEC, the certification authorizing the construction and operation of the facility issued by the CEC acts as the waste discharge permit and includes all required mitigation and design measures.

Local

Kern County General Plan. The Kern County General Plan identifies the federal, state, and local statutes, ordinances, or policies that govern the conservation of biological resources that must be considered during the decision-making process for any project that could affect biological resources.

The Land Use, Open Space, and Conservation Element of the Kern County General Plan provides for a variety of land uses for future economic growth while also ensuring the conservation of the County's agricultural, natural, and resource attributes. S1.10, *General Provisions*, provides goals, policies, and implementation measures for biological resources. Those applicable to the project are described below:

Chapter 1. Land Use, Open Space, and Conservation Element

1.10. General Provisions

1.10.5. Threatened and Endangered Species

Goals

Goal 1: Ensure that the County can accommodate anticipated future growth and development while maintaining a safe and healthful environment and a prosperous economy by preserving valuable natural resources, guiding development away from hazardous areas, and assuring the provision of adequate public services.

Policies

Policy 27: Threatened or endangered plant and wildlife species should be protected in accordance with state and federal laws.

Policy 28: The County should work closely with state and federal agencies to assure that discretionary projects avoid or minimize impacts on fish, wildlife, and botanical resources.

Policy 29: The County will seek cooperative efforts with local, state, and federal agencies to protect listed threatened and endangered plant and wildlife species through the use of conservation plans and other methods promoting management and conservation of habitat lands.

Policy 30: The County will promote public awareness of endangered species laws to help educate property owners and the development community of local, state, and federal programs concerning endangered species conservation issues.

Policy 32: Riparian areas will be managed in accordance with the USACE and the CDFW rules and regulations to enhance the drainage, flood control, biological, recreational, and other beneficial uses while acknowledging existing land use patterns.

Implementation Measures

Measure Q: Discretionary projects shall consider effects to biological resources as required by CEQA.

Measure R: Consult and consider the comments from responsible and trustee wildlife agencies when reviewing a discretionary project subject to CEQA.

Measure S: Pursue the development and implementation of conservation programs with state and federal wildlife agencies for property owners desiring streamlined endangered species mitigation programs.

Chapter 5. Energy Element

5.2. Importance of Energy to Kern County

Policies

Policy 8: The County should work closely with local, state, and federal agencies to assure that energy projects (both discretionary and ministerial) avoid or minimize direct impacts to fish, wildlife, and botanical resources, wherever practical.

Policy 9: The County should develop and implement measures which result in long-term compensation for wildlife habitat, which is unavoidably damaged by energy exploration and development activities.

Rosamond Specific Plan. Portions of the preferred and optional gen-tie alignments east of 50th Street West are located within the Rosamond Specific Plan area. The Rosamond Specific Plan was adopted in 1981, and revised in 1989, as part of the Land Use, Open Space, and Conservation Element of the Kern County General Plan. Its goals, policies, and standards are compatible with those of the General Plan but are tailored to the particular needs of the Rosamond area. The biological resources-related policies and measures described in the Rosamond Specific Plan that are applicable to the project are outlined below.

Chapter 4. Open Space/Conservation Element

Goals

Goal 3: To maintain open space qualities of the plan area.

Implementation Measures

Measure 3: All graded areas not utilized for development purposes shall be immediately reseeded with a ground cover designed to withstand the desert environment.

Willow Springs Specific Plan. Portions of the preferred and optional gen-tie alignments west of 50th Street West are within the Willow Springs Specific Plan area. This plan was adopted in 1992 and amended in 2008 as part of the Land Use, Open Space, and Conservation Element of the Kern County General Plan. Its goals, policies, and standards are compatible with those of the General Plan but are tailored to the particular needs of the expanded Willow Springs area. The biological resources-related policies and measures described in the Willow Springs Specific Plan that are applicable to the project are outlined below.

Resource Element

Policies

Policy 3: To ensure compliance with applicable state and federal laws and to protect the biological resources present in the Specific Plan area.

Mitigation/Implementation Measures

Measure 15: Where possible, project development within the Specific Plan Update area shall be designed to avoid displacement or destruction of western Joshua tree habitat, to the satisfaction of the Kern County Agricultural Commissioner's Office. Areas adjacent to the woodland shall have a 50-foot setback from the western Joshua tree plants. Within that setback, a native plant cover should be restored to natural habitat values to serve as a buffer, if such plant cover is not present.

Measure 16: A Joshua Tree Preservation and Transportation Plan shall be developed by the applicants for each parcel where Joshua trees are on site. The plan shall be

submitted to the Kern County Agricultural Commissioner's Office for review and approval prior to grading permit issuances.

Measure 21: Whether desert tortoises occur on site or not, garbage shall be hauled to a facility where it is immediately buried and not left above ground where ravens can congregate. If garbage service is not available, county road maintenance or other utility services shall be made contingent upon parcel owners removing visible trash on their property. The objective of these measures is to minimize the potential for increased raven predation of tortoises in the region subsequent to development.

Measure 23: A Joshua Tree Preservation and/or Transplantation Plan shall be developed by the applicants of discretionary projects for each parcel where Joshua trees are on site. The plan shall be submitted to the Kern County Agricultural Commissioner for review and approval prior to grading permit issuance.

Measure 24: Prior to issuance of any grading permits for individual projects, individual project applicants shall consult with the Regional Water Quality Control Board, state Department of Fish and Game and/or U.S. Fish and Wildlife Service, and the Army Corps of Engineers to identify potentially required permits. Compliance with this measure will be confirmed through the submittal of a letter (in conjunction with submittal of grading permit applications) to the County demonstrating compliance with the above-mentioned agencies.

Measure 25: Prior to the issuance of grading permits, individual project applicants shall obtain all appropriate permits as determined necessary by the Regional Water Quality Control Board, U.S. Fish and Wildlife Service, state Department of Fish and Game, and he Army Corps of Engineers.

Biological Resource Element

Goals

To preserve biological resources within the Specific Plan Area.

Policies

Policy 1: Where possible, development shall be designed to avoid displacement of sensitive species.

Policy 2: Focused surveys shall be conducted by a County-approved biologist to establish the presence or absence of sensitive species.

Policy 3: Initial development within the Update area shall, when possible, be directed towards previously impacted areas (i.e., agricultural fields).

Mitigation/Implementation Measure

Measure 2: Prior to tentative tract map approvals or additional development plan approvals, focused surveys shall be conducted by a qualified biologist (subject to the approval of the California Department of Fish and Game and the U.S. Fish and Wildlife Service) to establish the presence or absence of sensitive plant or wildlife species on the tract. Should sensitive species be present, applicable mitigation shall be implemented per federal, state, and local Endangered Species Protection regulations, as determined necessary by the County Agricultural Commissioner.

Measure 3: Initial development within the Willow Springs Specific Plan Update area shall, when possible, be directed towards previously impacted areas (i.e., agricultural fields). Portions of the plan area with native vegetation, especially along the northern and western borders, shall be developed in the later phases of project buildout.

Measure 4: Project site plans shall be encouraged by the County Agricultural Commissioner to be designed to preserve shrub communities where the Le Conte's thrasher is known to be, in accordance with state and federal regulations.

Measure 5: Although there is a low potential for the occurrence of desert tortoise in the Specific Plan area, desert tortoises may occur on site. If tortoises are discovered during subsequent surveys, the state Department of Fish and Game and the U.S. Fish and Wildlife Service shall be contacted immediately, and appropriate mitigation shall be developed and implemented prior to resumption of development activities.

Measure 7: Plants protected by the California Desert Native Plants Act shall be preserved to the satisfaction of the County Agricultural Commissioner. Property owners should be encouraged to replant any plants which are unavoidably displaced.

Kern County Zoning Ordinance. In November 2011, Kern County approved a Dark Skies Ordinance (Chapter 19.81). The purpose of this ordinance is to maintain the existing character of Kern County by requiring a minimal approach to outdoor lighting, recognizing that excessive illumination can create a glow that may obscure the night sky, and that excessive illumination or glare may constitute a nuisance. The ordinance provides requirements for outdoor lighting within specified unincorporated areas of Kern County to accomplish the following objectives applicable to biological resources:

Objective 2: Promote a reduction in unnecessary light intensity and glare, and to reduce light spillover onto adjacent properties.

Objective 3: Protect the ability to view the night sky by restricting unnecessary upward projections of light.

5.2.2 Environmental Impacts

BIOLOGICAL RESOURCES Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
c. Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☒	☐	☐
d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of wildlife nursery sites?	☐	☐	☒	☐
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☒	☐	☐
f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Communities Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☒	☐	☐

Environmental checklist established by Cal. Code Regs., tit. 14, Div. 6, Ch. 3, Appendix G, biological resources.

5.2.2.1 Methodology and Thresholds of Significance

In addition to the above environmental checklist, staff used the following methodology and thresholds of significance to evaluate the project.

Methodology

Impacts to biological resources were assessed through consideration of effects on the landscape, habitat, community, and species level for the proposed project and

alternatives. Impacts refer to any project-related activity including initial ground disturbance, vegetation removal, road construction improvements, operation of the energy storage facility, and any other long-term operation and maintenance activities that would be implemented to support the operation of the proposed project.

Appendix G of the CEQA Guidelines provides a set of topical guidance questions for an agency to consider when determining whether the project has any significant impacts. For biological resources, the questions include:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by CDFW or USFWS;
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by CDFW or USFWS;
- Have a substantial adverse effect on federally protected wetlands as defined by Section 404, of the Clean Water Act (including, but not limited to, marsh, vernal pool, and coastal) through direct removal, filling, hydrological interruption, or other means;
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites; or
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

Thresholds of Significance

An impact to biological resources would be considered significant (before considering offsetting mitigation measures) if the construction or operation of the project would result in one or more of the following:

- The potential for reduction, loss, or degradation of habitat for threatened, endangered, or special status species;
- The potential for loss or “take” of any federal or state listed plant or animal species; fully protected species; special status species, or species protected by the MBTA or other regulations;
- A net loss or permanent change in the extent or functional value of any habitat or biotic community considered biologically, scientifically, recreationally, or economically significant by federal, state, or local policies, statutes, and regulations;
- Adverse effect on federally protected wetlands as defined in Section 404 of the Clean Water Act;

- Alteration or destruction of habitat that precludes reestablishment of native populations of plants and animals;
- Impairment of movement, migration, or dispersal of resident and migratory fish and wildlife species; or
- Substantial loss of habitat or population decline of any native fish, wildlife or plant species, or overall reduction in biological diversity.

Each impact under consideration for biological resources is separately listed in bold text and contains a CEQA statement of the significance determination for the environmental impact as follows:

- **Significant and Unavoidable:** An impact that cannot be reduced to below the threshold given reasonably available and feasible mitigation measures. Such an impact requires a Statement of Overriding Considerations to be issued if the project is approved per section 15093 of the State CEQA Guidelines.
- **Less than Significant with Mitigation:** An impact that can be reduced to below the threshold level given reasonably available and feasible mitigation measures. Such an impact requires finding to be made under section 15091 of the State CEQA Guidelines.
- **Less than Significant:** An impact that may be adverse but does not exceed the threshold levels and does not require mitigation measures. However, mitigation measures that could further lessen the environmental effect may be suggested if readily available and easily achievable.
- **Beneficial:** An effect that would reduce existing environmental problems or hazards.

Direct and Indirect Impacts. Direct impacts are defined under CEQA as those effects that result from a project and occur at the same time and place. Some examples of direct impacts include the removal of vegetation or habitat; disruption of natural behavior from increased human presence and/or noise; mortality or injury from crushing, trampling, or entrapment; disruption of essential behaviors or burrow collapse from blasting, rock excavation or vibration, and exposure to fugitive dust, herbicides, or other hazardous materials. Because of the large number of vehicle trips if off-site rock disposal is utilized the project could also result in increased risk of roadkill for desert dwelling species.

Indirect impacts are caused by a project but can occur later in time or are farther removed in distance but are still reasonably foreseeable and related to the project. Indirect impacts can include the disruption of native seed banks, spread of invasive plant species, changes to soil or hydrology that adversely affects native species over time, disruption of prey base, or increased predation through alterations of the physical landscape from project features. Indirect impacts may also include fragmentation of habitat, edge effects, increased traffic, and human disturbance. Long-term indirect

effects may also occur from the operation and maintenance of the proposed project and include periodic line strikes along the gen-tie.

Permanent and Temporary Impacts. Permanent or long-term project related impacts include the conversion of land to a new use, such as the construction of the 88.6-acre WRESC site or from the construction of transmission line poles associated with the new 19-mile 230-kilovolt (kV) gen-tie line. Temporary or short-term impacts result from activities that are typically of short duration (i.e., six to 12 months) and that do not result in a permanent land use conversion such as temporary work areas needed to construct the transmission line poles, pull sites, and or splicing areas. Temporary impacts of the Project include ground disturbance, noise, human activity, and vehicle traffic associated with the construction phase of the gen-tie line and WRESC site. Because construction would occur for approximately 60 months some temporary work areas would be considered more permanent in nature and would require stabilization to manage dust and storm water run-off. The long-term loss of these areas to native wildlife would also have temporal effects that reduce access to habitat for foraging, movement, or reproduction. These areas would likely be fenced and include off-site parking, storage, and laydown areas.

Permanent and Temporary Impacts. Table 5.2-9 provides a broad summary of the types of impacts on biological resources that would or could occur during the construction and operation of the proposed project. Specific impacts on individual species are discussed below. Direct impacts include the potential for wildlife injury and mortality, the temporary and permanent loss of individual plants, and the loss of habitat used by plant and wildlife species. Indirect impacts to biological resources during construction could result from increased human activity, the introduction of non-native or invasive plants or wildlife, night lighting to support 24-hour construction at the site during specific activities, dust, noise, and soil compaction.

The WRESC is on relatively intact native habitat and a variety of sensitive plants and wildlife have been detected on or adjacent to the WRESC site and linear facilities. However, habitat conditions in the project area vary greatly and range from intact habitat on the WRESC site to highly disturbed locations along portions of the gen-tie line. For example, a large section of the gen-tie line is immediately adjacent to Mojave-Tropico Road and Rosamond Boulevard where site specific habitat conditions have been degraded through ongoing road disturbance and development. Similarly, because the WRESC site is surrounded by Highway 14, Sierra Highway, and an active railroad line the potential for some sensitive species of wildlife to occur is lower due to existing habitat fragmentation. Nonetheless, a wide variety of sensitive plants and animals occur in discreet locations at the WRESC site and along the gen-tie line.

The primary impacts to native plants and wildlife would occur from the removal of desert scrub and Joshua trees from the WRESC site. Construction activities would remove vegetation and require large scale clearing and grubbing, grading, and heavy construction for a period of up to 60 months. Removing vegetation would displace native vegetation and wildlife that rely on these habitats. Displacement would likely

result in mortality or decreased fitness for some species while other generalist species may benefit from preying on displaced species. Construction of the project would result in mortality or injury to wildlife from vehicle or heavy equipment use, particularly if slow-moving or sedentary animals occur in the path of vehicles or equipment. Ground-dwelling invertebrates, diurnal reptiles, and small mammals are the most likely species to be subject to mortality or injury from vehicles and equipment in this region. Wildlife could also be subject to mortality on the various access roads from increased vehicle traffic.

Controlled detonations (e.g. blasting used to fragment rock) would be used to excavate the underground cavern required for compressed air storage at depths of approximately 2,000 feet. Noise and vibration associated with controlled detonations has been demonstrated to adversely affect a variety of wildlife including nesting birds and in particularly fossorial (i.e., ground dwelling animals). Traditional drilling and controlled detonation practices, such as those used in mining or construction, can have significant adverse effects on terrestrial wildlife dependent upon several factors including the blast design, methods and technologies utilized in the process, the location of the blast site, and rock type. Impacts may result from of noise and vibration, habitat destruction, behavioral changes and declining air quality (Hamidun and Mohamad 2022; Akkewar and Kant 2022; Elevli and Arpaz 2010; Lameed and Ayodele 2010; Frelich 2014).

Each of these activities has the potential to result in direct and indirect impacts to plants and wildlife. Likewise, areas that were disturbed during construction but would not be permanently used for project components would be revegetated. Some of these areas would be permanently lost and mitigation would be required.

TABLE 5.2-9 GENERAL SUMMARY OF POTENTIAL IMPACTS ON BIOLOGICAL RESOURCES

Resource Type	Potential Impacts
Plants and Native Vegetation	■ Removal of native vegetation communities and individual special-status plants ■ Disruption of native seed banks and soil compaction ■ Wind and water erosion ■ Exposure of individual special-status plants or native vegetation communities to fugitive dust and herbicides ■ Degradation of habitat or displacement from invasive and noxious weeds
Invertebrates	■ Loss or modifications to habitat and microhabitats ■ Mortality or injury from crushing, trampling, or controlled detonations ■ Loss off overwintering or colony sites and removal of host or foraging plants ■ Degradation of habitat from increased erosion and sedimentation ■ Exposure to fugitive dust, herbicides, and other hazardous materials ■ Degradation of habitat from invasive and noxious weeds ■ Vibration or noise from controlled detonations and construction activities
Reptiles	■ Degradation or loss of Joshua tree woodland or desert scrub habitat ■ Loss of nesting or breeding sites ■ Mortality or injury from crushing, trampling, or entrapment ■ Exposure to herbicides and other hazardous materials ■ Introduction of non-native predators or competitors ■ Habitat fragmentation and edge effects

TABLE 5.2-9 GENERAL SUMMARY OF POTENTIAL IMPACTS ON BIOLOGICAL RESOURCES

	▪ Degradation of habitat from invasive weeds ▪ Risk of construction or operational related wildfires
Birds	▪ Loss of breeding, foraging, and/or dispersal habitat ▪ Disturbance to breeding behavior from controlled detonations or construction noise ▪ Destruction of nests or eggs ▪ Exposure to herbicides and other hazardous materials ▪ Habitat fragmentation and edge effects ▪ Increased interactions with invasive or predatory species ▪ Degradation of habitat from invasive weeds ▪ Collisions with transmission lines and shield wires ▪ Risk of construction or operational related wildfires
Mammals	▪ Injury or mortality from crushing or entrapment ▪ Loss of suitable habitat or disruption of habitat use ▪ Disturbance or destruction to nests or natal sites ▪ Exposure to herbicides or other hazardous materials ▪ Degradation of habitat from invasive and noxious weeds ▪ Disruption of movement corridors ▪ Changes in predation risk ▪ Increased potential for powerline collisions
Wildlife Corridors and Nursery Sites	▪ Interference with established wildlife migratory corridors
Jurisdictional Habitats	▪ Degradation of water quality from elevated erosion and sedimentation ▪ Release of herbicides or other hazardous materials

Overview of Operation Impacts

Operation activities that result in impacts to plants and wildlife would be limited after the construction of the WRESC and gen-tie line. The facility would remove most habitat for native plants and wildlife; however, it would be expected that birds would nest at or on the facility including structures and in any ornamental vegetation or berms that are constructed at the site. In addition, some ground dwelling species of wildlife would be expected to utilize the site for foraging and or habitat. It is likely that birds would also collide with the transmission line facilities or the exhaust stacks. This is a common phenomenon and has been recently observed by staff during inspections of adjacent transmission line facilities. Post-construction vehicle traffic would decline sharply during operation however it is possible that wildlife could be periodically struck by vehicles during inspections of the facility or gen-tie. Except for periodic avian and possible bat collisions with the gen-tie lines impacts during the operation phase would be substantially less severe because less disturbance and vehicular traffic would occur, and fewer people would be present. Facility lighting could also adversely affect wildlife that occur in adjacent areas.

Operation of the project would produce noise that would emanate from the site to adjacent habitat. The project would consist of four 130 MW power blocks that contain a motor-driven air compressor drivetrain, heat exchangers, and an air turbine generator and their ancillary equipment. The equipment is not known to cause offsite ground vibration or airborne low-frequency noise during normal operations (ESHD 2024i);

however, noise levels during daily operations could reach 60 dBA at 1,500 linear feet from the WRESC. Although noise levels are generally high due to the adjacent Highway, it would be expected that operation noise would be higher in habitat adjacent to the facility. It is possible that this noise could cause wildlife to avoid otherwise suitable habitat surrounding the site.

Operation of the project would also include a 600-acre foot hydrostatic compensating surface reservoir. This feature would be used during operation to develop pressure to operate the facility. After initial filling, the surface reservoir would be equipped with an interlocking shape floating cover estimated to be 90 percent effective in reducing evaporation (ESHD 2024i). It is possible that this feature could entrap wildlife species or act as a raven subsidy. Measures would be included to ensure that the sides of the reservoir do not result in wildlife entrapment and that surface water is not available for ravens.

Construction of the proposed gen-tie line would increase the risk of collision of birds and bats. Collision occurs when birds or bats fly into overhead wires. Electrocution occurs when a bird simultaneously contacts two energized phase conductors or an energized conductor and grounded hardware. This happens most frequently when a large bird attempts to perch on a transmission structure with insufficient clearance between these elements.

Mitigation Strategy. Each of the proposed Conditions of Certification (COCs) or mitigation measures were developed to ensure that impacts to sensitive biological resources are minimized or avoided to the extent possible based on the construction and operation of the project. In certain circumstances staff has proposed the use of pre-construction surveys, the implementation of non-disturbance buffers, the relocation of Joshua trees, avoidance of nesting birds, and worker training. To reduce impacts to less than significant for some species, staff has proposed compensatory mitigation to support land preservation. Because of the CEC's regulatory obligation under Section 1600 et seq of the CDFG Code and to comply with CESA requirements to fully mitigate impacts to State listed species the conditions of certification were developed in close cooperation with the CDFW. Where appropriate, the applicant's recommended mitigation (see the applicants various Biological Resources Technical Reports) was incorporated into staff's recommended conditions of certification.

5.2.2.2 Direct and Indirect Impacts

a. Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

Tables 5.2-10 provides a summary of the permanent and temporary impacts to native and non-native vegetation communities along with other land cover types. The acreages provided below represent permanent and temporary impacts under Option 1 –

Without Berm. The same impacts would occur under Option 2 - With Berm with the exception that those identified under the P1 and P2 North sites would be permanent rather than temporary. All other impacts would remain the same under both options.

TABLE 5.2-10 SUMMARY OF VEGETATION COMMUNITY IMPACTS		
Vegetation Community/Land Cover Type	**Acres of Impact**	**Impact Type**
WRESC Site		
Cheesebush scrub	13.18	Permanent
Creosote bush – white bursage scrub	63.74	Permanent
Disturbed/Developed	6.48	Permanent
White bursage scrub	5.20	Permanent
Subtotal		**(*88.6*)**
Access Roads		
Creosote bush – white bursage scrub	2.04	Permanent
Disturbed/Developed	0.05	Permanent
Subtotal		**(*2.09*)**
Pole Foundations		
Allscale scrub	0.03	Permanent
Creosote bush – white bursage scrub	0.05	Permanent
Creosote bush scrub	0.01	Permanent
Disturbed/developed	0.10	Permanent
Non-native grassland and forbs	0.01	Permanent
Rubber rabbitbrush scrub	0.01	Permanent
Subtotal		**(*0.21*)**
TOTAL – PERMANENT IMPACTS		**90.90**
P1 Site[1]		
Allscale scrub	0.17	Temporary
Cheesebush scrub	1.08	Temporary
Creosote bush – white bursage scrub	61.96	Temporary
Disturbed/developed	2.33	Temporary
White bursage scrub	9.10	Temporary
Subtotal		**(*74.64*)**
P2 North Site[1]		
Creosote bush – white bursage scrub	41.21	Temporary
Creosote bush scrub	4.25	Temporary
Disturbed/developed	1.44	Temporary
Subtotal		**(*46.90*)**
P2 South Site		
Creosote bush – white bursage scrub	7.60	Temporary

TABLE 5.2-10 SUMMARY OF VEGETATION COMMUNITY IMPACTS		
Disturbed/developed	1.53	Temporary
White bursage scrub	0.85	Temporary
Subtotal		**(*9.98*)**
Villa Haines Site		
Creosote bush – white bursage scrub	10.71	Temporary
Creosote bush scrub	0.26	Temporary
Disturbed/developed	2.39	Temporary
Subtotal		**(*13.36*)**
Pole Construction Sites		
Allscale scrub	3.04	Temporary
Cheesebush scrub	0.55	Temporary
Creosote bush – white bursage scrub	4.68	Temporary
Creosote bush scrub	0.91	Temporary
Disturbed/developed	11.95	Temporary
Non-native grassland and forbs	1.00	Temporary
Rubber rabbitbrush scrub	0.64	Temporary
Tamarisk thickets	0.11	Temporary
White bursage scrub	0.01	Temporary
Subtotal		**(*22.89*)**
Pull and Tensioning Sites		
Allscale scrub	2.39	Temporary
Cheesebush scrub	1.50	Temporary
Creosote bush – white bursage scrub	7.21	Temporary
Creosote bush scrub	1.19	Temporary
Disturbed/developed	8.71	Temporary
Rubber rabbitbrush scrub	0.40	Temporary
Subtotal		**(*21.40*)**
Underground Trench		
Allscale scrub	0.18	Temporary
Disturbed/developed	0.48	Temporary
Non-native grassland and forbs	0.04	Temporary
Rubber rabbitbrush scrub	0.02	Temporary
Subtotal		**(*0.72*)**
TOTAL – TEMPORARY IMPACTS		**189.89**

[1] Impacts would be temporary under Option 1 – Without Berm but permanent under Option 2 – With Berm.

Sources: WSP 2025o Willow Rock Incidental Take Permit Application, March 14, 2025, WSP

Riparian Habitat

According to the most recent Supplemental Preliminary Delineation of Jurisdictional Waters (WSP 2025n), the project area does not support any riparian habitat. Staff concurs that riparian habitat is absent from the project area and would not be impacted from the construction or operation of the project.

Sensitive Natural Communities and Native Vegetation

The applicant identified one CDFW sensitive natural community, Joshua tree woodland, occurring within the project area (WSP 2024d; WSP 2024v). This vegetation community was mapped along the northern portion of the optional gen-tie alignment west of the WRESC site. There are six additional native vegetation communities, including allscale scrub, cheesebush scrub, creosote bush – white bursage scrub, creosote bush scrub, rubber rabbitbrush scrub, and white bursage scrub occurring within the project area.

Construction

Less Than Significant with Mitigation Incorporated. The applicant did not identify any permanent or temporary impacts to Joshua tree woodland along this section of the gen-tie alignment. However, staff notes that if this optional section of the gen-tie alignment is constructed, there would likely be permanent impacts to Joshua tree woodland from pole foundation placement and any new access roads, and temporary impacts from pole construction sites and possibly pull and tensioning sites. This could range from 0.5 acres up to 2 acres depending on the size of the road and which alternative alignment is used. Staff notes that there are other locations within the project area, especially within and around the WRESC site, P1, P2 North, and P2 South, that exhibit characteristics that may meet the CNPS definition of Joshua tree woodland and were mapped as different vegetation communities by the applicant.

Additional native vegetation communities are dispersed throughout the project area and would be subject to impacts from construction of permanent features, including the WRESC site, access roads, and pole foundations, and temporary development of the site construction laydown and parking areas (P1, P2 North, P2 South, and Villa Haines), pole construction sites, pull and tensioning sites, and underground trenching.

Direct impacts to Joshua tree woodland along the optional northern section of the gen-tie alignment, if constructed, and other native vegetation communities within the project area would include the permanent and temporary loss of habitat, the loss or disruption of native seedbanks, or alterations local drainage patterns that results in offsite runoff and increased erosion and sedimentation to adjacent habitats. Indirect impacts to native vegetation and Joshua tree woodland would include long-term type conversion of desert habitats, long-term alterations to hydrology, and degradation of habitat from non-native invasive weeds.

The term “habitat” refers to the environmental and ecological conditions where a species is found. Wildlife habitat is generally described in terms of vegetation, though a

complete explanation often must encompass further detail, such as availability or proximity to water, suitable nesting or denning sites, shade, foraging opportunities, cover sites to escape predators, soils that are suitable for burrowing or hiding, limited noise and disturbance, and many other factors that are unique to each species. Vegetation itself provides vital habitat components, including physical structure, biological productivity, and foraging resources for many wildlife species. Further, vegetation often reflects other habitat components, such as regional climate, soil productivity and texture, elevation, and topography. Thus, vegetation is a useful overarching descriptor for habitat, and it is the primary factor in this analysis of impacts.

As summarized in **Table 5.2-10**, construction of the project (Option 1 – Without Berm) would result in the permanent removal of vegetation associated with 13.18 acres (or 13.35 acres under the Option 2 - With Berm) of allscale scrub, 13.18 acres (or 14.26 acres under the Option 2 - With Berm) of cheesebush scrub, 65.83 acres (or 169.00 acres under the Option 2 - With Berm) of creosote bush – white bursage scrub, 0.01 acre (or 4.26 acres under the Option 2 - With Berm) of creosote bush scrub, 0.01 acre of rubber rabbitbrush scrub (same under either option), and 5.20 acres (or 14.30 acres under the Option 2 - With Berm) of white bursage scrub. Although considered non-native, non-native grassland and forbs vegetation communities often provide suitable foraging and/or burrowing habitat for a variety of resident or migrant birds, fossorial mammals, and other wildlife. Approximately 0.01 acre (same under either option) of this community would be permanently removed during construction.

Table 5.2-10 also provides a summary of the temporary impacts to vegetation communities and other land cover types (Option 1 – Without Berm) and includes 5.78 acres (or 5.61 acres under the Berm Option) of allscale scrub, 3.13 acres (or 2.05 acres under Option 2 - With Berm) of cheesebush scrub, 133.37 acres (or 30.20 acres under Option 2 - With Berm) of creosote bush – white bursage scrub, 6.61 acres (or 2.36 acres under Option 2 - With Berm) of creosote bush scrub, 1.06 acres (same under either option) of rubber rabbitbrush scrub, and 9.96 acres (or 0.86 acre under Option 2 - With Berm) of white bursage scrub. Additionally, 1.04 acres (same under either option) of non-native grassland and forbs would be temporarily disturbed during construction.

Construction of the project would result in the permanent loss and temporary disruption of native seedbanks. Seedbanks can be defined as the storage of plant seeds in the superficial soil (Taiwo et al. 2018). Their important functions include donation of propagules, conservation of genetic diversity, and propagation of understory plant community diversity. These functions are all dependent upon the dynamics of a healthy seedbank coupled with favorable environmental factors (Taiwo et al. 2018). Even in areas that would be subject to temporary ground disturbance, disruption of the native seedbank could have long-term consequences, particularly in arid desert environments.

Construction of the project would require mass grading to develop the WRESC site, laydown and storage areas, and access roads. These activities could result in direct

impacts from alterations to local drainage patterns potentially increasing erosion and sediment runoff from the project site into adjacent native habitats.

The project would result in indirect impacts from long-term type conversion of desert habitats that are typically slow to recover after ground-disturbing construction activities. Plant recovery and succession following disturbance are poorly understood in desert habitats relative to more temperate regions. For example, Abella (2010) quantitatively reviewed vegetation reestablishment following a variety of disturbances, such as road construction, powerline corridors, and fire, in the Mojave and Sonoran Deserts. Results varied depending on the type (e.g., roads, fire, etc.) and the level (e.g., removal of topsoil, compaction of soils) of disturbance. However, results of the studies indicate that when old perennial vegetation communities, such as those containing Joshua trees and creosote bush are disturbed, the recovery times for species composition are on the order of decades to centuries at a minimum.

The applicant has proposed an overall construction schedule of approximately 5 years (ESHD 2024i). The applicant has also proposed to restore areas that are temporarily disturbed during construction with native species, such as *Phacelia* sp., *Asclepias* sp., *Lupinus* sp., and other plant species. Restoration efforts of early successional communities would be expected to facilitate the eventual reestablishment of total perennial cover (to amounts consistent with undisturbed areas); however, this would still be anticipated to take several years to decades (Abella 2010). While these early successional communities may provide habitat favorable for some wildlife species others that primarily depend on later-successional desert habitats may infrequently visit these areas or avoid them altogether. The applicant has also proposed to translocate western Joshua trees from disturbed portions of the project areas to P1, or similar lands, upon completion of construction.

Indirect impacts could occur if construction of the project results in long-term alterations to hydrology that disrupt natural sheet flow and drainage patterns, increases impermeable surface area, reduces soil infiltration and water availability. The applicant has proposed, however, that the WRESC site would be developed so that no wastewater or stormwater is discharged offsite (ESHD 2024i). Stormwater would be directed to onsite retention ponds to be retained for future site use or evaporated. Sheet flow from the upland areas northeast of the WRESC site would be diverted around the site, where it would continue to flow to its preconstruction locations.

Indirect impacts to native vegetation communities could also occur if non-native invasive weeds become introduced or established as a result of project construction activities. Weeds are highly adaptable and possess specific botanical and ecological traits, such as rapid growth, high seed production, and the ability to tolerate harsh conditions, that enable them to colonize disturbed areas. Non-native invasive weeds threaten native vegetation communities because they can exclude native plants (including special-status species occurring in the project area), alter habitat structure, increase fire frequency and intensity, decrease forage for herbivorous wildlife (including special-status species), and decrease limited water availability for both plants and

wildlife. For large-scale construction projects, heavy equipment is often transported from distant locations which can result in importing weed seeds and plant parts if they are not properly cleaned prior to use in a new area. Weed seeds can also be carried on hand tools, clothing, and shoes. The applicant identified several non-native invasive weeds, as designated by the CDFA and Cal-IPC, during surveys conducted in 2023 and 2024 (WSP 2024d; WSP 2024v). The applicant has recognized that weeds could result in impacts to sensitive biological resources and has proposed to develop an Invasive Species Treatment Plan (ESHD 2024i).

The direct and indirect impacts to western Joshua tree woodland and other native vegetation communities discussed above would be considered significant without mitigation. As part of the project, the applicant has proposed the restoration of temporary disturbed areas. Staff has incorporated this into COC **BIO-8** (Management Plan). This measure would require the basic restoration of temporary disturbance areas to prevent the establishment of weed sources, salvage of topsoil and seedbank resources, and ongoing monitoring and reporting of restoration sites. Because temporary disturbance areas would be fully mitigated to off-set impacts to burrowing owl and Crotch's bumble bee, the intent of COC **BIO-8** (Vegetation Management Plan) would be to establish basic cover and prevent the establishment of high risk weed species and not to restore lost functional values.

Impacts from offsite erosion and sedimentation would be reduced through the implementation of the project SWPPP which would ensure that development of the site does not result in substantial stormwater runoff from the project area during construction. Additionally, COC **WATER-2** (Construction Erosion and Sedimentation Plan Operations Drainage, Erosion and Sedimentation Plan) is recommended to ensure that all project elements of stormwater management are addressed during project operations. Indirect impacts from the introduction of non-native invasive weeds would be reduced through the implementation of proposed COCs **BIO-9** (Integrated Weed Management Plan) and **BIO-10** (Invasive Species Management Plan). These COCs require measures to identify, control, and manage existing and potential weed infestations in the project area, worker education on the detrimental effects of invasive species, and conditions to maintain clean equipment and vehicles that could carry weed seeds and plant parts into the project area. The implementation of these measures would reduce impacts to sensitive and native vegetation communities to less than significant.

Operation

Less Than Significant with Mitigation Incorporated. Direct and indirect impacts to Joshua tree woodland and other native vegetation communities would be similar in type but greatly reduced in magnitude compared to those discussed for construction. Vegetation removal and grading activities would be completed during the construction phase of the project. During operation, all activities would be conducted in previously developed areas within the WRESC site or along existing access roads. Therefore, direct impacts to western Joshua tree woodland and other native vegetation communities

from the loss of habitat and loss or disruption of native seed banks would not occur as a result of implementing operation activities. The WRESC site would continue to capture wastewater and stormwater onsite for future use or it would be evaporated and sheet flow would continue to be diverted around the site during the operation phase of the project.

Indirect impacts could occur if non-native invasive weeds are introduced or become established from operational activities. These impacts would be similar to those discussed for the construction phase but would be greatly reduced in magnitude since major ground-disturbing activities would have been completed and temporary disturbance areas would have been restored and reseeded with native seed mixes. The implementation of the same COCs for the project would reduce impacts to western Joshua tree woodland and other native vegetation communities to less than significant.

b. Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

Special-Status Plants

Except for western Joshua trees (discussed below), no other federal- or state-listed plant species are likely to occur within or adjacent to the project area. Three non-listed special-status plant species were observed by the applicant during focused surveys for rare plants in 2023 and 2024. These include alkali mariposa lily, sagebrush loeflingia, and Mojave monardella. Several other non-listed special-status plant species were determined to have some potential to occur within or adjacent to the project area (see **Table 5.2-5**).

Construction

Impacts to special-status plants would closely resemble those discussed above for native vegetation communities. Direct impacts to special-status plants would include the removal or destruction of individuals or small populations, loss of habitat, destruction or disturbance of seedbanks, and exposure to increased erosion and sedimentation, excessive fugitive dust, and hazardous materials.

Based on data and reports provided by the applicant, it is likely that a small number of alkali mariposa lily, sagebrush loeflingia, and Mojave monardella individuals would be removed or destroyed during construction. Sagebrush loeflingia (CRPR 2B.2) was observed along the western edge of the P1 site, within 500 feet of the P2 South site, and along a section of the alternative gen-tie alignment near Felsite Avenue and Tropico Road. Alkali mariposa lily (CRPR 1B.2) was documented within the preferred gen-tie alignment along Rosamond Boulevard between 90th Street West and 97th Street West. Mojave monardella (CRPR 4.2) was identified in both the P2 North and P2 South

sites as well as along the eastern portion of the preferred gen-tie alignment immediately west of Highway 14. It should be noted that there were several areas, particularly surrounding the WRESC, P1, P2 North, P2 South, and Villa Haines sites that were not accessed during focused rare plant surveys and that could support additional occurrences of special-status plant species.

Major ground-disturbing activities would primarily occur in native habitats that support special-status plant species. Habitat for special-status plants, particularly sagebrush loeflingia, that were observed in relatively dense populations within and adjacent to the WRESC and P1 sites, would be permanently removed during grading and development of the site. Similarly, habitat for alkali mariposa lilies, which occurs along portions of the gen-tie alignment, would be temporarily removed during the development of pole construction and pull and tensioning sites associated with the gen-tie line construction. These activities would also result in loss of local seedbanks and the removal of individuals and small populations of these species and other special-status plants, if present, during construction.

Direct impacts would occur if alterations to local soil conditions and existing hydrologic properties intensify the immediate frequency and magnitude of surface runoff and soil erosion resulting in the degradation of suitable habitat for special-status plants during construction. Even at small, discrete locations, the impact of microtopography on surface and runoff connectivity of the topsoil act as primary controls for the hydrological and erosional processes in broader environments (Mohr et al. 2013). Special-status plants may also be directly impacted from excessive fugitive dust which can have harmful physiological effects and may affect plant productivity and nutritional qualities (Sharifi et al. 1997). Prolonged exposure may also affect natural plant processes such as photosynthesis, respiration, and transpiration, and allow the penetration of phytotoxic gaseous pollutants (Farmer 1993). Special-status plants may be directly impacted from inadvertent spills of hazardous materials such as petroleum-based products (e.g., gasoline, motor oil), hydraulic fluid leaks, and construction waste or leachate. Concrete-related waste can inadvertently enter special-status plant habitat through various means, including drift, leaking, or spilling.

Indirect impacts to special-status plants would be similar to those discussed under vegetation communities. These include the degradation of habitat from long-term type conversion and alterations to local hydrology. Degraded habitats could promote suitable conditions for non-native invasive weeds to outcompete and displace special-status plants and other native species.

Direct and indirect impacts to plants would be considered significant without mitigation if project activities result in the loss of a substantial portion of a known population. of a CRPR List 1B or 2 species, such as sagebrush loeflingia and alkali mariposa lily. Staff has determined that loss of more than ten percent of the known individuals within an occurrence would be a significant impact in this case because it could reduce the occurrence size below a critical threshold, increasing the risk the loss of genetic diversity or the ability to respond following drought or other disturbances. In addition,

the occurrence is small or isolated the loss of more than 10 percent of the occurrence could adversely affect seed production and seed banks that could result in long-term population decline.

However, the impacts to CRPR List 4 species, such as Mojave monardella, are not typically considered under CEQA unless the occurrence is considered especially rare or locally significant.

As part of the project, the applicant has proposed specific measures to reduce and mitigate impacts to special-status plants, including focused pre-construction surveys, collection of seed or transplanting of plants, and avoidance buffers. Staff has incorporated the language of these measures into **BIO-11** (Special-Status Plant Avoidance Measures). This COC includes, but is not limited to, preconstruction floristic surveys within all project disturbance areas and a 100-foot buffer, the establishment of protective buffers, and compensatory land acquisition mitigation.

In addition, staff recommends implementation of the following conditions of certification **BIO-1** (Designated Biologist Selection), **BIO-2** (Designated Biologist Duties), **BIO-3** (Designated Monitor Selection), **BIO-4** (Designated Biologist and Biological Monitor Authority), **BIO-5** (Worker Environmental Awareness Program [WEAP]), **BIO-6** (Biological Resources Mitigation Implementation and Monitoring Plan), **BIO-7** (General Impact and Avoidance Measures), **BIO-8** (Vegetation Management Plan), and **BIO-9** (Integrated Weed Management Plan)). These measures include, but are not limited to, biological monitoring during construction, worker training to provide information on special-status plants occurring in the project area, general construction BMPs to avoid sensitive biological resources, habitat restoration, and conditions to minimize the introduction and spread of non-native invasive weeds.

Impacts from offsite erosion and sedimentation would be reduced through the implementation of the project SWPPP which would ensure that development of the site does not result in substantial stormwater runoff from the project area during construction. Additionally, **WATER-2** (Construction Erosion and Sedimentation Plan Operations Drainage, Erosion and Sedimentation Plan) would be implemented to ensure that all project elements of stormwater management are addressed during project operations. Impacts from fugitive dust would be mitigated by implementation of **AQ-SC3,** which include watering roads and or stabilizing them with soil binders. Dust suppressants would be durable non-toxic soil stabilizers, and many other activity-specific control measures would be applied to reduce fugitive dust and to ensure activities do not create visible dust emissions during construction. **AQ-SC4** would require a qualified dust monitor during dust producing activities and require remedial measures if fugitive dust exceeds authorized limits.

Implementation of these measures would reduce impacts to special-status plants to less than significant.

Operation

Operation impacts to special-status plants would be similar in type but greatly reduced in magnitude to those discussed above for construction. The developed project area would not support suitable habitat for special-status plants; however, some species, such as sagebrush loeflingia and alkali mariposa lily may continue to occur in habitats adjacent to the WRESC site or along the gen-tie alignment. Impacts to special-status plants, if present, would likely be associated with exposure to increased erosion and sedimentation, fugitive dust, and hazardous materials from workers at the WRESC, driving access roads, and performing maintenance activities along the gen-tie alignment. Similarly, non-native invasive weeds could be introduced into adjacent habitats from vehicles and equipment during operations. The implementation of the same COCs discussed above for construction would reduce impacts during operation to less than significant.

Western Joshua Tree

As described in **Section 5.2.1, Environmental Setting**, 3,970 western Joshua trees, which are designated as a candidate species for listing under CESA, were recorded in the survey area during the 2024 verification census conducted by the applicant. It was noted that not all the trees within the survey area would be impacted by implementation of the project.

Construction

Construction of the project would require avoidance, permanent removal, and/or relocation of western Joshua trees. The specific number of trees that are expected to be avoided, permanently removed, and/or relocated would vary depending on whether the project is constructed under the Option 1 – Without Berm or Option 2 - With Berm.

Directs impacts to western Joshua tree would occur from permanent removal or relocation of individual trees. Under Option 1 – Without Berm, the applicant has determined that a maximum of 1,158 western Joshua trees would require permanent removal and 249 trees would be relocated. Under Option 2 - With Berm, the applicant has identified a maximum of 1,625 trees for permanent removal and 266 for relocation.

Because the species is a candidate for listing under CESA, any permanent removal or relocation of western Joshua tree would be considered significant. California Fish and Game Code section 1927.3 implements the Western Joshua Tree Conservation Act (WJTCA) which authorizes take of western Joshua trees if certain requirements set forth in the statute are met. Conditions of certification are recommended to comport with the requirements of section 1927.3 authorizing the project owner to remove western Joshua trees on site. Section 1927.3 provides the CEC the authority to require the project owner to relocate one or more western Joshua trees and implement reasonable measures required by CDFW to facilitate the successful relocation and survival of salvage trees. For any take authorization issued under the WJTCA for which western Joshua tree relocation would be required, the permittee must develop a Relocation

Plan. The plan shall include the number of trees to be relocated and the method(s) for relocation. Pursuant to the WJTCA, the number of trees to be relocated is a calculation based on the number of trees that would be permanently (lethally) removed as confirmed by the western Joshua tree census required under the WJTCA. The number of trees to be relocated would be based on the expected rate of relocation success for each method used, as well as the size class of each tree proposed for relocation, as described **in Table 5.2-11**.

TABLE 5.2-11 CDFW GUIDELINES WESTERN JOSHUA TREE RELOCATION PERCENTAGES

Size Class	Bare root relocation	Tree spade relocation
Size Class A (< 1m)	18%	9%
Size Class B (≥ 1m and < 5 m)	12%	6%
Size Class C (≥ 5m)	6%	3%

Source: CDFW 2024b

Tree spade relocation is the preferred relocation method as it minimizes impacts to roots and can have a success rate of greater than 90 percent with sufficient aftercare, while bare root relocation causes more damage to roots and is reported to have a lower success rate of approximately 50 to 90 percent even with sufficient aftercare (CDFW 2024b). If bareroot relocation is preferred a larger percentage of western Joshua trees would need to be increased consistent with the WJTCP.

The applicant provided preliminary data identifying the number of trees that would be permanently removed and the number of trees that would require relocation based on using the tree spade relocation under the CDFW guidelines **Table 5.2-12** summarizes the maximum number of trees the applicant expects to be removed or relocated based on size class for each project option.

TABLE 5.2-12 SUMMARY OF LETHAL REMOVAL AND RELOCATION FOR WESTERN JOSHUA TREE

Method	**Size Class A**	**Size Class B**	**Size Class C**	**Total**
Option 1 – Without Berm				
Permanent Removal	453	632	73	1,158
Relocation – Hydrostor Plan[1]	79	169	1	249
Relocation – CDFW Calculator	41	35	2	78
Option 2 - With Berm				
Permanent Removal	685	804	136	1,625
Relocation – Hydrostar Plan[1]	83	182	1	266
Relocation – CDFW Calculator	62	45	4	111

[1] The applicant's biologist identified a greater number of relocation candidates compared to calculations methods required under the WJTCA based on an expert assessment of tree size, health, and in situ conditions.

Section 1927.3, subdivision (d) of the CFGC also requires that any WJTCA permittees satisfy in lieu fees for deposit into the Western Joshua Tree Conservation Fund prior to the issuance of the take. The project area is within the low-fee region as defined by Section 1927.3, subdivision (d)(2)(A) of the CFGC, which includes that following fee requirements:

- $152.75 for each western Joshua tree less than one meter in height (Class A)
- $203.50 for each western Joshua tree one meter or greater but less than five meters in height (Class B)
- $1,017.75 for each western Joshua tree greater than five meters in height (Class C)

Based on the preliminary data provided by the applicant, **Table 5.2-13** provides the in-lieu fees required for the Option 1 – Without Berm and Berm Option prior to the issuance of WJTCA take authorization.

TABLE 5.2-13 IN LIEU FEES REQUIRED FOR IMPACTS TO WESTERN JOSHUA TREE

Method	Size Class A	Size Class B	Size Class C	Total
Option 1 – Without Berm				
Permanent Removal	$69,195.75	$128,612.00	$74,295.75	$272,103.50
Relocation	$12,067.25	$34,391.50	$1,017.75	$47,476.50
Total Fees	$81,263.00	$163,003.50	$75,313.50	**$319,580.00**
Option 2 - With Berm				
Permanent Removal	$104,633.75	$163,614.00	$138,414.00	$406,661.75
Relocation	$12,678.25	$37,037.00	$1,017.75	$50,733.00
Total Fees	$117,312.00	$200,651.00	$139,431.75	**$457,394.75**

[1] The applicant's biologist identified a greater number of relocation candidates compared to calculations methods required under the WJTCA based on an expert assessment of tree size, health, and in situ conditions.
Source: Preliminary Conceptual WJT Relocation Plan (WSP 2024h)

Additional direct and indirect impacts, including loss or disturbance of seedbank, loss of habitat, and exposure to increased erosion and sedimentation, excessive fugitive dust, and hazardous materials for trees that are avoided or occur in adjacent habitats. Indirect impacts would include degradation of habitat from long-term alterations to local hydrology and the introduction and colonization of non-native and invasive weeds.

Proposed Conditions of Certification. Construction of the proposed project would result in the permanent removal and relocation of western Joshua trees and has the potential to directly and indirectly impact trees that are avoided within the project area or occur within adjacent habitats. Direct and indirect impacts that result in the take of western Joshua trees or degrade habitat would be considered a significant impact under CEQA. Because this species' status as a state candidate for listing, any project-related impact would also require compliance with the WJTCA. These requirements include measures to fully off-set impacts to the species. As part of the project, the applicant has proposed measures to comply with the WJTCA to mitigate for impacts to western

Joshua tree. CEC staff have incorporated these measures into COC **BIO-12** (Western Joshua Tree Avoidance, Minimization, and Mitigation Measures), as appropriate, to fully mitigate impacts to western Joshua tree under the requirements of the WJTCA, which includes developing a final Relocation Plan and providing funding to the Western Joshua Tree Conservation Fund.

Operation

Impacts to western Joshua trees plants from the operation of the facility would be greatly reduced in magnitude compared to those discussed for construction. The developed project area would not support suitable habitat for this species; however, Joshua trees would continue to occur in habitats adjacent to the WRESC site or along the gen-tie alignment. Impacts to special-status plants, if present, would likely be associated with exposure to increased erosion and sedimentation, fugitive dust, and hazardous materials from workers at the WRESC, driving access roads, and performing maintenance activities along the gen-tie alignment. Similarly, non-native invasive weeds could be introduced into adjacent habitats from vehicles and equipment during operations. The implementation of the same COCs discussed above for construction would reduce impacts during operation to less than significant and comport with the WJTCA.

Common Wildlife

Construction

Less Than Significant. The project area supports a variety of common wildlife species and their distribution in the project area is highly dependent on the location. Typically, more intact native vegetation communities support a broad diversity of native species compared to more developed or disturbed areas. For example, the WRESC site and portions of the proposed laydown support relatively intact native vegetation. These areas are likely to support the most diverse assemblage of native species. Conversely, the gen-tie line spans a mosaic of natural, developed, and disturbed lands. Habitat conditions in this area differ widely and range from highly disturbed to intact habitat.

During construction it is likely that many of these species, especially fossorial, or slow-moving species, would be subject to displacement, injury, or mortality. Direct impacts to wildlife could include mortality from vehicle collisions, crushing from heavy equipment, entrapment, disruption of behavior (e.g., breeding, movement, foraging) from noise, vibration, or human presence, degradation or loss of foraging habitat, exposure to herbicides or other hazardous materials, and exposure to fugitive dust. Common wildlife could also be impacted from the use of explosives during the excavation of the subterranean cavern.

Removing vegetation at the WRESC site would displace common wildlife that rely on these habitats. Displacement would likely result in mortality or decreased fitness for some species while other generalist species may benefit from preying on displaced animals. For example, it is common to observe ravens feeding on displaced or injured

animals that have been exposed during initial vegetation or grading activities. Similarly, some species of predatory birds also are attracted to the initial construction activities where they prey on small insects, mice, and reptiles. These impacts would also occur during the gen-tie line construction but to a lesser degree.

Most of the common species expected to occur in the project area are relatively abundant and are expected to persist in adjacent desert, agricultural, and developed lands. These impacts would be relatively minor compared to the acreage of habitat in the region. In addition, common birds, raptors, and some larger mammals typically forage over wide areas. Impacts to animals with smaller ranges such as fossorial mammals would be more substantial within the proposed disturbance footprint.

Construction of the project would result in mortality or injury to wildlife from vehicle or heavy equipment use, particularly if slow-moving or sedentary animals occur in the path of vehicles or equipment or along the road edges where most of the gen-tie would be located. Ground-dwelling invertebrates, diurnal reptiles, and small mammals are the most likely species to be subject to mortality or injury from vehicles and equipment. This type of mortality can have detrimental effects on local populations if the loss is continual (Trombulak and Frissell 2000) however that is not expected to occur at the WRESC site or gen-tie line due to its proximity to existing road traffic and development.

Common wildlife would be subject to increased mortality risk on project access roads particularly in more rural areas and areas supporting native vegetation and or more intact habitat. However, the risk of roadkill would also increase along more frequently used roads including but not limited to Rosamond Boulevard, Mojave-Tropico, Dawn Road, Highway 14, and Sierra Highway. If excavated cavern rock is transported off-site to locations such as Holiday Rock, this would substantially increase road traffic in some less developed areas which would increase the risk of roadkill to a suite of wildlife species and some domestic animals. Even birds such as barn owls, vultures, and other species are at risk during crepuscular periods associated with dawn and dusk. Trombulak and Frissell (2000) determined that animal behavior can be altered by the presence and use of roads through modified movement patterns and reproductive success and increased physiological stress. However, most of the roads in the project area are well travelled and currently subject to routine and often heavy traffic such as Rosamond Boulevard and Sierra Highway. See **Section 5.14, Transportation** for existing road use and the expected elevated levels of traffic that would occur during construction. As described in **Section 5.14, Transportation** during peak period construction activity, the project is estimated to generate 1,498 worker trips and 728 truck trips during a typical day of the peak construction period. The project is also estimated to generate 749 worker trips and 76 truck trips during the AM and PM peak hours.

Construction activities and use of access roads, particularly in areas used by nesting birds can adversely affect wildlife by disrupting breeding, foraging, and movement. Wildlife species are most vulnerable to disturbance during their breeding seasons.

These disturbances could result in roost, den, or territory abandonment and subsequent reproductive failure if they were to occur during the breeding season.

Elevated noise from construction equipment, pile driving, vehicle traffic, and increased human presence could result in changes to wildlife behavior. Wildlife in or near work areas could be adversely affected if activities disrupt normal behaviors, such as movement, breeding, and foraging. Dust generated during construction could also adversely affect wildlife species in habitats within or adjacent to work areas. Dust can smother small organisms and reduce the quality of wildlife habitat, if excessive.

Controlled detonations have been proposed to facilitate construction of the proposed cavern. Controlled detonations can be conducted in several different ways but often requires the placement of blasting compounds within drilled cavities in the rock or soil. When the charge is detonated the parent material is fragmented and becomes more easily removed by construction equipment. (Elevli and Arpaz 2010) indicate that during controlled detonations only a small portion of the blast energy is utilized for fragmentation and that excess energy is released in other forms. Some of these include noise, vibration, dust, chemical fumes and residue, displacement of rock or soil, and overpressure. Among these side effects, ground vibration known as blast-induced ground vibration is a concern because it may have a detrimental effect on nearby structures such as buildings, roads, etc. (ibid). The ground vibration is a wave motion, spreading outwards from the point of the blast like how a stone dropped into water forms ripples spreading outward. As the vibration passes through the structures, it induces vibrations in these structures also (Ibid).

The effects of controlled detonations can result in a series of impacts to wildlife. Species that occur within the blast area could be subject to direct mortality or injury. Impacts may also occur as a result of noise and vibration, habitat destruction, behavioral changes and declining air quality (Hamidun and Mohamad 2022; Akkewar and Kant 2022; Elevli and Arpaz 2010; Lameed and Ayodele 2010; Frelich 2014). Loud noise and ground vibration from controlled detonations are known to disturb wildlife, causing stress and altering behavior (Holthuijzen et al. 1990). Some species of fossorial animals communicate through noise and vibration and controlled detonations could disrupt this behavior or interfere with communication for short periods of time. Noise and vibration could also result in increased vigilance which has been documented in some birds. The Holthuijzen et al. study (1990) found differences between behavioral response of falcons exposed to experimental and construction controlled detonations. Similarly, controlled detonations can lead to destruction of wildlife habitat, which may cause wildlife to be displaced and may reduce the biodiversity in the vicinity of the blast area (Lameed and Ayodele 2010, Frelich 2014; Cristescu et al. 2016).

Blast-induced ground vibration would be expected to result in adverse impacts to ground dwelling species near the detonation. Seismic vibrations are known to cause earthworms to emerge from the soil (Mitra et al. 2009) and likely have adverse effects to a variety of species. It is likely that general construction disturbance and controlled detonations could displace some species in adjacent habitats.

Noise and vibration can adversely affect nesting birds and in particular fossorial or burrowing animals. The proximity to the center of the blast zone and the type of species is a function to how an animal either reacts or is harmed. While there is incomplete information on the effects of vibration to the physiology of desert species Barneich et al., (2004) completed a study of blast and traffic induced vibration on the stability of burrows for ground dwelling animals including the desert tortoise and the San Bernardino kangaroo rat (*Dipodomys merriami parvus*). They concluded that the resulting analysis indicated that the heavy truck traffic should not affect the stability of kangaroo rat burrows more than three feet from the side of the roadway.

To evaluate seismic testing, a 15-lb explosive charge was detonated to evaluate if a burrow would collapse at a given distance. Field tests were performed by constructing artificial tortoise burrows and inducing progressively higher vibration levels near the test burrows while observing the stability of the burrow. The data obtained from the tests were used to develop a site-specific attenuation relationship and vibration amplitude-burrow collapse relationship (Ibid). At the conclusion of the study, it was recommended that detonations should employ a 150 ft. buffer for unoccupied burrows and a 300-foot buffer for occupied burrows. While these were artificial burrows it provides some evidence to support the establishment of suitable testing buffers.

As described in **Section 5.9, Noise and Vibration** blasts are scheduled every 10 to 12 hours at a depth of approximately 2,000 ft to minimize impact to surrounding areas (ESHD 2024i). Controlled detonations activities are not continuous and are scheduled to occur twice per day during daytime hours. During construction, noise levels at approximately 4,200 feet from the project site during the loudest construction phases, including pile driving but excluding short duration controlled detonations (addressed separately below), would reach 46 dBA (ESHD 2024h). The average ambient noise level at that location 56 dBA Ldn.

The nighttime construction noise contour (see **Section 5.9, Noise and Vibration**) shows that construction noise level during nighttime hours at approximately 4,200 feet from the project site would be 33 dBA, which is substantially lower than the average nighttime ambient sound level of 49 dBA Leq at this location.

Furthermore, each controlled detonation event for underground cavern excavation would last only a few seconds. Typically, rock blasting produces a maximum noise level of 130 dBA. considering this level is produced at the ground surface where the shaft would be installed, the projected noise levels at closest residence 5,400 feet away is approximately 65 dBA. This is 9 dBA above the ambient noise level of 56 dBA Ldn at NSA-1 (ESHD 2024h, Section 5.7.3.2.2.2). Although considerably louder closer to the blast points the existing road noise and periodic rail traffic already provides a relatively high noise baseline in the surrounding area.

As noted in **Section 5.9, Noise and Vibration,** the primary source of vibration during the construction process would be controlled detonation activities. The threshold of human response begins at a PPV of 0.16 in/sec. Caltrans characterizes this as a

"distinctly perceptible" event (Caltrans 2013). A level of 0.20 in/sec has been found to be annoying to people in buildings and can pose a risk of architectural damage to buildings. At some level this is likely to adversely affect some species of wildlife.

For comparison, jackhammers can cause a ground borne vibration rate of 0.035 in/sec at 25 feet (less than the threshold of human response), and underground controlled detonations can cause a ground borne vibration of 0.4 in/sec at 1,280 feet (Caltrans 2013 and ESHD 2024h, Section 5.7.3.2.2.2). At 2,500 feet away, the vibration rate generated by blasting drops from 0.4 in/sec to 0.14 in/sec. This vibration intensity is lower than the threshold of human response, or 0.16 in/sec.

Staff considers controlled detonations and ground borne vibration to have the potential to disrupt animal behavior similar to other construction activities and could startle species well outside of the project area to some degree. Except for non-special status birds which are protected by state and federal regulations, discussed below, the injury or mortality to common wildlife would be adverse but less than significant.

Nonetheless, impacts to these species would be minimized through the application of mitigation measures described for nesting birds and other species (See Impact Analysis below). These measures require conducting surveys, monitoring, implementing non-disturbance buffers, and allowing wildlife to move out of harm's way during construction, among many other requirements. In addition, although not required for common species of wildlife, staff recommends the implementation of **NOISE-6** which limits controlled detonations to daylight hours. Specific conditions related to controlled detonations would be required for other species and would include seasonal timing, pre-construction surveys, scare charges or warning horns, species relocation, and monitoring.

Operation and Maintenance

Less Than Significant. Direct and indirect impacts associated with operation activities would be substantially reduced relative to initial construction activities. No controlled detonations would occur, and maintenance activities would be limited to routine activities within the WRESC site and gen-tie corridor. No habitat would be removed but direct impacts could result from crushing or trampling of wildlife that are in the facility or the disruption of nesting birds. It is likely that birds and other species would nest or use the new structures, rock berms, and other structures after the completion of construction. The project would consist of four 130 MW power blocks. The applicant noted that each power block would contain a motor-driven air compressor drivetrain, heat exchangers, and an air turbine generator and their ancillary equipment. Such equipment is not known to cause offsite ground vibration or airborne low-frequency noise during normal operations (ESHD 2024i). The report indicates that noise levels during daily operations would be consistent and be no greater than 60 dBA at 1,500 linear feet from the project area. Although noise levels are generally high due to the adjacent Highway, it would be expected that operation noise would be higher in habitat

adjacent to the facility. It is possible that this noise could reduce use of the habitat for some species in this area.

It is expected that insects and other wildlife would also be attracted to the water storage reservoir. Wildlife that becomes entrapped in the facility could be injured or drown. However, the applicant indicated in Data Request DR-146 that in addition to the floating cover, other wildlife prevention measures include the installation of a perimeter fence/walls and rescue ramps. This fence/wall would prevent wildlife from accessing the reservoir. For those few wildlife species that manage to enter the reservoir, escape ramps would be designed periodically around the outer edge of the reservoir to ensure that wildlife species have a way to escape the reservoir (GA 2023c). Staff has included specific measures in **BIO-7** (General Impact and Avoidance Measures) that include ensuring that appropriate fencing and wildlife ramps are installed in the facility to reduce entrapment and limit access to the reservoir. In addition, this condition requires the development of a Reservoir Management Plan to further monitor and reduce impacts to wildlife that may be attracted to the reservoir.

CEC staff conclude, while not required, the implementation of these COCs would reduce project related impacts to common wildlife. Operation of the power blocks would generate noise which can adversely affect wildlife that occurs in adjacent areas. These include implementation of **BIO-1** (Designated Biologist Selection), **BIO-2** (Designated Biologist Duties), **BIO-3** (Designated Monitor Selection), **BIO-4** (Designated Biologist and Biological Monitor Authority), **BIO-5** (Worker Environmental Awareness Program [WEAP]), **BIO-6** (Biological Resources Mitigation Implementation and Monitoring Plan), **BIO-7** (General Impact and Avoidance Measures), **BIO-8** (Vegetation Management Plan), **BIO-9** (Integrated Weed Management Plan), **BIO-10** (Invasive Species Management Plan), **BIO-15** (Special-Status Plant Avoidance Measures), **BIO-17** (Nesting Bird Avoidance and Minimization Measures), **BIO-22** (Small Mammal Avoidance Measures and Minimization Measures), **AQ-SC3**, **AQ-SC4**, **HAZ-1**, **HAZ-6**, **HAZ-7**, and **WORKER SAFETY-1**. Staff conclude that while not required the implementation of these COCs would reduce project related impacts to common wildlife.

Special Status Wildlife

Habitat in the project area has the potential to support a variety of federal and state listed, candidate for listing, proposed for listing, state fully protected wildlife species, species of special concern, CDFW Special Animals (SA), watch list (WL) and USFWS Birds of Conservation Concern (BCC).

Impacts to special-status wildlife would vary depending on the habitats utilized by these species and the types of work activities conducted at occupied locations. These could include injury or mortality of individuals, loss or degradation of habitat, impediments to movement, disturbance to breeding and foraging behavior, and exposure to herbicides or other hazardous materials. Indirect impacts could include the degradation of habitat from invasive and noxious weeds. Wildlife species that occur in the larger WRESC site

would be more adversely affected than those that are present along more disturbed portions of the gen-tie line or along the well-travelled access roads such as Rosamond Boulevard.

Special Status Invertebrates

Threatened, endangered, candidate, proposed for listing, or other special status invertebrates were observed in the project area during biological surveys conducted by the applicant (WSP 2024d; WSP 2024v). This included Crotch's bumble bee. Monarch butterfly also has a potential to occur in the project area, however foraging plants for this species were not detected on the project site.

Crotch's Bumble Bee

Construction

Less Than Significant with Mitigation Incorporated and Fully Mitigated Under CESA. Crotch's bumble bee is a candidate for listing under CESA. Thirty-five Crotch's bumble bee workers were recorded during the protocol surveys and incidentally during other surveys conducted by the applicant (WSP 2025o). Seven Crotch's bumble bee queens were also observed foraging in patches of Phacelia. Observations of bees including queens were recorded in P2 North and other locations outside of the Project site and along the proposed gen-tie line (See Figure 2 of the applicant's ITP Application (WSP 2025o). No bees were recorded on the WRESC site but suitable foraging habitat is present. The greatest concentration of bees was detected in the denser patches of Phacelia. No hives were observed, and the applicant has suggested that suitable overwintering habitat is limited. However, staff notes that due to the large number of bees identified and the presence of small mammal burrows, downed Joshua trees, and other material, nesting and or overwintering sites could be present on the WRESC site and other project components.

Crotch's bumble bees exhibit social behavior, creating colonies of related individuals that cooperate to maintain the health and survival of the colony. Colonies consist of a caste system which includes queens, workers, and reproductive bees. New queens emerge during colony establishment, growing season, or reproductive stage. These life stages are defined as the Colony Active Period by CDFW. During each life stage, the colony exhibits different behaviors, including nesting, foraging, and overwintering. The height of the Colony Active Period for Crotch's bumble bee occurs between February and October; however, the timing of a singular nest can be dependent on climate conditions. For example, a nest at lower elevation with an earlier blooming period would likely be active before a nest with later blooming floral resources at higher elevation (Williams et al., 2014).

Little is known about specific habitat requirements of the species as they can be found in a variety of vegetation communities including grassland, scrub, chaparral, and woodlands that provide native foraging resources. Crotch bumble bees prefer smaller flowers that are abundant with pollen and nectar, such as milkweed (*Asclepias* spp.),

chaenactis (*Chaenactis* spp.), deerweed (*Acmispon* sp.), buckwheat, lupines (*Lupinus* spp.), clovers (*Medicago* spp.), phacelias, and sages (*Salvia* spp.) (Williams et al., 2014).

Queens emerge from hibernation between February and March and may disperse between 1.6 and 6.2 miles (2.6 and 10.0 kilometers) to find a new nest site (Hatfield et al. 2015; Goulson 2010). Once the queen selects the hive location, the active colony is typically detectable between April and August. Nest sites are frequently found underground in abandoned rodent burrows but may also occur above ground within tufts of grass, bird nests, rock piles, or cavities in dead trees or logs.

Direct impacts to Crotch's bumble bee would include the loss or modification of foraging and possibly nesting habitat, the disturbance or destruction of occupied nesting sites, and exposure of individuals and/or nesting sites to fugitive dust, ground vibration from controlled detonations, herbicides, and other hazardous materials. Bees could also collide with vehicles on public roads particularly on Sierra Highway, Highway 14, and Rosamond Boulevard. However, those impacts would be difficult to quantify should they occur. Indirect impacts to western bumble bees could include habitat fragmentation and the loss or degradation of habitat from invasive weeds. The loss of bees and occupied foraging habitat would be considered a significant impact without mitigation.

Anticipated Take. Construction of the WRESC would result in approximately 90.90 acres of permanent and 189.89 acres of temporary impacts to native and non-native vegetation communities and other landforms throughout the project area under the Option 1 – Without Berm and approximately 212.44 acres of permanent and 68.35 acres of temporary impacts would occur under the with berm option. Of this total 6.6 acres permanent and 23.6 acres temporary and 8.9 acres permanent and 26.5 acres temporary consist of disturbed or developed lands respectively.

Construction of the berm scenario would result in:

- The permanent loss of 9.0 acres of high-quality foraging habitat and temporary impacts to 25.9 acres of high-quality foraging habitat.
- The permanent loss of 145.6 acres of medium to low-quality foraging habitat and temporary impacts to 64.9 acres medium to low-quality foraging habitat.

Construction of the without-berm scenario is estimated to result in:

- The permanent loss of 1.4 acres of high-quality habitat and temporary impacts to 8.3 acres of high-quality foraging habitat.
- The permanent loss of 80.8 acres of medium to low-quality foraging habitat and temporary impacts to 90.3 acres of medium to low-quality foraging habitat.

Staff consider the loss of suitable foraging habitat to be significant without compensatory mitigation and the loss of bees would be considered a Take under the CESA.

Based on habitat and species occurrences documented during surveys, habitat loss is expected to be limited to the permanent loss of primary nectar sources in the WRESC site and long term (approximately five years plus restoration of temporary loss of nectar sources in P1, P2 North, and P2 South line. See Figure 2 of the applicant's ITP Application for a detailed map of high-quality foraging areas (WSP 2025o). Some shorter-term impacts to foraging resources could also occur along the proposed gen-tie line.

Construction of the project could also result in habitat fragmentation. Habitat fragmentation can adversely affect a wide range of species. Bumble bee species richness, abundance, and genetic diversity are influenced by the quality of habitat on a landscape level. While bumble bees can forage and disperse over relatively long distances, isolated patches of habitat may not be sufficient to support bumble bee populations (Hatfield and LeBuhn, 2007; Ockinger and Smith, 2007). Because of their unique method of sex determination and colonial life cycle, bumble bees are particularly sensitive to habitat fragmentation (Xerxes Society et al., 2018). The project area and broader region consists of a patchwork of open desert scrub, rural residential, mining, and developing solar farms. Based on the detections of bees in the region it appears that bees can continue to move and forage in the region. The permanent conversion of habitat to support the WRESC would not result in the establishment of new barriers to bumble bee movement or fragment habitat during construction to a degree where bees would be displaced from the region.

The most likely impact to these species would be the destruction of nest sites should they occur within suitable habitat. Although nest sites were not detected during the protocol surveys, nests are difficult to find and may have been overlooked. In addition, it is possible that bees could colonize the WRESC site prior to construction of the project. Should they occur, colonies could be lost or collapsed from ground vibration or be crushed by vehicles and other heavy equipment. In addition, dust could result in a reduction of floral resources or disturbance to an active bumble bee colony if present on the WRESC site or adjacent areas. Research on the ecological effects of dust has mostly focused on its consequences for ecosystem processes from local to global scales (Field et al., 2009). Much less is known about effects at the level of individual organisms. For example, the effects of dust on plant reproduction are not entirely known, although there is ample reason to believe that it is harmful (Waser et al., 2017). It has been demonstrated that dust can interfere with pollen-stigma interaction and fruit set resulting in reductions in pollen viability and stigma quality (Zhang et al., 2019). Fugitive dust would be generated during construction which result in degradation of flowering plants in adjacent habitats.

Exposure to herbicides or other hazardous materials could result in the degradation of foraging habitat or the loss of individual bees or active nesting colonies. Bumble bees require consistent sources of nectar, pollen, and nesting material when adults are active, typically from mid-February to late September in temperate areas. For the project, weather conditions may delay foraging opportunities as the site is well within

the snowbelt. Kearns et al. (1998) state “herbicide use affects pollinators by reducing the availability of nectar plants. In some circumstances, herbicides appear to have a greater effect than insecticides on wild bee populations. Some of these bee populations show massive declines due to the lack of suitable nesting sites and alternative food plants.”

The introduction or spread of non-native weeds are also a risk to this species. Like all North American bumble bees, Crotch’s bumble bees prefer open, meadow-like conditions and depend on floral resources for their nutritional needs. Crotch’s bumble bees appear to tolerate more scrub communities if there are floral resources. In the Mojave Desert weeds including non-native grasses and Saraha mustards can displace preferred foraging species and alter fire ecology. When invasive weeds invade and dominate formerly native habitats, they may threaten bumble bee populations by competing with the native nectar and pollen floral resources relied upon by bumble bees. If pervasive enough, weed infestation can result in the complete displacement of native vegetation and fragmentation of suitable habitat, even for generalist foragers. Extensive proliferation of invasive weeds on a broader scale can also result in an increased risk of wildfire. Although weeds are common across much of the region and are known to occur along access roads and within the project area, the loss or degradation of bumble bee foraging habitat could occur unless weed control measures are implemented.

As part of the project the applicant has proposed the restoration of temporary disturbed areas. This would include the inoculation of foraging species required by Crotch's bumble bee. Temporary laydown yards and parking areas pose a risk for the colonization and spread of weeds into adjacent areas and would need to be managed carefully during the 5-year construction window. As described above in the analysis for noxious and invasive weeds, the project owner would be required to identify and treat any local infestations attributed to the project and ensure that vehicles are cleaned prior to entering the site as part of staff’s proposed COCs.

Proposed Conditions of Certification. Construction of the proposed project would remove currently utilized foraging habitat and has the potential to result in the direct loss of individual bees or colonies. Direct and indirect impacts that degrade habitat or result in the loss of Crotch's bumble bee would be considered a significant impact under CEQA. Because of this species status as a state candidate for listing any project related impacts would also require compliance with CESA standards. These requirements include measures to fully offset impacts on the species.

The applicant has proposed a series of general and specific measures to reduce and mitigate impacts to Crotch’s bumble bee including but not limited to worker training, delineating sensitive habitat areas, conducting pre-construction surveys, monitoring, delaying the removal of sensitive foraging plants until after the flight season and the implementation of non-disturbance buffers. In addition, the applicant has proposed establishing Phacelia and other nectar sources in the proposed restoration areas in P1, P2 North, and P2 South. By creating additional foraging habitat for Crotch’s bumble bee

in these areas it is possible these species could increase use of the project site should adequate floral resources persist.

CEC staff has incorporated these measures into proposed COCs, as appropriate. The COC also includes recommendations that were developed in coordination with the CDFW. To reduce impacts the project owner would implement **BIO-13** (Crotch's Bumble Bee Avoidance Measures), which would require identifying suitable habitat for Crotch's bumble bees within the project area, surveying those areas for active nesting sites, and avoiding active nesting sites, if present. Work would be directed around the active nest site until the bees have left the colony or the colony has become dormant. The measure would also require the development of a Crotch's Bumble Bee Mortality Reduction and Relocation Plan. The plan shall also identify nest relocation techniques and locations where Crotch's bumble bee nests will be relocated to; an assessment of the habitat and floristic resources found within the relocation sites; and a detailed description of the relocation process including method of removal, transport, and relocation.

In addition, the staff recommends implementation of **BIO-1** (Designated Biologist Selection), **BIO-2** (Designated Biologist Duties), **BIO-3** (Designated Monitor Selection), **BIO-4** (Designated Biologist and Biological Monitor Authority), **BIO-5** (Worker Environmental Awareness Program [WEAP]), **BIO-6** (Biological Resources Mitigation Implementation and Monitoring Plan), **BIO-7** (General Impact and Avoidance Measures), **BIO-8** (Vegetation Management Plan), **BIO-9** (Integrated Weed Management Plan), and **BIO-10** (Invasive Species Management Plan), **BIO-1** would require all construction personnel and project staff to undergo environmental awareness training prior to conducting work on the project. **BIO-2** requires the restoration of temporary disturbed areas with native species including annual wildflowers to promote foraging habitat. Impacts from fugitive dust would be mitigated by implementation of **AQ-SC3** and **AQ-SC4**, which include watering roads and or stabilizing them with soil binders and would require a qualified dust monitor.

As a component of **BIO-8** (Vegetation Management Plan) the project owner would be required to include a one-time planting of the preferred foraging species as part of the seed mix along with other flowering plants used by pollinators. This would ensure that temporarily disturbed areas that are proposed for restoration would provide future habitat and partially offset any direct loss of individual bees during construction. **BIO-9** would require the development and implementation of a weed control plan.

With the implementation of these COCs direct and indirect impacts that degrade habitat or result in the loss of Crotch's bumble bee would be reduced to a less than significant under CEQA and would follow CESA standards.

Jeopardy Analysis. Crotch's bumble bee has a wide geographic and elevational distribution and utilizes a variety of habitats throughout its current range, which continues to provide a relatively large amount of remaining intact habitat. Numerous surveys have been recently conducted and would continue to be performed through

projects like the California Bumble Bee Atlas (https://www.cabumblebeeatlas.org/point-surveys.html). Results of these surveys would continue to provide a better understanding region-wide of the current distribution, habitat use, and threats to Crotch's bumble bee. Because of these surveys the detections of Crotch's bumble bees across the State are increasing and bees have been detected in a much broader area than previously considered.

In the Antelope Valley and portions of the Mojave Desert, foraging resources can vary widely and are dependent on seasonal rainfall. It is likely that the range and distribution of Crotch's bumble bees in this area varies greatly year to year and may contract to areas of dense foraging resources.

Crotch's bumble bee has been extirpated from 60 to 70 percent of its historic range and has undergone a 93 percent decline in relative abundance when compared to its historic population high (Hatfield and Jepsen, 2021). Climate change has been identified as one of the primary threats to the species. The WRESC site and broader region is in an area susceptible to the effects of climate change.

The project is being constructed to provide energy storage capacity to support the State's strategy to achieve greenhouse gas reduction goals and to minimize the State's contribution to global climate change. The allowance of incidental take of Crotch bumble bee specific to this project would ultimately contribute to the long-term recovery of the species.

With the implementation of staff's proposed COCs which include the restoration of temporarily disturbed areas and the acquisition of off-site habitat for Crotch's bumble bee the implementation of project is not likely to jeopardize the continued existence of Crotch's bumble bee across its range.

Operation

Less Than Significant with Mitigation Incorporated. Direct and indirect impacts associated with operation activities would be substantially reduced relative to initial construction activities. Generally, there would be no habitat impacts. Bees could be disturbed from noise or vibration should they nest immediately adjacent to the facility but those impacts are expected to be limited. It is possible that bees or other fossorial animals could avoid areas near the project site due to noise. The implementation of the same COCs would reduce impacts to Crotch's Bumble Bee to less than significant and fully mitigate impacts to the species should take occur.

Monarch Butterfly

Construction

Less Than Significant with Mitigation Incorporated. Monarch butterfly is a candidate for federal listing. Although species designated as federal candidates for listing do not receive full protection under the ESA, take would only be authorized under the context

of the appropriate permits issued by USFWS if the species is officially designated as federally threatened or endangered prior to implementation of the project.

The abundance and migratory behavior of monarch butterflies are a product of the diversity and abundance of larval milkweed host plants of the genus Asclepias (Malcolm, 2018). During the breeding season, monarch butterflies lay their eggs on their obligate milkweed host plant which provide toxins to protect them from predation. Larvae emerge after two to five days and develop while feeding on the milkweed host plant.

Monarch butterflies were not detected on the project site and the site does not support suitable tree groves for this species. Although windrows of vegetation are present along portions of the gen-tie line. In addition, the project area is well outside the known overwintering range for the species. No milkweed plants required for supporting caterpillars were observed by the applicant during focused rare plant surveys in 2023 and 2024. However, there are several recent iNaturalist records indicating that the species occur in the general region and the project site supports potential foraging resources. Therefore, monarch butterfly overwintering or breeding individuals are not likely to occur, but there is a low potential the species could be present as an infrequent migrant and forager within or adjacent to the project site.

There is a low potential for direct impacts to monarch butterfly, if present during construction activities, which could include exposure to fugitive dust, herbicides, and other hazardous materials. Indirect impacts could include habitat fragmentation and the loss or degradation of habitat from invasive weeds. If present during project activities, impacts to monarch butterfly due to exposure to herbicides or other hazardous materials, exposure to fugitive dust, and degradation of habitat from invasive or noxious weeds would be considered a significant impact under CEQA.

To reduce impacts, the staff proposes implementation of the following COCs: **BIO-1** (Designated Biologist Selection), **BIO-2** (Designated Biologist Duties), **BIO-3** (Designated Monitor Selection), **BIO-4** (Designated Biologist and Biological Monitor Authority), **BIO-5** (Worker Environmental Awareness Program [WEAP]), **BIO-6** (Biological Resources Mitigation Implementation and Monitoring Plan), **BIO-7** (General Impact and Avoidance Measures), and **BIO-9** (Integrated Weed Management Plan) . As a component of **BIO-8** (Vegetation Management Plan) the project owner would be required to include suitable milkweed species as part of the seed mix along with other flowering plants used by pollinators such as monarchs and bumble bees. This would ensure that temporarily disturbed areas that are proposed for restoration would offer host plants for this species in the future. **BIO-7** identifies a series of standard environmental measures that must be complied with during construction. **BIO-9** (Integrated Weed Management Plan) would require the identification and avoidance of milkweed plants during vegetation management or herbicide use should they be present.

Impacts from fugitive dust would be mitigated by implementation of **AQ-SC3** and **AQ-SC4,** which include watering roads and or stabilizing them with soil binders and would

require a qualified dust monitor. Implementation of these measures would reduce impacts to a less than significant level.

Operation

Less Than Significant with Mitigation Incorporated. Direct and indirect impacts associated with operation activities would be substantially reduced relative to initial construction activities. The implementation of the staff's proposed COCs for the project construction would also reduce operation impacts to monarch butterflies to less-than-significant.

Special-Status Fish

No Impact. The project site does not support suitable habitat for special-status fish, and none are expected to occur. Special-status fish are not expected to be affected by the project.

Special-Status Amphibians

No Impact. The project site does not support suitable habitat for special-status amphibians, and none are expected to occur. Special-status amphibians are not expected to be affected by the project.

Special-Status Reptiles

The project area has the potential to support northern legless lizards, coast horned lizards, and desert tortoise. The legless and coast horned lizards are state species of special concern, and the desert tortoise is federal- and state-listed as threatened under the ESA and CESA, respectively.

Northern Legless Lizard and Coast Horned Lizard

Less Than Significant with Mitigation Incorporated. The northern legless lizard and coast horned lizard are state species of special concern. Coast horned lizards and northern legless lizards were not observed during any of the 2023 and 2024 surveys conducted by the applicant. However, the project site occurs within a transitional area between the foothills of the Tehachapi Mountains and the western Mojave Desert. Coast horned lizards and northern legless lizards are known to occur within these habitat edges and there are several recent iNaturalist records located within 10 miles of the project site concentrated at the west end of the gen-tie alignment. In addition, there is suitable habitat at the project site and along the proposed gen-tie route. Therefore, there is a low to moderate potential for these species to occur within or adjacent to the project site particularly near the Whirlwind Substation.

Construction of the WRESC could directly affect these species and their habitat, should either species occur on or near the Project site or along portions of the gen-tie line. Impacts could include mortality due to collisions with vehicles or heavy equipment, loss or degradation of habitat, fugitive dust, release of hazardous materials, soil compaction, ground vibration, and increased noise. Indirect impacts include the introduction and

spread of invasive weeds (particularly Sahara mustard). If present during project activities, impacts to these species would be considered a significant impact under CEQA.

To reduce impacts, CEC staff recommends implementation of COC **BIO-15** (Special Status Reptile Avoidance and Minimization Measures). This measure would require surveys and avoidance of special-status reptiles in suitable habitat and the relocation of the animals to non-disturbance areas outside the project footprint. In addition, staff recommends implementation of the following COCs: **BIO-1** (Designated Biologist Selection), **BIO-2** (Designated Biologist Duties), **BIO-3** (Designated Monitor Selection), **BIO-4** (Designated Biologist and Biological Monitor Authority), **BIO-5** (Worker Environmental Awareness Program [WEAP]), **BIO-6** (Biological Resources Mitigation Implementation and Monitoring Plan), **BIO-7** (General Impact and Avoidance Measures), and **BIO-9** (Integrated Weed Management Plan). As a component of **BIO-8** (Vegetation Management Plan). **BIO-7** identifies a series of standard environmental measures that must be complied with during construction. **BIO-9** (Integrated Weed Management Plan) would require the identification and avoidance of milkweed plants during vegetation management or herbicide use should they be present.

Impacts from fugitive dust would be mitigated by implementation of **AQ-SC3** and **AQ-SC4,** which include watering roads and or stabilizing them with soil binders and would require a qualified dust monitor. Implementation of these measures would reduce impacts to a less than significant level.

These COCs would minimize and avoid disturbance, injury, and mortality to special-status reptiles. In addition, although not required for these species the acquisition of mitigation lands to off-set impacts to burrowing owl (see **BIO-14**) and other species would further reduce impacts from the proposed project. Implementation of these conditions of certification would reduce impacts to a less than significant level.

Operation

Less Than Significant with Mitigation Incorporated. Direct and indirect impacts associated with operation activities would be substantially reduced relative to initial construction activities. Generally, there would be no habitat impacts. The implementation of the same COCs for the project operation would reduce impacts these species to a less than significant level.

Desert Tortoise

Less Than Significant with Mitigation Incorporated. The desert tortoise is federal- and state-listed as threatened under the ESA and CESA, respectively. This species nor any potential burrows were detected during protocol surveys of the WRESC site and adjacent laydown areas. In addition, most of the gen-tie line was also surveyed. Several areas were not physically surveyed because of landowner restrictions. These areas were subject to a search by field glasses which would be unlikely to detect this species if present. However, the distribution of desert tortoise in this portion of the Mojave Desert

is limited. Nonetheless, the project site and portions of the gen-tie line support suitable habitat for this species and there remains a low potential for this species to occur in very low densities.

Although there is a low potential for this species to occur the applicant considers the species absent from the WRESC and is not seeking take coverage under CESA or ESA. Therefore, should they be detected during pre-construction surveys or construction monitoring the applicant would be required to cease activities in the immediate vicinity of the animal and potentially seek take authorization. Depending on the location of the detection, in the unlikely event a desert tortoise was detected work stoppages could occur within the WRESC.

Construction of the WRESC would result in approximately 90.90 acres of permanent and 189.89 acres of temporary impacts to native and non-native vegetation communities and other landforms throughout the project area under Option 1 – Without Berm and approximately 212.44 acres of permanent and 68.35 acres of temporary impacts would occur under the with berm option. Of this total 6.6 acres permanent and 23.6 acres temporary and 8.9 acres permanent and 26.5 acres temporary consist of disturbed or developed lands respectively.

Most of the permanent impacts to habitat would occur in areas that is not expected to be currently occupied by desert tortoise. In addition, this area is not likely to provide valuable habitat for this species should populations expand in the future. Staff consider the potential for desert tortoises to occur within the WRESC site to be very low or absent based on the site's location between long term existing barriers to movement for this species. The primary site is surrounded by development which has likely reduced the ability for desert tortoises to move through the area. The site is between Highway 14 to the west and Sierra Highway and an active railroad to the east. While open habitat is present to the north the area is capped by rural development. It is likely that desert tortoise occurrences in this region have declined over the years through roadkill, predation, loss of connectivity to adjacent lands, and collection.

There is a slightly higher potential for desert tortoise to occur along portions of the gen-tie alignment north of Dawn Road and near the Whirlwind Substation, however, there has been no detections in this area during surveys conducted for the numerous solar fields in the region. The one record within two miles was obtained approximately 15 years ago and it remains possible for animals to occur in low densities near the toe of the adjacent mountains.

Direct impacts to desert tortoise are unlikely as they have a very low potential to occur but would include the loss of historic foraging habitat. If present impacts could also include collision or crushing by heavy equipment and vehicles, vibration from controlled detonations, direct exposure to herbicides, and displacement from preferred habitat. Construction during the mating season, or other periods of high activity, could result in the displacement of breeding pairs. Indirect impacts include increased edge effects due to habitat fragmentation, increased competition for resources, increased risk of

predation or raven subsidies, the introduction of invasive plant species. As no handling would occur if detected, the risk of possible disease transmission due to handling and relocation efforts would not occur.

Desert tortoise may also be adversely impacted from increased raven predation or subsidies from the WRESC and during construction activities. Although physically separated from occupied desert tortoise habitat any raven subsidies would pose a risk to the species by increasing the reproductive success or ravens in the region.

The loss of habitat from the project is not likely to represent a substantial loss of occupied habitat. The Project is on the edge of the range of the species in most areas supports a low density of desert tortoise, if any. Further, the location of the site represents a small portion of the habitat available in the occupied region.

There is a low potential for direct exposure of desert tortoise to fugitive dust, herbicides, and other hazardous materials. Indirect impacts could include the loss or degradation of habitat from invasive weeds.

Construction of the proposed project would remove historic foraging habitat and has a very low potential to result in the direct loss of individual desert tortoise. Direct and indirect impacts that remove or degrade habitat not occupied by desert tortoise would not be considered a significant impact under CEQA. In addition, habitat loss in areas not expected to support this species would be considered less than significant and would not conflict with CESA standards. However, the acquisition of desert scrub and or Joshua tree woodland habitat required as compensatory mitigation to fully mitigate impacts to Crotch's Bumble Bee and burrowing owl would off-set any impacts to desert tortoise foraging should they be present in low numbers.

The applicant has proposed a series of general and specific measures to reduce and mitigate impacts to desert tortoise including pre-construction surveys, worker training, and monitoring.

To reduce impacts, staff recommends implementation of COC **BIO-16** (Desert Tortoise Avoidance and Minimization Measures). This measure would require the completion of pre-construction clearance surveys of the project site, the installation of tortoise proof fencing, and construction monitoring. However, should a desert tortoise be found, a non-disturbance buffer would be required, and work would be halted pending coordination with the CPM, CDFW, and USFWS. The applicant did not seek take authorization for this species and staff notes there is a low potential for this species to occur.

Staff also recommends **BIO-1** (Designated Biologist Selection), **BIO-2** (Designated Biologist Duties), **BIO-3** (Designated Monitor Selection), **BIO-4** (Designated Biologist and Biological Monitor Authority), **BIO-5** (Worker Environmental Awareness Program [WEAP]), **BIO-6** (Biological Resources Mitigation Implementation and Monitoring Plan), **BIO-7** (General Impact and Avoidance Measures), **BIO-8** (Vegetation Management

Plan), and **BIO-9** (Integrated Weed Management Plan) would be required. In addition, although not required for this species the acquisition of mitigation lands to off-set impacts to burrowing owl (See **BIO-14**) and other species would further reduce impacts from the proposed project if those lands also support habitat for desert tortoise.

Impacts from fugitive dust would be mitigated by implementation of **AQ-SC3** and **AQ-SC4,** which include watering roads and or stabilizing them with soil binders and would require a qualified dust monitor. Implementation of these conditions of certification would reduce impacts to a less than significant level and ensure the avoidance of Take of desert tortoise in compliance with CESA requirements.

Operation

Less Than Significant with Mitigation Incorporated. Direct and indirect impacts associated with operation activities would be substantially reduced relative to initial construction activities. Generally, there would be no habitat impacts, and adjacent areas have a low potential to support this species. The implementation of the same COCs for project construction would reduce impacts to desert tortoise to less than significant and ensure compliance with CESA requirements.

Common and Special Status Birds

The project area provides foraging, cover, or breeding habitat for a variety of resident, wintering, and migratory birds. Some of the common resident species that nest in the desert habitats include sagebrush sparrow (*Amphispiza nevadensisi*), horned lark (*Eremophila alpestris*), western meadowlark (Sturnella neglecta), ash-throated flycatcher (*Myiarchus cinerascens*), cactus wren (*Campylorhynchus brunneicapillus*), and greater roadrunner (*Geococcyx californianus*). Migrant or wintering birds of the general region include Brewer's sparrow (*Spizzela breweri*), chipping sparrow (*Zonotrichia leucophrys*), warbling vireo (*Vireo gilvus*), gray flycatcher (*Empidonax wrightii*), Scott's oriole (*Icterus parisorum*), and lazuli bunting (*Passerina amoena*).

Common raptors in the region and include American kestrel *(Falco sparverius*), Cooper's hawk (*Accipiter cooperii*), red-tailed hawk (*Buteo jamaicensis*), and turkey vulture (*Cathartes aura*). Shore birds including bitterns and long billed curlews may also occur.

Some of these birds include merlins, brewer's sparrow, and others are considered USFWS BCC or CDFW WL or SA (See **Table 5.2-8**).

Except for a few non-native birds such as European starling (*Sturnus vulgaris*) and house sparrow (*Passer domesticus*), the loss of active bird nests or young is regulated by the Federal Migratory Bird Treaty Act (MBTA) and Fish and Game Code, section 3503 and would be considered an adverse impact.

Construction

Less Than Significant with Mitigation Incorporated. Construction of the project could result in direct and indirect impacts to nesting bird species protected under California Fish and Game Code sections 3503.5 and 3511 and the Migratory Bird Treaty Act. Construction activities, primarily though removal of vegetation, could cause destruction or abandonment of active nests or the mortality of adults, young, or eggs.

Direct impacts to nesting birds include ground-disturbing activities associated with construction of the WRESC site and gen-tie line, as well as increased noise levels from heavy equipment, controlled detonations and ground borne vibration, increased human presence, and exposure to fugitive dust. Indirect impacts to nesting birds could include the loss of habitat due to the colonization of weeds, dust, or human disturbance due to weed maintenance, and routine inspection and maintenance at the facility.

Construction activities conducted during the breeding season could result in the displacement of breeding birds and the abandonment of active nests, as well as a disruption in foraging activity, particularly on the larger facility site and parking areas. The removal of habitat during the breeding season could result in the displacement of breeding birds and the abandonment of active nests. It is expected that the large number of Joshua trees would support a variety of small birds and likely be used as shrike cache sites. Clearing vegetation may also result in adverse effects from habitat fragmentation for some species and reduce future nesting opportunities. Conversely there would be some species of more disturbance tolerant birds that benefit from creating edge habitats. The most likely impacts from habitat loss would occur at the WRESC facility site.

Breeding birds and other wildlife may temporarily or permanently leave their territories to avoid construction activities, which could lead to reduced reproductive success and increased mortality on a local scale. Increased vehicle travel on rural access routes could displace nesting birds or result in lower nest success. Similarly, if the no-berm alternative is selected vehicle use would increase which could disrupt nesting near the quarry sites to some degree. Birds could also be exposed to increased risk of collisions with vehicles on Sierra Highway and Rosamond Boulevard and along project access roads. This risk may be more likely for species such as owls who are often struck by vehicles along access roads during periods of low light or birds that are attracted to roadkill. As work would occur for approximately five years and include nighttime activity it is likely that nesting and bird use for less tolerant species would decline.

How construction noise affects a specific bird can vary greatly depending on the location of a nest and the species nesting. The scientific record contains extensive research documenting the negative effects of anthropogenic generated sound levels to many species of nesting birds. Noise disturbance due to construction, traffic, and other anthropogenic activity has been found to have detrimental impacts on pairing success and clutch size in some bird populations (Habib et al., 2007; Halfwerk et al., 2011). However, other more disturbance tolerant birds such as house finches and king birds

appear to successfully nest near noise producing sources and some activity build nests within active construction sites. However, there may be underlying risks to birds who elect to nest near locations with elevated sound levels such as a construction project, highway, or other sound generating facility.

Conversely, many other birds are intolerant of any human disturbance. Anthropogenic noise may affect populations by masking or distorting male song patterns or inducing a stress response that negatively impacts fitness (Habib et al., 2007; Kleist et al., 2018). Barber et al., (2009) noted that elevated noise levels can result in masking of predators and decrease communication between individual groups of birds. They also found that regardless of the mechanisms involved, their study suggested that noise decreases a direct measure of fitness and hatching success, in the western bluebird, a species previously thought to be noise tolerant.

Although there is no riparian habitat present in the project area, many riparian birds and other neo-tropical migrants are also adversely affected by noise and human disturbance. Reijnen and Foppen (2006) demonstrated that for two species of European warbler (*Phylloscopus* spp.), sound levels between 26 dB(A) and 40 dB(A) reduced breeding density by up to 60 percent compared to areas without disturbance (1995). In addition, while the current sound thresholds used by many regulatory agencies for most birds in California are approximately 60 dB(A), this level may still adversely affect breeding success for some species. These data suggest disturbance from adjacent road noise and urban development may be a contributing factor in the use of habitat adjacent to developed areas. However, avian responses to noise and human disturbance may be a function of the perceived threat rather than on the intensity of noise. Therefore, increased noise levels would likely alter and/or preclude the breeding activities for many common and sensitive bird species known to occur in the project area.

Current noise and disturbance regimes associated with the project area may reduce the risk of disturbing some species or limit nesting opportunities for some birds. Ambient disturbance varies from low to high levels throughout the Project area, particularly along Rosamond Boulevard. Many of these disturbances, such as frequently traveled highways and less frequently traveled paved and unpaved roads and urban development are ubiquitously scattered in areas in and adjacent to the Project area. In addition, anthropogenic disturbances including off-highway vehicle (OHV) use, rural residences, agricultural lands, and construction and maintenance activities associated with renewable development projects are common along much of the gen-tie line region. Routine military overflights and mining operations also result in periodic sonic booms and explosions that can be heard thought the WRESC project area.

During construction it is likely the site would still provide suitable substrate for some species of birds. Depending on the species, birds may actively nest on the ground close to equipment or even on idle construction equipment. In southern California deserts, birds have been documented nesting on vehicles, foundations, construction trailers, and other equipment left overnight or during a long weekend. In areas where construction

may be phased, birds may quickly utilize these features as nest sites. Many of the birds that would be likely to use these types of nesting substrates are common species such as ravens, house finches, and doves. Some cavity nesting species may also become trapped should they enter vertical pipes, outhouse vents, or other equipment. Cavity nesting birds may be difficult to detect should they be present in trees planned for removal.

Herbicides and rodenticides may be used to manage the with berm option and to control weeds and other species that may become established at parking or laydown areas. Although the risk is low, individual birds could be exposed to herbicides or hazardous materials such as coolant, fuel, or rodenticides. Even if birds do not come into direct contact with herbicides or other hazardous materials, they can be affected via food-chain concentrations, particularly when these materials are widely applied across a landscape. This can occur when rabbits or other small herbivores consume material exposed to contaminants or contaminant residue. The contaminant accumulates in the tissue of the predatory animal through bioaccumulation as exposed prey items are consumed. Even at non-fatal levels, the bioaccumulation of some contaminants can result in a reduction in the amount of food consumed, loss of weight, changes in physical activity, and a decrease in the production, fertility, and hatchability of eggs (Cox, 1991).

Any project related impact that results in the loss of nesting habitat, disturbance of breeding behavior, destruction of nests or eggs, exposure to herbicides or other hazardous materials, and mortality or injury to individual birds would be considered a significant impact. The applicant and CDFW proposed measures to reduce impacts to nesting birds. Staff incorporated language from these measures into **BIO-17** (Nesting Bird Avoidance and Minimization Measures), as appropriate. This COC would require pre-construction surveys for nesting birds and the establishment of non-disturbance buffers to avoid disturbing active nest sites. This COC also would require the development of a Nesting Bird Management Plan that contains the types of birds that have the potential to nest in the project area, where they likely nest, prescriptive language on who is qualified to conduct nesting bird surveys and monitor active nests, the methodology of the surveys, when surveys would be required, and the frequency they must be repeated. The measure would also require the establishment of a nesting bird log to track active nests and provide routine reports to the CEC Compliance Project Manager (CPM) on nest status.

Staff also recommend **BIO-1** through **BIO-4** (Designated Biologist Selection and Qualifications, Designated Biologists Duties, Biological Monitor Selection, and Designated Biologist and Biological Monitor Authority), **BIO-5** (Worker Environmental Awareness Program [WEAP]), **BIO-7** (General Impact and Avoidance Measures), **BIO-8** (Vegetation Management Plan), and **BIO-9** (Integrated Weed Management Plan). These measures would educate workers regarding the legal protections for nesting birds and who to contact should a nest be detected, restore native vegetation communities, and require the identification and treatment of weed infestations. The

weed management plan would contain prescriptive measures including conducting preconstruction surveys and treatment of weeds prior to ground disturbance should the work occur when plants are visible.

To reduce impacts from exposure to hazardous materials and improper herbicide use Staff recommends **HAZ-1** which would require the preparation of a Spill Prevention Control and Countermeasures Plan (SPCC), **WORKER SAFETY-1** which includes construction worker safety programs to protect workers from exposure to hazardous material and waste, and **BIO-9** (Integrated Weed Management Plan) which includes the requirements and safe handling practices for herbicide use. In addition, **BIO-5** (Worker Environmental Awareness Program [WEAP]) would educate workers to the risk of hazardous materials and provide protocols for notifying construction managers should spills or leaks be detected.

Operation

Less Than Significant with Mitigation Incorporated. The operation and maintenance of the facility would introduce several potential impacts to nesting birds. The first is related to the protection of birds that are likely to nest on project facilities after the project is completed. Common disturbance tolerant birds are likely to forage and or nest on structures and substrates in the project area. In addition, birds may be attracted to the water storage ponds and reservoir if surface water access is available. Routine maintenance activities could disturb nesting birds and result in nest failure or entrapment of pipes, towers, or equipment. These impacts would be greatly reduced compared to construction and would be mitigated with the same types of COCs identified for the proposed project. These include inspecting equipment for nests prior to cleaning or repairs, ensuring that water is not available from the storage reservoir. And conducting weed management outside the breeding season to the extent possible.

Birds would also be subject to new baseline noise levels and vibration from the operation of the facility. Noise would emanate from the generators when they operate. Noise levels in adjacent habitat may result in the displacement of some species of less disturbance tolerant species. Noise could mask predators, disrupt breeding calls, or result in increased vigilance for some birds, however because of the adjacent road and railroad noise the species present in this area may already be acclimated to noise levels that occur in more remote sections of the desert.

The most likely operational risk to birds is collision with the new 19-mile transmission line. There are several factors that contribute to avian collisions including the location of the line, the type and behavior of the bird, weather conditions, and size or type of the towers. Bird collisions with powerlines, or more commonly with the thin shield wire located above the powerlines, is a known phenomenon and can pose a risk to birds. Studies indicate that most observed power line collisions were with narrower, less visible overhead shield wires and lines that cross daily movement corridors (between roosting, nesting, and feeding areas) (Luzenski et al., 2016). Collisions risk depends on a species' ability to detect these thin wires and shield wires are 50 percent thinner and

less visible than the larger more visible transmission lines and account for most collisions with transmission lines (Bernardino et al. 2018).

The highest risk is in locations where a transmission line bisects a daily or migratory flight path or during poor weather conditions. Collision risk increase where lines are located near or bisect important foraging habitat, riparian areas, lakes, ponds, and wetlands. In the Antelope Valley this may include the many large agricultural fields that are present in the region. However, the proposed gen-tie line does not cross immediately adjacent to any of the large agricultural fields in the region. The closest orchard is over one mile south of Rosamond Boulevard which mitigates the risk of collision for some species due to the distance from important foraging or breeding areas.

Several other factors can affect the risk of birds related to collision with transmission lines including the bird's morphological characteristics such as vision and flight patterns, and their behavioral characteristics such as flocking or foraging behavior, or migratory patterns (Bateman et al., 2023). Collision rates can increase in low light conditions, during inclement weather, such as fog, rain or snow, during strong winds, and during panic flushes when birds are startled by a disturbance or are fleeing from danger (Brown and Drewien, 1993; Luzenski et al., 2016). All these conditions are common in the Antelope Valley and winds often exceed 25 mph for extended periods of time.

Another factor is the height of the transmission line. An existing distribution line is present along Rosamond Boulevard and several large transmission lines run in a generally north south direction across the Antelope Valley. The proposed towers would be approximately 90 feet in height. Most birds fly below 500 feet except during migration to avoid expenditure of energy to fly higher and to avoid hazards such as winds or predators (Ehrlich et al., 1988). Generally, taller structures pose a higher collision risk as birds flying at wire height would tend to fly higher to avoid the line as opposed to passing below. However, wire height is typically associated with other features that could impact collision like voltage, number and spacing of wires, span length, and diameter of conductors and shield wires. The combination of the existing distribution line and the new transmission line would likely result in an increased level of collisions compared to baseline conditions.

One study examined the impact of changing tower heights on raptor flight responses, increasing towers from 20-25 meters tall (65-85 feet) to 55-60 meters (180-195 feet) tall (Luzenski et al., 2016). The study showed that prior to increasing the tower height, approximately 75 percent of raptors crossed above the wires and 25 percent crossed within the wire zone; few crossed below. After increasing the tower height 92 percent of raptors crossed above the wires and few crossed within or below, indicating that raptors were more likely to pass above the higher wires. Overall, there was a 28 percent increase in the proportion of birds flying above the wire zone after the construction of taller towers. The study concluded that increasing flight elevation to pass above the wires may indicate that the raptors could identify the wire zone and

appropriately alter flight to avoid it. Their results further suggest that well-marked lines or lines with increased diameter, even in movement corridors, can lessen collision risk.

Collision mortality estimates in North America have not identified a noticeable effect on long-term population trends; however, it may increase risk for a subset of species with susceptible characteristics. Collisions primarily affect strong, fast fliers with poor or restricted vision (i.e., waterfowl and crane species) (Bateman et al., 2023). Additionally, large, heavy-bodied birds (swans, pelicans, herons, and cranes) are thought to be more vulnerable than smaller, more maneuverable species (Luzenski et al., 2016). One study identified that vulnerable species that may be at risk of population-level impacts shared characteristics including low maneuverability in flight, hazardous behavioral traits (especially flight height and flocking flight), long-lived and slow-reproducing life-history, habitat specialization, and unfavorable conservation status (D'Amico et al., 2019).

Passerines (i.e., songbirds) and waterfowl (e.g., ducks) collide with powerlines (APLIC, 2012), particularly during nocturnal migrations or poor weather conditions (Avery et al., 1978). However, passerines and waterfowl may have a lower potential for collisions than larger birds, such as raptors, due to behavioral factors. For example, smaller birds tend to reduce their flight activity during poor weather conditions (Avery et al., 1978). Additionally, passerines and waterfowl tend to fly under power lines, as opposed to larger species, which generally fly over the lines and risk colliding with the higher static lines.

Operation of the project would likely result in small numbers of birds periodically colliding with the shield wire along the length of the alignment. Except for raptors there does not appear to be a substantial risk of collision for most species based on the location of the line. The line would be primarily located in a previously developed region, there are no important bird areas or unique habitat where birds would concentrate, and the line is only 90 in height. However, there are numerous raptor and raven nests located in the project area and the State listed Swainson's hawk is a well-known resident of the Antelope Valley. In addition, during Swainson's hawk surveys the applicant noted numerous raptor nests along Rosamond Boulevard and at least one active Swainson's hawk nest 1.8 miles north of one of the proposed transmission line alternative alignments. Therefore, although adverse, impacts would be considered less than significant for passerines but may pose a risk to raptors, and particularly Swainson's hawk (See Swainson's hawk analysis below). To reduce the risk of collision staff recommends **BIO-18** (Collision Avoidance and Minimization Measures) which would require the placement of visual markers to alert birds of the presence of the shield wire.

Raptors, ravens, and other large birds often perch and nest on tall structures, including electrical transmission towers and poles. Golden eagles, peregrine falcons, and other large raptors are most susceptible to electrocution on transmission structures because of their large size and wingspan, distribution, and behavior (APLIC 2012). Collisions involving raptors have occurred but appear to be relatively uncommon compared with collisions involving other species groups (Luzenski et al. 2016). Distribution lines that

are greater than 1 kilovolt (kV) but less than 69 kV generally have less spacing than transmission lines, thus posing an electrocution hazard for perching raptors. Configurations less than 1 kV or greater than 69 kV, like the proposed 115 kV sub transmission system, typically do not present an electrocution potential, based on conductor placement and orientation (APLIC 2012). The likelihood of electrocutions occurring at voltages greater than 69 kV is extremely low (APLIC 2012) and is not expected to occur on the proposed 230 kV transmission line. Therefore, the risk of electrocution would be considered less than significant.

Burrowing Owl

Construction

Less Than Significant with Mitigation Incorporated and Fully Mitigated Under CESA. The western burrowing owl or burrowing owl is a state candidate for listing under CESA. It is also designated as a USFWS BCC and a CDFW SSC. It is also protected under the federal MBTA and California Fish and Game Code. Threats to burrowing owl include habitat loss, predation, roadkill, reduced burrow availability due to rodent control, and pesticides. Suitable habitat is present throughout the project area. No burrowing owls were observed within the project site during the 2023 and 2024 protocol-level surveys conducted by the applicant. However, one pair was observed 500 feet north of the P2 North area in 2024. Three individual owls were also incidentally observed in the general region of the project site in 2023. These include one foraging in desert scrub habitat roughly one mile southeast of the intersection of Dawn Road and Sierra Highway, one along Hamilton Road near 110th Street approximately 2 miles north of the gen-tie alignment, and one located near the intersection of 75th Street West and Hamilton Road.

In addition, 40 unoccupied suitable burrows (29 in 2023 and 11 in 2024) were identified within or adjacent to the project site. However, no burrowing owl sign or indication of use was observed at any of the burrows. Because birds have been observed in the project area and suitable burrows are present it is assumed that western burrowing owl could nest and forage within and adjacent to the WRESC project site and along portions of the gen-tie line. Because of this the applicant has asked for Take coverage for the project.

Anticipated Take. Construction of the WRESC would result in approximately 88.8 acres of permanent and 122.2 acres of temporary impacts to native and non-native vegetation communities and other landforms throughout the project area under Option 1 – Without Berm and approximately 163.5 acres of permanent and 117.3 acres of temporary impacts would occur under the with Option 2 - With Berm. Of this total 6.6 acres permanent and 23.6 acres temporary and 8.9 acres permanent and 26.5 acres temporary consist of disturbed or developed lands respectively. Based on the observations of owls near the project site most of this habitat can and is likely used as foraging and breeding habitat for burrowing owls and likely supports satellite burrows for this species.

The loss of foraging habitat for burrowing owls would be considered a significant impact and warrant compensatory mitigation to replace lost habitat. Assessing the type of mitigation typically involves identifying how the site is being used by owls (i.e., wintering and or resident birds), the number of owls that use a site, the habitat quality, expected range of individual birds, the type and duration of impacts, and existing anthropogenic influences that may affect occupancy or use. Because owls have been observed in the project area during focused and routine surveys it is likely the project site would overlap with the territories of one or more birds. Therefore, staff assume that all the natural habitat communities on the project site that would be permanently removed would require mitigation. In addition, mitigation would also be required for the temporary loss of habitat in staging, laydown and parking areas that would be lost for a period of 5 years and take many years to functionally recover post restoration. CDFW and staff are requiring a 3:1 mitigation ratio for all permanent and temporary impacts due to the long duration temporal loss of habitat functions in temporarily disturbed native vegetation communities and grasslands. In addition, this mitigation would off-set impacts to owls that may abandon habitat in adjacent areas due to noise and ground borne vibration.

Construction of the project could directly affect burrowing owl and its habitat by the loss and degradation of habitat, mortality due to collisions with vehicles or heavy equipment, destruction of burrows, exposure to noise and ground borne vibration from controlled detonations, fugitive dust, and the release of hazardous materials. Adult burrowing owls would generally shelter in their burrow rather than flee from disturbance, and construction activities could result in injury and mortality to adults, damage or destruction of burrows, and injury or mortality to eggs and nestlings should they occur in the development footprint or near disturbance areas. Indirect impacts include the introduction and spread of invasive weeds, providing predator subsidies to ravens, and increased human presence. Noise from the operation of the project could also adversely affect owls in areas adjacent to the project site.

No active burrows were detected on the project site however CDFW currently uses the following standard to assess potential burrow types in occupied burrowing habitat:

- *A potential burrowing owl burrow* is any subterranean hole three inches or larger for which no evidence is present to conclude that the burrow is being used or any past use by a burrowing owl.
- *A known burrowing owl burrow* is a burrow that shows evidence the burrow is being used, known to have been used, or past use by a burrowing owl, or an "atypical" burrow (e.g., a pipe, culvert, buckled concrete, etc.) showing signs of occupancy (e.g. burrowing owl presence, whitewash, pellets, prey remains, etc.)
- *A nesting burrowing owl burrow* is used for nesting (e.g. known burrowing owl burrow indications of the presence of eggs, chicks, dependent young, and/or brooding or egg incubation.

During construction it is possible that burrowing owls would be encountered and may require passive relocation. Should this occur, the project owner would limit this activity to the non-breeding season and comply with the requirements identified in staff's conditions of certification identified below which would require pre-construction surveys, monitoring of burrow sites, use of cameras and monitors to determine if a burrow is in use, and the placement of one-way doors. Staff acknowledge that the passive relocation of burrowing owls can increase the risk of predation if alternative sheltering locations are not available or known to the animal. Therefore, if this action was to be proposed the project owner would need to construct a series of artificial burrows prior to the displacement to give the owls time to identify their presence within their range. Once a burrow is collapsed it would be carefully blocked and or excavated to prevent reuse by the species. Should an active nest be detected a non-disturbance buffer shall be implemented and routinely monitored until the nest has fledged.

If present impacts to burrowing owl habitat, or direct impacts to burrowing owls or their nests could be significant without mitigation. Any action that results in direct impacts to burrowing owl that results in harm would constitute take under CESA. To reduce these impacts staff recommend implementation of **BIO-19** (Burrowing Owl Avoidance, Minimization, and Take Measures) that would include specific survey, monitoring, and relocation methods. These include preparing detailed burrowing owl maps, a Burrowing Owl Mortality Reduction Plan, and a Burrowing Owl Artificial Burrow Replacement Plan. In addition, **BIO-14** (Habitat Management Land Acquisition for Crotch's Bumble Bee and Western Burrowing Owl) which requires the project owner to obtain mitigation lands to replace habitat lost from the development of the project.

In addition, staff recommends implementation of **BIO-1** (Designated Biologist Selection), **BIO-2** (Designated Biologist Duties), **BIO-3** (Designated Monitor Selection), **BIO-4** (Designated Biologist and Biological Monitor Authority), **BIO-5** (Worker Environmental Awareness Program [WEAP]), **BIO-6** (Biological Resources Mitigation Implementation and Monitoring Plan), **BIO-7** (General Impact and Avoidance Measures), **BIO-8** (Vegetation Management Plan), and **BIO-9** (Integrated Weed Management Plan). Impacts from fugitive dust would be mitigated by implementation of **AQ-SC3** and **AQ-SC4,** which include watering roads and or stabilizing them with soil binders and would require a qualified dust monitor.

With the implementation of these COCs direct and indirect impacts that degrade habitat or result in the loss of burrowing owl would be reduced to a less than significant under CEQA and would follow CESA standards.

Jeopardy Analysis. The petition for listing provides evidence that the burrowing owl is in decline across the state of California and describes several anthropogenic sources of population decline. These include direct mortality and habitat loss caused by urbanization, and reduction or elimination of their primary burrow excavators, ground squirrels, from grazing and agricultural lands. The widespread development of landscape renewable energy facilities has also contributed to the loss of habitat across the Antelope Valley and portions of the Mojave Desert.

Construction of the proposed project would remove foraging habitat for burrowing owls primarily at the WRESC site and the various laydown and parking areas. Construction may also adversely affect foraging or nesting owls in adjacent habitat during construction and through facility noise and ongoing vehicle use in the region. However, there are several important considerations related to the project.

- The applicant has assumed the presence of burrowing owls on the project site.
- Burrowing owls have been detected in adjacent areas. No occupied burrows have been detected on the project site to date, although suitable burrows were detected during surveys.
- The project area, particularly around the WRESC site supports owl use despite being in an area with relatively high background noise from Sierra Highway, Highway 14, and the existing railroad.
- Portions of the WRESC site are used for illegal dumping and OHV use.
- Few owls are likely to be injured or killed because of relocation as no active burrows were currently found on the project site.
- The project owner would be required to implement numerous COCs to avoid and minimize impacts to burrowing owls if they are present during construction, and would ensure owls are protected by no-activity buffers or passively moved out of the project footprint so that injury and death of burrowing owls is minimized (i.e., clearance surveys, construction buffers, relocation, translocation, and employing qualified avian biologists).
- The project owner would manage potential subsidies such as trash and water to reduce the potential for increased predation by common ravens and would implement weed management and revegetation to reduce the spread of invasive nonnative plants in the project area.
- Compensation requirements of acquisition and/or restoration/enhancement through would result in a net increase in the quantity and quality of habitat managed for burrowing owl conservation.

Therefore, although the project would potentially reduce the quality and value of burrowing owl habitat lost during construction and could adversely affect owl use to some degree in adjacent lands large blocks of intact habitat would remain to the north, east, and south of the site. Given the small number of owls potentially directly affected by the project, there is no information to indicate that development of the project would appreciably reduce the burrowing owl population levels in the region. Based on the status, environmental baseline for the project area, effects of the proposed project, and cumulative effects on burrowing owls in the region, the proposed project is not likely to jeopardize the continued existence of the burrowing owl in the region.

Operation

Less Than Significant with Mitigation Incorporated. Direct and indirect impacts associated with operation activities would be substantially reduced relative to initial construction activities. Impacts from the risk of collision and electrocution are described above under common birds and would be less than significant with the implementation of **BIO-18** (Collision Avoidance and Minimization Measures) which would require the placement of visual markers to alert birds of the presence of the shield wire. Burrowing owl are a known local resident of the project area, and this measure would reduce collision risk for resident birds. In addition, the implementation of the same COCs for project construction would reduce impacts to burrowing owl to a less than significant level and ensure compliance with CESA requirements.

Swainsons Hawk

Construction

Less Than Significant with Mitigation Incorporated. Swainson's hawk is a state listed as threatened species under the CESA. Swainson's hawks nest in areas such as riparian woodlands, roadside trees, trees along field borders, and the edges of remnant oak woodlands. In the Antelope Valley, they are found in Joshua trees and in large non-native trees that border agricultural fields. However, this species can also nest and forage in desert scrub communities like those found on the project site. One active Swainson's hawk nest was documented 1.8 miles north of the gen-tie alignment during surveys conducted in 2021. The nest was located within a Joshua tree surrounded by creosote bush scrub habitat with scattered Joshua trees.

The nest failed in 2021 but fledged chicks in 2023. Swainson's hawk observations were also recorded by the applicant during the 2023 just south of an existing water tank on a rocky outcrop north of Dawn Road and between 20th Street West and 30th Street West. The second was recorded south of Rosamond Boulevard and east of 140th Street West. Each of these observations were recorded within the survey area. The applicant suggested these sightings may be the same nesting pair previously discussed above. The 2023 surveys also identified 78 potentially nest sites within one half mile of the project site. Of the potential nest sites, Swainson's hawk was only observed at one with two occupied by red-tailed hawk and 57 occupied by ravens.

Based on the current distribution of Swainsons hawks in the project area it is likely that construction impacts to this species would not occur with the implementation of pre-construction surveys and monitoring. However, should birds occupy new nests near the WRESC site or along the gen-tie route they could be subject to nest disturbance. Direct impacts to Swainson's hawk, if present, could include disruption of nesting due to increased dust, noise, vibration, disturbance, and exposure to hazardous materials. Indirect impacts include the degradation of habitat due to the introduction and spread of invasive weeds and increased human presence.

Construction of the WRESC would permanently remove between 88.8 and 122.2 acres of native and non-native vegetation communities and other landforms and between 163.5 and 117.3 acres of temporary impacts depending on which Option 2 - With Berm is constructed. Some of this habitat could be used by Swainsons hawks for foraging, although the proximity to the Highway may limit foraging to some degree. This species is currently occupying trees along rural roads in the Antelope Valley and may tolerate some level of disturbance.

The permanent loss of foraging habitat (i.e., productive habitat for prey species such as small mammals and insects) would be considered a significant impact.

To reduce impacts from habitat loss staff recommends implementation **BIO-14** (Habitat Management Land Acquisition for Crotch's Bumble Bee and Western Burrowing Owl) which requires the project owner to obtain mitigation lands to replace habitat lost from the development of the project. To avoid impacts to nesting Swainson's the project owner would implement **BIO-20** (Swainson's Hawk Avoidance and Minimization Measures) which would require the identification and monitoring of nests within 0.5 miles of development areas including the gen-tie line. No work would be authorized within these buffers unless compelling biological data suggests a smaller buffer could be implemented.

Staff also recommend **BIO-1** through **BIO-4** (Designated Biologist Selection and Qualifications, Designated Biologists Duties, Biological Monitor Selection, and Designated Biologist and Biological Monitor Authority), **BIO-5** (Worker Environmental Awareness Program [WEAP]), **BIO-7** (General Impact and Avoidance Measures), **BIO-8** (Vegetation Management Plan), and **BIO-9** (Integrated Weed Management Plan). These measures would educate workers regarding the legal protections for nesting birds including Swainson's hawk and who to contact should a nest be detected, restore native vegetation communities, and require the identification and treatment of weed infestations. The weed management plan would contain prescriptive measures including conducting preconstruction surveys and treatment of weeds prior to ground disturbance should the work occur when plants are visible.

To reduce impacts from exposure to hazardous materials and improper herbicide use Staff recommends **HAZ-1** which would require the preparation of a Spill Prevention Control and Countermeasures Plan (SPCC), **WORKER SAFETY-1** which includes construction worker safety programs to protect workers from exposure to hazardous material and waste, and **BIO-9** (Integrated Weed Management Plan) which includes the requirements and safe handling practices for herbicide use.

Operation

Less Than Significant with Mitigation Incorporated. Direct and indirect impacts associated with O&M activities would be substantially reduced relative to initial construction activities. Impacts from the risk of collision and electrocution are described above under common birds. The site is not immediately adjacent to important foraging

habitat for Swainson's hawk, but it is likely to bisect their typical flight patterns. However, the small number of breeding Swainson's hawks in the Antelope Valley and the potential isolation from other Swainson's hawk populations makes the Antelope Valley population particularly susceptible to extirpation (CEC and CDFW 2010). Due to the geographical isolation of the Antelope Valley Swainson's hawk population from other breeding populations, together with the species' high site fidelity, it is reasonable to infer that rapid re-colonization of the Antelope Valley would be unlikely if nesting pairs were lost. Given these facts, the CDFW would consider impacts to breeding pairs to be potentially significant because they may cause the population to become less than self-sustaining. One active Swainson's hawk nest was located 1.8 miles north of one of the proposed transmission line alternative alignments and other nesting is common in the valley at discrete locations.

Because of their limited numbers in the region the loss of a small number of birds could pose a risk to local occurrences. Any potential impact with the transmission line would be considered significant. To reduce the risk of collision staff recommends **BIO-18** (Collision Avoidance and Minimization Measures) which would require the placement of visual markers to alert birds of the presence of the shield wire. The implementation of **BIO-18** and the same COCs for project construction would reduce impacts to this species to a less than significant level and ensure compliance with CESA requirements.

Le Conte's thrasher and Loggerhead shrike

Construction

Less Than Significant with Mitigation Incorporated. Loggerhead shrike is a CDFW SSC. Le Conte's thrasher is designated as a USFWS BCC and a CDFW SSC. Loggerhead shrike and LeConte's thrasher are known to occur in the project area and are likely nesters in scrub communities present at the WRESC site and along portions of the linear facilities. Compared to most avian species, staff has directly observed that both birds appear to be less tolerant of disturbance associated with nesting sites. However, both species would often investigate construction sites where prey items may be flushed from the ground. Another important consideration for loggerhead shrike is they cache prey items in the spines of Joshua trees, fences, and other naturally sharp items. These are often retrieved later and may become less desirable if located near large scale construction projects.

Direct and indirect impacts to these species would be the same as described for other birds. Construction of the proposed project would result in the loss of foraging habitat and could disrupt breeding or access to cache sites. However, most of the region supports ample habitat in adjacent areas and it is likely that the birds would move to adjacent habitat during construction. Any project related impact that results in the loss of nesting habitat, disturbance of breeding behavior, destruction of nests or eggs, disruption of cache sites, exposure to herbicides or other hazardous materials, and mortality or injury to individual birds would be considered a significant impact.

To reduce impacts to nesting birds staff recommends implementation of **BIO-17** (Nesting Bird Avoidance and Minimization Measures). This measure requires pre-construction surveys for nesting birds and the establishment of non-disturbance buffers to avoid disturbing active nests and cache sites. This measure also requires the development of a Nesting Bird Management Plan that contains the types of birds that have the potential to nest in the project area, where they likely nest, prescriptive language on who is qualified to conduct nesting bird surveys and monitor active nests, the methodology of the surveys, when surveys would be required, and the frequency they must be repeated. The measure would also require the establishment of a nesting bird log to track active nests and provide routine reports to the CPM on nest status. In addition, **BIO-14** (Habitat Management Land Acquisition for Crotch's Bumble Bee and Western Burrowing Owl) which requires the project owner to obtain mitigation lands to replace habitat lost from the development of the project.

Staff also recommend **BIO-1** through **BIO-4** (Designated Biologist Selection and Qualifications, Designated Biologists Duties, Biological Monitor Selection, and Designated Biologist and Biological Monitor Authority), **BIO-5** (Worker Environmental Awareness Program [WEAP]), **BIO-7** (General Impact and Avoidance Measures), **BIO-8** (Vegetation Management Plan), and **BIO-9** (Integrated Weed Management Plan). These measures would educate workers regarding the legal protections for nesting birds and who to contact should a nest be detected, restore native vegetation communities, and require the identification and treatment of weed infestations. The weed management plan would contain prescriptive measures including conducting preconstruction surveys and treatment of weeds prior to ground disturbance should the work occur when plants are visible.

To reduce impacts from exposure to hazardous materials and improper herbicide use Staff recommends **HAZ-1** which would require the preparation of a Spill Prevention Control and Countermeasures Plan (SPCC), **WORKER SAFETY-1** which includes construction worker safety programs to protect workers from exposure to hazardous material and waste, and **BIO-9** (Integrated Weed Management Plan) which includes the requirements and safe handling practices for herbicide use.

Operation

Less Than Significant with Mitigation Incorporated. Direct and indirect impacts associated with O&M activities would be substantially reduced relative to initial construction activities. Impacts from the risk of collision and electrocution are described above under common birds and would be reduced by the implementation of **BIO-18** (Collision Avoidance and Minimization Measures) which would require the placement of visual markers to alert birds of the presence of the shield wire. The implementation of **BIO-18** and the same COCs for project construction would reduce impacts to these species to a less than significant level.

California Condor, Bald or Golden Eagle, Tricolored Blackbird, Short-eared Owl, Long-eared Owl, Mountain Plover, Prairie Falcon, and Northern Harrier

Construction

Less Than Significant with Mitigation Incorporated. The California condor has not been documented in the project area but may soar over portions of the project site or gen-tie alignment. There is no nesting habitat and nesting impacts to this species are not expected to occur. California condors are a wide-ranging species with potential to occur at any time within the project area, however the absence of large prey items likely limits their distribution in the project area. They could be attracted to roadkill on access roads and are curious birds. Over the life of this project, it is possible that individual condors could fly over or stop in the project area.

The greatest risk for condors is associated with the potential for ingestion of objects such as microtrash (i.e. broken glass, hardware, plastic waste, bottle caps, small pieces of metal) or substances such as ethylene glycol antifreeze. These are existing conditions present within most of the region. Adults can bring microtrash back to nest sites where young birds can be injured or killed when they ingest the material. California condors are known to forage on a variety of carrion including small mammals such as jack rabbits (Collins 2000) and may be attracted to small animals killed during construction activities on the primary access routes such as Rosamond Boulevard. The west end of the gen-tie is relatively close to the Tehachapi Mountains which also contains critical habitat for this species. Other hazards include power line collisions or vehicle strikes. The proposed project includes measures to avoid injury or mortality to California condors.

Bald eagle is state-listed as endangered and are only expected to occur in the project area as a transient bird and impacts are not expected to occur. Golden eagles are state fully protected and are known to forage across the Mojave Desert. Golden eagle was not observed or detected during any of the 2023 and 2024 surveys conducted by the applicant. The project site does not support suitable breeding habitat, and nesting birds are unlikely to occur. Eagles could also nest on large trees in the region but have not noted in the areas during surveys for Swainson's hawks. Human intrusions near golden eagle nest sites have resulted in nest abandonment with high nestling mortality when young go unattended due to altered behavior by the parent birds (Pagel et al. 2010).

Tricolored blackbirds are listed as threatened under CESA. This species is also a USFWS BCC and CDFW SSC. Tricolored blackbirds were not observed or detected during any of the 2023 and 2024 surveys conducted by the applicant. The project site does not support suitable breeding habitat so nesting colonies are unlikely to occur. This species is known from the Antelope Valley historically near Holliday Lake and ponds across the Valley floor.

The short-eared owl is a USFWS BCC and a CDFW SSC. With rare exceptions, the project site is outside of the known breeding range of the species and the project area supports marginally suitable habitat. Nesting birds are not likely to occur. Suitable foraging habitat is present and there are several historic and recent CNDDB, iNaturalist, and eBird winter records within 10 miles of the project site.

The long-eared owl is a USFWS BCC and a CDFW SSC. Long-eared owls were not observed or detected during any of the 2023 and 2024 surveys conducted by the applicant. However, the project site and adjacent lands provide some suitable nesting opportunities, particularly in windrows and other planted trees associated with properties along Rosamond Boulevard and in the general vicinity.

Mountain plover is a USFWS BCC and a CDFW SSC. Mountain plover was not observed during any of the 2023 and 2024 surveys conducted by the applicant. This project site is outside of the known breeding range for this species so nesting birds are not likely to occur. The project site does support suitable wintering and foraging habitat and there are several recent eBird records scattered within 10 miles south of the project site.

Northern harrier is a USFWS BCC and a CDFW SSC. Northern harrier nesting was not identified during any of the 2023 and 2024 surveys conducted by the applicant. However, this species was observed foraging within the gen-tie alignment north of Dawn Road in 2024. There are several recent CNDDB, iNaturalist, and eBird breeding and non-breeding season records scattered within 10 miles of the project site; however, suitable breeding habitat is extremely limited in the general region.

Impacts to some species including California condors and bald eagles are extremely unlikely and have been included in the analysis because they may overfly the area. Should either of these species land or be observed in the project area during construction the implementation of **BIO-7** (General Impact Avoidance and Minimization Measures) ensure impacts are avoided. Likewise, impacts to wintering species would be associated with habitat loss or disturbance from construction equipment, noise, and human disturbance. For resident breeding birds impacts would be the same as described for common and other sensitive species and could include nest disturbance, habitat loss, and the disruption of breeding.

Any project related impact that results in the loss of nesting habitat, disturbance of breeding behavior, destruction of nests or eggs, exposure to herbicides or other hazardous materials, and mortality or injury to individual birds would be considered a significant impact. To reduce these impacts the staff recommends implementation of **BIO-17** (Nesting Bird Avoidance and Minimization Measures). This measure requires pre-construction surveys for nesting birds and the establishment of non-disturbance buffers to avoid disturbing active nest sites. This measure also requires the development of a Nesting Bird Management Plan that contains the types of birds that have the potential to nest in the project area, where they likely nest, prescriptive language on who is qualified to conduct nesting bird surveys and monitor active nests, the methodology of the surveys, when surveys will be required, and the frequency they must be repeated. The measure will also require the establishment of a nesting bird log to track active nests and provide routine reports to the CEC CPM on nest status. In addition, **BIO-14** (Habitat Management Land Acquisition for Crotch's Bumble Bee and Western Burrowing Owl) which requires the project owner to obtain mitigation lands to replace habitat lost from the development of the project.

Staff also recommend **BIO-1** through **BIO-4** (Designated Biologist Selection and Qualifications, Designated Biologists Duties, Biological Monitor Selection, and Designated Biologist and Biological Monitor Authority), **BIO-5** (Worker Environmental Awareness Program [WEAP]), **BIO-7** (General Impact and Avoidance Measures), **BIO-8** (Vegetation Management Plan), and **BIO-9** (Integrated Weed Management Plan),. These measures would educate workers regarding the legal protections for nesting birds and who to contact should a nest be detected, restore native vegetation communities, and require the identification and treatment of weed infestations. The weed management plan would contain prescriptive measures including conducting preconstruction surveys and treatment of weeds prior to ground disturbance should the work occur when plants are visible.

To reduce impacts from exposure to hazardous materials and improper herbicide use Staff recommends **HAZ-1** which would require the preparation of a Spill Prevention Control and Countermeasures Plan (SPCC), **WORKER SAFETY-1** which includes construction worker safety programs to protect workers from exposure to hazardous material and waste, and **BIO-9** (Integrated Weed Management Plan) which includes the requirements and safe handling practices for herbicide use. The implementation of these measures would reduce impacts to nesting birds to less than significant and comply with regulations protecting nesting birds.

Operation

Less Than Significant with Mitigation Incorporated. Direct and indirect impacts associated with operation activities would be substantially reduced relative to initial construction activities. Birds such as California condors are not expected to occur in the project area with any regularity. However other birds could be at risk from collision or electrocution with project components. Impacts from the risk of collision and electrocution are described above under common birds and would be reduced by the implementation of **BIO-18** (Collision Avoidance and Minimization Measures) which would require the placement of visual markers to alert birds of the presence of the shield wire. The implementation of **BIO-18** and the same COCs for project construction would reduce impacts to these species to a less than significant level.

Special Status Mammals

Tulare Grasshopper Mouse, Tehachapi Pocket Mouse, and San Joaquin Pocket Mouse

Less Than Significant with Mitigation Incorporated. Tulare grasshopper mouse is designated as a CDFW SSC. Tulare grasshopper mouse was not observed or identified during any of the 2023 and 2024 surveys conducted by the applicant. Although the nearest record is limited to a historic occurrence near SR-58 approximately 12.5 miles north of the project site, the overall distribution of this subspecies is not well understood.

Tehachapi pocket mouse is a CDFW SSC. Tehachapi pocket mouse was not observed or detected during any of the 2023 and 2024 surveys conducted by the applicant. The project site supports suitable habitat and there are scattered CNDDB records located in the general region with the nearest occurring within 5 miles.

San Joaquin pocket mouse is designated as a CDFW SA. San Joaquin pocket mouse was not observed or detected during any of the 2023 and 2024 surveys conducted by the applicant. Although the region encompassing the project site is not included in published range maps for the species, it is known to occur in the western Mojave Desert and suitable habitat occurs. There are two CNDDB records located approximately two miles north of the Whirlwind Substation at the western end of the project site.

The distribution of these cryptic species is poorly understood, and it is likely that the species occurs in relatively low densities where suitable habitat persists. There is potential for these species to occur on the WRESC project site and along portions of the gen-tie route.

Construction of the project could directly affect special-status small mammals and their habitat, should they occur on or near the project site by the loss and degradation of habitat; disturbance of foraging, dispersal, and breeding activities; mortality due to crushing by foot traffic, vehicles, or heavy equipment; fugitive dust; ground borne vibration from controlled detonations, exposure to hazardous materials; soil compaction that prevents burrowing; and increased noise and disturbance. Small mammal burrows or nests located within project disturbance areas may be damaged or destroyed, and adults or young within the burrows or nests may be injured or killed. Small mammals in or near work areas may be disturbed or frightened away by human presence, noise, and activity. Exposure from grading could also subject injured animals to predation from ravens and other species who often frequent construction projects. Indirect impacts include the introduction and spread of invasive weeds, noise, and increased human presence.

Because of their ecology it is likely that some of these species would be subject to mortality during construction should they be present in the disturbance footprint. CEC staff has proposed a series of measures to reduce mortality but acknowledge it would not be practical to attempt any large-scale trapping or relocation efforts for these species.

Any impact on these species would be considered a significant impact if it results in mortality or habitat loss. To reduce impacts to this species, if present, staff recommends the implementation of **BIO-22** (Small Mammal Avoidance Measures and Relocation Plan) which requires monitoring and salvage of any small mammals exposed during construction to a pre-approved location outside of disturbance areas such as the Joshua tree relocation area. While not required to reduce impacts, the implementation of **BIO-14** (Habitat Management Land Acquisition for Crotch's Bumble Bee and Western Burrowing Owl) would provide additional refuge land for these species in the region. Staff also recommends **BIO-1** through **BIO-4** (Designated Biologist Selection

and Qualifications, Designated Biologists Duties, Biological Monitor Selection, and Designated Biologist and Biological Monitor Authority), **BIO-5** (Worker Environmental Awareness Program [WEAP]), **BIO-7** (General Impact and Avoidance Measures), **BIO-8** (Vegetation Management Plan), and **BIO-9** (Integrated Weed Management Plan).

To reduce impacts from exposure to hazardous materials and improper herbicide use Staff recommends **HAZ-1** which would require the preparation of a Spill Prevention Control and Countermeasures Plan (SPCC), **WORKER SAFETY-1** which includes construction worker safety programs to protect workers from exposure to hazardous material and waste, and **BIO-9** (Integrated Weed Management Plan) which includes the requirements and safe handling practices for herbicide use. The implementation of these measures would reduce impacts to small mammals to less than significant levels.

Operation

Less Than Significant with Mitigation Incorporated. Direct and indirect impacts associated with operation activities would be substantially reduced relative to initial construction activities. Post construction it is likely these species would not occur within the project site. If present, disturbance would likely be associated with noise and nighttime lighting around the perimeter of the facility. This could increase predation risk. The project is not expected to substantially increase perch sites compared to baseline conditions due to the large number of Joshua trees that will remain in adjacent areas. The implementation of the same COCs for project construction would reduce impacts to these species to less than significant and be consistent with CESA requirements.

American Badger and Desert Kit Fox

Less Than Significant with Mitigation Incorporated. The American badger is a CDFW Species of Special Concern. The desert kit fox is a protected furbearing mammal under California Code of Regulations Title 14, section 460. American badger and desert kit fox was not observed during any of the 2023 and 2024 surveys conducted by the applicant. However, suitable habits occur throughout the project site and along the gen-tie line. In addition, several large burrows suitable for the species were documented within and adjacent to the project site during each year of surveys. Desert kit fox scat was also detected within the project site during each year of surveys.

Both species have a high potential to occur in the project area and are well known from the Antelope valley. Each of these species construct multiple large burrows for denning and may routinely move from one burrow to another throughout the season. Desert kit fox can construct large burrow complexes with multiple entrances; however, these features were not noted to occur at the WRESC site or along the gen-tie line. Staff did note several small unmapped burrows near the Whirlwind substation during a site visit conducted in December 2024.

Construction of the project could directly affect American badger and desert kit fox and their habitat by the loss and degradation of habitat; disturbance of foraging, dispersal,

and breeding activities; mortality due to crushing by foot traffic, vehicles, or heavy equipment; fugitive dust; ground borne vibration from controlled detonations, exposure to hazardous materials; soil compaction that prevents burrowing; and increased noise and disturbance. Each of these species can also be susceptible to collisions with vehicles along the many project access roads including Rosamond Boulevard. In some instances, kit fox and American badger have also been observed denning close to rural development however, staff is uncertain of the proximity to those locations put them at risk of disease or predation by dogs.

Construction that results in injury or mortality to these species would be considered a significant impact. To reduce impacts to this species staff recommends the implementation of COC **BIO-22** (American Badger, Desert Kit Fox, and Ringtail Avoidance and Minimization Measures) which requires conducting pre-construction surveys and establishing non-disturbance buffers for the animals. The plan will require specific information on survey methodologies, roles of designated staff, methods for den assessments and avoidance buffers, methods proposed for passive relocation efforts, den excavation, management of sick or diseased animals, and reporting requirements.

During preconstruction surveys, all desert kit fox and/or American badger observations, including individual animals, dens and den complexes, and sign, will be recorded. Any dens or den complexes identified during preconstruction surveys will be classified using the following designations:

- Active (Natal or Non-Natal)
- Potentially Active (Natal or Non-Natal)
- Inactive (Care must be taken to ensure burrows are inactive)

Den protection for both species will be based on the following guidance:

- Inactive Dens. Dens that are within disturbance limits or the required 500-foot survey buffer that exhibiting no evidence of desert kit fox or American badger use and a clearly visible terminus will be defined as inactive and will be blocked or collapsed during preconstruction surveys to prevent future use by American badgers or desert kit fox.
- Inactive dens outside of disturbance limits will be subject to passive exclusion methods to ensure any animals are not still within the burrow. Any inactive den within the disturbance limits and is determined to be inactive after the assessment will be subject to passive exclusion methods or may be excavated depending on construction requirements. Wherever possible, inactive dens will be preserved for future occupancy. These dens will be preserved to the maximum extent feasible.
- Potentially Active dens. Dens that are active or potentially active identified during the preconstruction surveys will require the establishment of a 500-foot non-disturbance buffers until the status of the den can be determined. To determine if a den is inactive the project owner shall conduct an assessment over a period of five

(5) consecutive nights as required in COC **BIO-22** (American Badger, Desert Kit Fox, and Ringtail Avoidance and Minimization Measures). If the den is active the avoidance buffer will remain intact, and no construction activities will be permitted within the buffer without prior approval from the CPM in coordination with the CDFW.

- Active dens. If an active desert kit fox den is detected within 500 feet of any work area during the desert kit fox pupping season (January 1 through August 31), they will be designated as an avoidance area, and a minimum 500-foot avoidance buffer will be established and maintained until the den is confirmed to be inactive. If an active American badger den is detected within 100 feet of any work area during the pupping season (March 1 through August 31) a minimum 100-foot avoidance buffer will be established until the den is confirmed to be inactive.
- If an active desert kit fox or American badger den is detected within 500 feet of any work area outside of the pupping seasons described above a minimum 200-foot avoidance buffer will be established for desert kit fox and 100-foot avoidance buffer for American badger will be established and maintained until the den is confirmed to be inactive. Avoidance buffers may be adjusted only with advance written approval from the CPM in coordination with CDFW.
- Relocation of American badger will be allowed outside the pupping season.
- Relocation of desert kit fox will not be allowed at any time except on a case-by-case basis after coordination with the CPM and with the concurrence of the CDFW.

Any impact on these species would be considered a significant impact if it results in injury or mortality. To reduce impacts to this species staff recommends the implementation of **BIO-22** (American Badger, Desert Kit Fox, and Ringtail Avoidance and Minimization Measures) and **BIO-14** (Habitat Management Land Acquisition for Crotch's Bumble Bee and Western Burrowing Owl) which would provide compensatory land to reduce impacts from habitat loss. Staff also recommends **BIO-1** through **BIO-4** (Designated Biologist Selection and Qualifications, Designated Biologists Duties, Biological Monitor Selection, and Designated Biologist and Biological Monitor Authority), **BIO-5** (Worker Environmental Awareness Program [WEAP]), **BIO-7** (General Impact and Avoidance Measures), **BIO-8** (Vegetation Management Plan), and **BIO-9** (Integrated Weed Management Plan) To reduce impacts from exposure to hazardous materials and improper herbicide use. Staff recommend **HAZ-1** and **WORKER SAFETY-1.** The implementation of these measures would reduce impacts to small mammals to less than significant levels and would avoid taking of protected furbearing mammals such as the desert kit fox. Impacts from fugitive dust would be mitigated by implementation of **AQ-SC3** and **AQ-SC4,** which include watering roads and or stabilizing them with soil binders and would require a qualified dust monitor.

Operation

Less Than Significant with Mitigation Incorporated. Direct and indirect impacts associated with operation activities would be substantially reduced relative to initial

construction activities. Post construction it is likely these species would not occur within the project site but could remain in adjacent areas. If present, disturbance would likely be associated with noise and nighttime lighting around the perimeter of the facility which could result in lower activity levels along the fence line. It is also possible that the reservoir or any proposed irrigation could be an attraction to kit fox which can climb perimeter fences to some degree. There could be some increase in the risk of roadkill due to increased baseline traffic from facility staff. The implementation of the same COCs for project construction including management of the basins, minimization of light pollution, and worker education would reduce impacts to these species to less than significant level and ensure compliance with Title 14 requirements.

Mohave Ground Squirrel

Less Than Significant with Mitigation Incorporated. Mohave ground squirrel is listed as threatened under CESA. No Mohave ground squirrels were observed or detected during live- and camera-trapping components of the 2023 and 2024 protocol-level surveys conducted by the applicant. The project site is within the southern portion of the species' historic range where population densities have historically been low and entirely absent from the southwestern portion of the range since at least the mid-1990s (Leitner 2021). However, recent trapping efforts have detected the species near Sanborn approximately six miles to the north and CDFW has indicated there are confidential records of this species occurring in closer areas.

Therefore, while staff concur with the likelihood of presence is extremely low it cannot be ruled out. CEC staff assert that the current conclusions of absence based on the most recent survey data will be valid through July 2025. At that point the applicant will either be required to provide additional survey data (such as camera or live trapping) or seek take coverage for the species prior to construction.

Otherwise, construction of the project could directly affect this species and their habitat, should they occur on or near the project site by the loss and degradation of habitat; disturbance of foraging, dispersal, and breeding activities; mortality due to crushing by foot traffic, vehicles, or heavy equipment; fugitive dust; ground borne vibration from controlled detonations, exposure to hazardous materials; soil compaction that prevents burrowing; and increased noise and disturbance. Mohave ground squirrel burrows located within project disturbance areas may be damaged or destroyed, and adults or young within the burrows or nests may be injured or killed. Mohave ground squirrels in or near work areas may be disturbed by human presence, noise, and construction activity. Indirect impacts include the introduction and spread of invasive weeds, noise, and increased human presence.

To ensure the protection of Mohave ground squirrel and ensure that unauthorized take does not occur the project owner would implement **BIO-23** (Mohave Ground Squirrel Avoidance and Minimization Measures) which would require the completion of additional surveys for this species should project activities commence after April 2026. Should no Mohave ground squirrel be detected work may proceed with existing COCs. However,

should a Mohave ground squirrel be found, a non-disturbance buffer would be required, and work would be halted pending coordination with the CPM and CDFW. The applicant did not seek take authorization for this species and staff notes there is a low potential for this species to occur. The applicant is conducting camera trapping in the summer of 2025 and will submit results once surveys are complete.

Operation

Less Than Significant with Mitigation Incorporated. Based on recent surveys this species is not expected to occur at the project site and operational impacts are not expected to occur. However, should they occur at some point during the operational lifespan of the project Mohave ground squirrel could be subject to direct and indirect impacts associated with noise and nighttime lighting around the perimeter of the. However, the implementation of the same COCs for project construction would reduce impacts to this species to less than significant and ensure compliance with CESA requirements.

Ringtail and Mountain Lion

Less Than Significant with Mitigation Incorporated. The ringtail is a CDFW FP species which are known to occur in scattered locations across the Antelope Valley, adjacent mountains, and portions of the Mojave Desert where access to reliable water sources occur. Typically, ringtails are seldomly found more the 0.6 miles (1.0 kilometer) from permanent water. Denning sites typically occur in rock recesses, hollow trees, logs, snags, abandoned burrows, or woodrat nests. Most of the WRESC project sites do not support suitable denning habitat and the site does not have a reliable water source nearby. This species will utilize woodrat middens, and it is possible that some of the larger hollow Joshua trees could provide cover for this species in the region. The most likely area for this species to occur is near Willow Springs and some of the mines associated with the Tropico-Mojave Road area. Therefore, there is a low likelihood of encountering this species during construction. The highest risk may be associated with the risk of roadkill on the various access roads that are present around the Willow Springs area.

In 2020, the Southern California/Central Coast Mountain Lion ESU was designated as a candidate species for listing under the CESA. Mountain lion was not observed or detected during any of the 2023 and 2024 surveys conducted by the applicant. The general region surrounding the project site does not support suitable denning habitat for the species. Although some prey resources, including domestic sheep and small numbers of mule deer may be present, the region does not support an ample prey base for sustained occupancy by mountain lion. There are numerous recent iNaturalist records from the foothills of the Tehachapi Mountains and Angeles National Forest to the northwest and southwest of the project site, respectively. Therefore, there is a low potential that mountain lion could occur as a very infrequent transient within or adjacent to the project site, moving between more suitable habitats in these foothill areas. It is unlikely to occur on the WRESC site but more likely would be associated with less developed portions of the gen-tie line.

Direct impacts to mountain lions from construction of the project or gen-tie line are not expected to occur. Mountain lions are secretive, typically move at night and the area lacks denning or dense cover for them to find shelter. Construction related impacts to ringtail are also not expected to occur. However, impacts to both species would be avoided should they occur in the project area through staff's proposed COCs including **BIO-1** through **BIO-4** (Designated Biologist Selection and Qualifications, Designated Biologists Duties, Biological Monitor Selection, and Designated Biologist and Biological Monitor Authority) **BIO-5** (Worker Environmental Awareness Program [WEAP]), **BIO-7** (General Impact and Avoidance Measures), and **BIO-21** (Small Mammal Avoidance Measures and Minimization Measures). These conditions would be required to include information regarding the detection of these species and provide prescriptive measures should animals be detected in or near proposed work areas. The general impact and avoidance measures would also include pre-construction survey requirements and stop work orders should either of these protected species be detected. To reduce impacts from exposure to hazardous materials and improper herbicide use staff recommend **HAZ-1** and **WORKER SAFETY-1.** The implementation of these measures would reduce impacts to mountain lions and ringtail to less than significant levels and would avoid take of these species.

Operation

Less Than Significant with Mitigation Incorporated. Both species have an extremely low potential to occur at the project site. Direct and indirect impacts associated with operational activities, should they occur, would be substantially reduced relative to initial construction activities. If present, disturbance would likely be associated with noise and nighttime lighting around the perimeter of the facility. It is also possible that the reservoir or any proposed irrigation could be an attractant to ringtail which could enter the facility to gain access to water. Mountain lions typically avoid more developed areas that lack suitable prey opportunities and will likely avoid the facility should they be moving through the adjacent landscape. Like desert kit fox, ringtails are susceptible to vehicle strikes but they expected to occur in very low densities. The implementation of the same COCs for the construction of the project would reduce impacts these species to less than significant and avoid take.

Common and Sensitive Bats

Less Than Significant with Mitigation Incorporated. Bats are likely to forage over most of the broader region and likely occur to some degree as period foragers across the project site where they prey on small insects, moths, and other invertebrates. These may include species designated as "special animals" by CDFW such as pallid bat, Townsend's big-eared bat, hoary bat, and Mexican free-tailed bat.

Townsend's big-eared bat, western red bat, hoary bat, spotted bat, western mastiff bat, big free-tailed bat, long-legged myotis, and pocketed free-tailed bat are all California SSC that have the potential to occur within the Project area. Hoary bats have been detected near California City and near Piute Ponds on Edwards Air Force Base and most of these bats are found throughout the western portion of the Mojave Desert.

Bat life histories vary widely. Some species hibernate during winter or migrate to warmer areas. During the breeding season, bats generally roost during the day, either alone or in communal roost sites, depending on species. Some species feed mainly over open water where insect production is especially high, but others forage over open shrublands. The decline of bat populations is often due to roost site disturbance, loss of foraging habitat, and loss of roost sites. Activities that have been documented to impact bats include livestock grazing, vegetation treatments, and water reclamation that could lead to loss of a water source or riparian habitat. Due to their sensitivity to human disturbance, roost protection is important for bats. Roost protection measures may include seasonal use restrictions or physical closures as necessary.

Roosting habitat on the project site is low and it is located some distance away from permanent water sources. However, bats likely use the old mine cavities around Willow Springs and some bats can find shelter in dense windrows of trees, manmade structures, bridges, hollow logs, rock crevasses, and even debris piles.

Although the risk is low, if present bats could be disturbed from increased noise from heavy equipment, controlled detonations, human presence, and exposure to fugitive dust. Noise, vibration, and human activity could disrupt maternity roosts during the breeding season should they occur. Indirect effects could include increased traffic, dust, and human presence in the Project area. The most likely risk to bats is during crepuscular and nighttime periods when work is conducted with the use of lights. Nighttime lighting could attract insects and pose a risk to bats from construction activities. In addition, bats that forage near the ground, such as the pallid bat, would also be subject to crushing or disturbance by vehicles driving at dusk, dawn, or during night work.

Roosting bats are not expected to occur, and the site does not support suitable habitat for maternity colonies and hibernacula. There is some risk of encountering migrant bats or bats that may be attracted to night lighting.

Direct impacts to bats include mortality or displacement of bats during ground-disturbing activities associated with construction, increased noise levels from heavy equipment or controlled detonations, human presence, and exposure to fugitive dust. Indirect effects could include increased traffic, dust, and human presence in the project area.

To reduce impacts staff recommends implementation of' general conditions for sensitive species avoidance and minimization including **BIO-1** through **BIO-4** (Designated Biologist Selection and Qualifications, Designated Biologists Duties, Biological Monitor Selection, and Designated Biologist and Biological Monitor Authority), **BIO-5** (Worker Environmental Awareness Program [WEAP]), and **BIO-7** (General Impact and Avoidance Measures). These conditions would be required to include information regarding the detection of these species and provide prescriptive measures should bats be detected or injured during construction. They also include specific conditions to search for and avoid nesting or roosting habitat in the unlikely event that bats should

be detected during construction. To reduce impacts from exposure to hazardous materials and improper herbicide use staff recommend **HAZ-1** and **WORKER SAFETY-1.** The implementation of these measures would reduce impacts to bats to less than significant.

Operation

Less Than Significant with Mitigation Incorporated. Direct and indirect impacts associated with operation activities would be substantially reduced relative to initial construction activities but have some risk from collision with project facility and the transmission line; however, studies have shown that bats are more susceptible to collisions with wind turbines and infrequently collide with stationary structures (WEST 2020). However, dead or injured bats have been found during bird mortality searches at transmission and distribution powerline corridors (Manville 2016). Bat mortality could also occur if individuals became trapped in other Project equipment or infrastructure. It is anticipated that very few bat fatalities would occur during the life of the Project based on the very low bat fatalities discovered at regional projects. Bats may also be attracted to the retention or water storage ponds and hunt for insects around facility lighting. This could increase the risk of bat mortality, especially for bats that forage on or near the ground. Similarly, bats could start day roosting or find cavities in the facility to roost. To reduce impacts the project owner would implement the same COCs for project construction. This would reduce the impact of special status and common bats to less than significant levels.

c. Would the project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

State and Federal Jurisdictional Waters and Habitat

Less Than Significant with Mitigation Incorporated. Federal waters are not present, and the area drains to an internally dry lakebed. In addition, recent court rulings have removed ephemeral drainages from federal jurisdiction.

The applicant documented 25 ephemeral drainage features in the project area that they concluded meet the definitions of jurisdiction under LRWQCB and CDFW regulations and 49 ephemeral drainages that were determined by the applicant to not meet the definitions of LRWQCB and CDFW jurisdiction. At this time, staff does not concur with the applicant's final jurisdictional determination and believes that some of these features may potentially meet LRWQCB and CDFW jurisdiction. For the purposes of this analysis staff is assuming all the drainages are likely jurisdictional. **Table 5.2-3** above summarizes the potentially jurisdictional features identified in the project area by the applicant. The applicant has indicated that impacts to jurisdictional features would not occur.

There are no jurisdictional features on the WRESC project site however several small drainages were noted on the Villa Haines parking and laydown area. Most of the drainage features noted by staff are present along the gen-tie line and consist of small ephemeral washes, swales, and ditches. Riparian vegetation does not occur. The applicant has indicated that none of these features would be impacted during construction. However, staff believes that some temporary impacts are likely to occur to support the construction of the proposed gen-tie and drainages could also be impacted at the Villa Haines site and along the various access roads should road grading or maintenance be required to support heavy equipment needed for transmission line construction.

The importance of intermittent and ephemeral streams to wildlife in arid environments is well known (Levick et al. 2008). Ephemeral washes similar to those that are present along the projects gen-tie line and near the proposed parking and laydown provide higher soil moisture and unique habitat that is distinct from the surrounding uplands providing more continuous vegetation cover and microtopographic diversity than the surrounding uplands. This difference is often observed during periods of rainfall or when seasonal wildflowers are present. Ephemeral and intermittent streams in the arid west provide important habitat for wildlife and are responsible for much of the biotic diversity (Levick et al. 2008). They have higher moisture content and provide shade and cooler temperatures within the channel. In cases where the habitat is distinct in species composition, structure, or density, wash communities provide habitat values not available in the adjacent uplands. Riparian and wash dependent vegetation along desert washes drive food webs, provide seeds for regeneration, habitat for wildlife, access to water, and create cooler, more hospitable microclimatic conditions essential for a number of plant and animal species. Baxter (1988) noted that washes, because of their higher diversity plant communities, are probably important foraging locations for desert tortoise; in smaller washes, there is greater cover and diversity of spring annuals, providing important food sources.

Staff notes that most of the drainages that are present in the project area are highly degraded or occur as small drainages flowing to or from numerous access roads. Most of these have compromised function and in more developed areas do not provide substantial habitat for native species. Nonetheless many would still be considered jurisdictional by CDFW and RWCQB.

Direct impacts to state and CDFW waters could include the removal of native vegetation, the discharge of fill, degradation of water quality, and increased erosion and sediment transport. Indirect impacts could include alterations to the existing topographical and hydrological conditions and the introduction of non-native, invasive plant species. As required by CDFW codes and state regulations the project owner would be required to provide notification for any impact to these systems.

To reduce these impacts staff recommends **BIO-24** (Lake and Streambed Equivalency Conditions) which was drafted in coordination with the CDFW to meet in-lieu permitting requirements. This condition includes measures that are consistent with Administrative,

Avoidance and Minimization requirements that are included in a typical CDFW Lake and Streambed permit. These conditions would address the construction of the Project. In addition, impacts to jurisdictional features and their associated resources are protected by the COCs required to protect biological resources and water quality. These include **BIO-1** through **BIO-14**, and **BIO-24**.

Conditions of certification **WATER-1**, **WATER-2**, **WATER-5**, **AQ SC3** and **AQ-SC4**, **HAZ-1**, **HAZ-6**, **HAZ-7,** and **HAZ-8**, and **WORKER SAFETY-1**. These measures include pre-construction surveys, monitoring, habitat restoration, weed and invasive species control, storm water management, worker training, dust control, spill containment and reporting, verification of WDR permit requirements, and fire safety measures. COC **BIO-14** requires the acquisition of mitigation lands for Crotch's bumble bee and western burrowing owl. It is expected that any small impacts to jurisdictional features that may be subject to temporary or permanent impacts would be fully mitigated through the acquisition of these lands which will likely support a larger number of features compared to those that occur in the project area. With the implementation of these measures impacts to jurisdictional waters would be reduced to less than significant and meet CDFW regulatory requirements.

The implementation of the SWPPP would also ensure that the development of the site would not cause substantial degradation in the quality, or an increase in the rate or volume, of stormwater runoff from the site during construction. Staff recommend COC **WATER-1** to ensure the project complies with the Construction General Permit. A project operations Drainage, Erosion, and Sedimentation Control Plan (DESCP) should be prepared to monitor and manage both onsite and offsite stormwater events per **WATER-2**.

Operation

Less Than Significant with Mitigation Incorporated. Direct and indirect impacts associated with operation activities would be substantially reduced relative to initial construction activities. Periodic impacts to drainages near the transmission towers could occur during routine inspections and maintenance. The implementation of the same COCs for the project would reduce impacts to jurisdictional waters to less than significant and ensure compliance with LSA requirements.

d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of wildlife nursery sites?

Wildlife Movement Corridors and Nursery Sites

Less Than Significant. The project site is on undeveloped lands that are currently confined to the west by Highway 14 and to the east by Sierra Highway and an active railroad. Numerous fences border the highways, and the railroad inhibits the movement of small less motile species to some degree. The project is further confined to the south

where the Highways and rail lines from a pinch point near 30th Street West just north of the city of Rosamond. The project would isolate a small parcel of land between the southern border of the project at this location. Natural lands subject to a lower level of anthropogenic disturbance occur to the north but this area is also confined between the Highway and the railroad and quickly transitions to rural residences and more disturbed habitat.

On a local scale the project site consists of primarily undeveloped lands, which can provide opportunities for undisturbed localized wildlife movement. Burrowing owls have been documented in the project area and the site supports a variety of small mammals, reptiles, and insects including the state candidate Crotch's bumble bee. The project site broadly includes areas of sparsely to moderately high desert vegetation cover, intermixed with previously disturbed areas. However, existing development associated with the area around Rosamond prevents any regional connectivity between the Tehachapi Mountains to the north and northwest and the San Gabriel Mountains to the south.

Construction of the gen-tie line is also not expected to disrupt any important movement corridors. Once completed the transmission lines will not impose a physical barrier to most wildlife and except for the western end of the gen-tie line most of the transmission line would be confined by rural residences and numerous large scale solar energy facilities. Therefore, while the project will likely inhibit some local movement it will not pose a barrier to regional movement and impacts would be considered less than significant. Similarly, adjacent habitats will also be available for local breeding and foraging.

Although not required to reduce impacts, staff's recommended COCs for other species including **BIO-5** through **BIO-24** would further reduce potential impacts by preserving important foraging habitat for burrowing owl and other desert species, providing worker training to reduce human wildlife interactions, and a suite of preconstruction survey, monitoring and reporting requirements.

Operation

Less Than Significant. Direct and indirect impacts associated with operation activities would be substantially reduced relative to initial construction activities. It is unlikely that the existing gen-tie line would pose a barrier to wildlife movement. There is some potential to wildlife to avoid areas near the WRESC site, however the site is not in an import movement corridor.

e. Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

As currently designed, the proposed project is considered consistent with the applicable goals, policies, and measures of the Kern County General Plan, the Rosamond Specific Plan, and the Willow Rock Specific Plan. The project will implement COC's to reduce

potential project-related impacts to sensitive biological resources, including native vegetation communities, special-status species, and jurisdictional features.

Kern County does not have a tree protection ordinance. The Kern County General Plan and the Rosamond and Willow Springs Specific Plans encourage the preservation of open space and habitat for western Joshua tree and other sensitive desert resources, including special-status plants and wildlife.

As discussed above, the project will restore temporarily disturbed areas, provide compensatory mitigation for habitat disturbance, and require specific conditions for mitigating impacts to western Joshua tree. For impacts to western Joshua tree that cannot be avoided, take coverage under the WJTCA would be obtained. The project will also comply with COCs **BIO-1** through **BIO-24**. Therefore, the project would be consistent with the Kern County General Plan and the Rosamond and Willow Springs Specific Plans and impacts would be less than significant with mitigation.

f. Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Communities Conservation Plan, or other approved local, regional, or state habitat conservation plan?

The project area is within the boundaries of two conservation plan areas, including the Desert Renewable Energy Conservation Plan and the West Mojave Plan. At this time, each of these plans is applicable to Bureau of Land Management (BLM) administered public lands within their boundaries. The preferred gen-tie alignment crosses two federally-owned parcels managed by the BLM. This alignment may be completely contained within an existing road easement associated with Mojave Tropico Road. Nonetheless, the implementation of **LAND-3** (BLM ROW Grant Requirement) would ensure that the project owner files an Application for Transportation and Utility Systems and Facilities on Federal Lands (SF-299) form prior to construction on any BLM-administered lands. The additional implementation of **BIO-1** through **BIO-24** would ensure that impacts are reduced to less than significant.

5.2.2.3 Cumulative Impacts

Cumulative projects are identified as past projects, current projects, or reasonably foreseeable future projects that, when viewed in connection with the proposed project, cause their cumulative effects on biological resources to be potentially significant. A master list of cumulative projects that may be relevant to the cumulative analysis for each issue area addressed for the proposed project is provided in **Appendix A, Table A-1.** As described above, the project-specific impacts would be less than significant with the implementation of staff's proposed COCs.

Cumulative

Less Than Significant with Mitigation Incorporated. As small- to large-scale solar energy and development projects and urbanization pressures increase within Kern County, impacts to biological resources in the region are expanding on a cumulative level. As

described in Appendix A, Table A-1, other projects with similar effects on biological resources have been completed, have been approved, or are in the application process for approval in the Antelope Valley. These include 11 energy projects, 12 residential/housing projects, 12 commercial property projects, and 2 mining projects, all within 8 miles of the project area.

While some of these projects are on previously disturbed or developed lands, many occur on undeveloped lands that support native habitats similar to the proposed project. Cumulatively, the proposed project adds to the direct removal of regional native habitats, general vegetation, and special-status plant and wildlife habitat and individuals. Cumulative indirect impacts are also possible through increased habitat fragmentation and habitat degradation through the introduction of non-native invasive weeds.

If the proposed project is approved approximately 90.90 acres (under Option 1 – Without Berm) and 212.44 acres (under Option 2 – With Berm) of native vegetation communities would be permanently removed. This would contribute to the overall permanent removal of native vegetation in the region when evaluated in the context of cumulative impacts. However, there are several mitigating factors that have been taken into consideration if the loss of this habitat would be considered cumulatively considerable. First, the project area is largely confined between major transportation corridors that reduce the value of this habitat in the broader landscape. Second, the loss of these habitats from project construction would be mitigated through implementation of **BIO-14** (Habitat Management Land Acquisition for Crotch's Bumble Bee and Western Burrowing Owl) which would fully off-set these impacts and conserve important habitat in the region. Temporary impacts to scrub communities would be further off-set through a combination of land acquisition identified above and the implication of **BIO-8** (Vegetation Management Plan) which requires the basic restoration of long-term temporary work and staging areas to control the spread of invasive weeds. Therefore, the project would not contribute to cumulatively considerable impacts from the permanent or temporary conversion of habitat.

The project would also result in the loss sensitive plants and likely some species of wildlife. Of particular concern is the potential for cumulative impacts to state-listed plants and wildlife species, including western Joshua tree, Crotch's bumble bee, Mohave ground squirrel, Swainson's hawk, and western burrowing owl. Construction of the project would result in the removal of up to 1,138 (under Option 1 – Without Berm) and 1,625 (under Option 2 – With Berm) western Joshua trees which would be considered a significant impact under CEQA.

To reduce the projects contribution to cumulatively considerable impacts staff recommended the implementation of **BIO-12** (Western Joshua Tree Avoidance, Minimization, and Mitigation Measures) requires the relocation of an estimated 249 (under Option 1 – Without Berm) and 266 (under Option 2 – With Berm) western Joshua trees along with the applicable mitigation fees required under the WJTCA. Conformance with the WJTCA that was developed to mitigate impacts to this species

throughout its range. In addition, the small number of other sensitive plants that would be potentially impacted by the project would be mitigated through seed collection and other measures that would contribute to their preservation in the region. Impacts to special status plants would not be cumulatively considerable. Implementa-tion of Staffs proposed COCs would reduce project-specific impacts on special-status species and their habitat to less than significant.

Development of the proposed project would result in the removal of suitable foraging habitat for the species. Crotch's bumble bee is a generalist species that nests, overwinters, and forages in a wide variety of habitats if conditions are suitable. Given the proximity to the proposed project, it is likely that cumulative projects also support suitable nesting, overwintering, and foraging habitat for the species. However, this species is far ranging and is being detected across most of southern California including portions of the Antelope valley and Mojave Desert. The applicant applied for incidental take coverage of this species and staffs proposed COC **BIO-13** (Crotch's Bumble Bee Avoidance and Minimization Measures) and **BIO-14** (Habitat Management Land Acquisition for Crotch's Bumble Bee and Western Burrowing Owl) would ensure that impacts to this species are fully mitigated, and the project would not result in a decline of the species across its range. Therefore, cumulative impacts to Crotch's bumble bee and their nest and overwintering sites would be fully mitigated and not contribute to cumulatively considerable impacts.

Burrowing owl and Swainson's hawk are two species that are subject to cumulative impacts from habitat loss and development activities. Both species are present in the region and have been subject to widespread habitat loss from past, present, and future projects. Based on the project's location the lost likely impact to burrowing owl is loss of foraging habitat and possible disruption of nesting sites. To reduce the loss of habitat and in consideration of existing habitat losses in the region staff proposed COC **BIO-14** (Habitat Management Land Acquisition for Crotch's Bumble Bee and Western Burrowing Owl) which would fully off-set these impacts and conserve important habitat in the region. With the implementation of staff's proposed measures for habitat acquisition the project is not likely to result in cumulatively considerable impacts to Swainson's hawk. Except for a portion of the gen-tie line, the project site is not near nesting birds and is subject to adjacent impacts from Highway 14, Sierra Highway, and a railroad. The most likely potential for cumulative impacts to this species is from collisions with new gen-tie lines and other project infrastructure associated with this and other projects planned or recently constructed in the region. To reduce impacts from collision staff recommended **BIO-18** (Collision Avoidance and Minimization Measures) which would require the project owner to install anti-collision markers on the transmission line shield wire. This would off-set the project's contribution to the loss of this species in the region and impacts would be considered cumulatively considerable.

The project is not expected to result in the loss of Mohave ground squirrel or its occupied habitat and is not expected to result in cumulative impacts to this species. However, existing mitigation including **BIO-14** (Habitat Management Land Acquisition

for Crotch's Bumble Bee and Western Burrowing Owl) would preserve land that may be used by this species in the region.

With the implementation of staff's recommended conditions of certification **BIO-1** through **BIO-24** the project would not contribute to cumulatively considerable impacts from the permanent or temporary conversion of habitat or direct and indirect impacts to plants or wildlife.

5.2.3 Project Conformance with Applicable LORS

Table 5.2-14 provides staff's determination of conformance with applicable local, state, and federal LORS, including any proposed Conditions of Certification, where applicable, to ensure the project would comply with LORS. As shown in this table, staff conclude that the project would be consistent with all applicable LORS. The subsection below, "Staff Proposed Conditions of Certification", contains the full text of any referenced Conditions of Certification.

TABLE 5.2-14 CONFORMANCE WITH APPLICABLE LORS

Applicable LORS	Conformance and Basis For Determination
Federal	
Federal Endangered Species Act (16 USC §§ 1531 et seq. and 50 CFR part 17.1 et seq.)	
Designates and protects federally threatened and endangered plants and animals and their critical habitat. Applicants for projects that could result in adverse impacts on any federally listed species are required to mitigate potential impacts in consultation with USFWS.	**Yes.** There are no federally-listed plants species expected to occur in the project area. Federally-listed wildlife species with at least some potential to occur include monarch butterfly, desert tortoise, and California condor. Each of these species has been determined to have a low potential to occur. The project area does not support suitable overwintering or breeding habitat for monarch butterfly, and if present, would occur as an infrequent migrant. The distribution of desert tortoise is limited; however, there is a possibility that the species could occur. The applicant is not seeking coverage under the ESA. Therefore, **BIO-16** would require complete avoidance if a tortoise is observed during implementation of the project unless further coordination with the CPM, CDFW, and USFWS service is conducted. California condor is not expected to nest in the project area but may occur as a very infrequent forager. **BIO-1** through **BIO-15** would reduce impacts to federally-listed species to less than significant and ensure compliance with the ESA.
Migratory Bird Treaty Act (16 USC §§ 703 to 711)	
Makes it unlawful to take or possess any migratory nongame bird (or any part of such a migratory nongame bird as designated in the Act.	**Yes.** The project would include **BIO-1** through **BIO-10** and **BIO-16** through **BIO-20** to reduce impacts to resident and migratory birds and ensure compliance with the MBTA.
Bald and Golden Eagle Protection Act (16 USC §§ 668 to 668c)	
Provides for the protection of the bald and golden eagle by prohibiting, except under	**Yes.** Bald eagle is not expected to occur in the project area. Golden eagle is not expected to nest in the

TABLE 5.2-14 CONFORMANCE WITH APPLICABLE LORS	
certain specified conditions, the take, possession, and commerce of such birds. The 1972 amendments increased penalties for violating provisions of the Act or regulations issued pursuant thereto and strengthened other enforcement measures.	project area but could occur as a forager. The project would include **BIO-1** through **BIO-10** and **BIO-17** to reduce impacts to golden eagle and ensure compliance with the BGEPA.
Clean Water Act §§ 401 and 404 (33 USC §§ 1251 to 1376)	
Requires the permitting and monitoring of all discharges to surface water bodies. Section 404 requires a permit from the USACE for a discharge of dredged or fill materials into waters of the U.S., including wetlands. Section 401 requires a permit from RWQCB for the discharge of pollutants. By federal law, every applicant for a federal permit or license for an activity that may result in a discharge into a California water body, including wetlands, must request state certification that the proposed activity will not violate state and federal water quality standards.	**Yes.** The project area does not support waters of the U.S. so section 404 of the CWA would not apply. The project owner would obtain the appropriate Section 401 permits through the LRWQCB prior to impacting and jurisdictional features to ensure compliance with the CWA. The additional implementation of **BIO-24** provides conditions, such as installation of BMPs to control erosion and sedimentation, refueling requirements, and weed control, would further reduce impacts to these features.
Desert Renewable Energy Conservation Act – BLM	
Habitat Conservation Plan/Natural Communities Conservation Plan and a BLM Land Use Plan Amendment covering both public and private lands across seven counties, including Kern County.	**Yes.** The project would include **LAND-3** which would require an application for Transportation and Utility Systems and Facilities on Federal Lands (SF-299) to ensure compliance with the DRECP.
State	
California Endangered Species Act (Fish and G. Code, §§ 2050 to 2098)	
Species listed under this act cannon be “taken” or harmed, except under specific permit.	**Yes.** The applicant is seeking take coverage for western Joshua tree, Crotch’s bumble bee, and western burrowing owl through the in lieu permitting process to ensure compliance with CESA. The additional implementation of **BIO-1** through **BIO-23** would further ensure that impacts to state-listed species are less than significant.
Fully Protected Species (Fish and G. Code, §§ 3511, 4700, 5050, and 5515)	
Lists animals species that are fully protected in California and states that these species may not be “taken” or possessed at any time and no provision of this code or any other law shall be construed to authorize the issuance of permits or licenses to take any fully protected species. However, California Senate Bill 147 (SB 147), passed in July 2023, authorizes CDFW to issue permits for the incidental take of fully protected species for certain projects, including renewable energy.	**Yes.** Fully-protected species with the potential to occur within the project area include golden eagle, California condor, ringtail, and desert kit fox. The implementation of **BIO-1** through **BIO-10** and **BIO-17** through **BIO-22** would reduce impacts to less than significant and ensure compliance with Fish and Game Code sections 3511, 4700, 5050, and 5515.

TABLE 5.2-14 CONFORMANCE WITH APPLICABLE LORS	
Migratory Birds (Fish and G. Code, §§ 3503, 3503.5, 3513, and 3800)	
Makes it unlawful to take, possess, or destroy any birds of prey or to take, possess, or destroy the nest or eggs of any migratory bird.	**Yes.** The project would include **BIO-1** through **BIO-10** and **BIO-16** through **BIO-20** to reduce impacts to resident and migratory birds and ensure compliance with Fish and Game Code sections 3511, 4700, 5050, and 5515.
Furbearing Mammals (Fish and G. Code, §251.1 and Title 14 §460)	
Contains regulations for taking furbearing mammals, including prohibiting the harassment or unapproved take of furbearing mammals, including fisher, American badger, Sierra Nevada Mountain beaver, Pacific marten, and Sierra red fox.	**Yes.** The project would include **BIO-1** through **BIO-10** and **BIO-22** to reduce impacts to fur-bearing mammals, specifically American badger, and ensure compliance with Fish and Game Code section 251.1 and Title 14 §460.
Native Plant Protection Act (Fish and G. Code, §§ 1900 et seq.)	
Designates state rare and endangered plants and provides specific protection measures for identified populations. The Act also prohibits the take of rare and endangered native plants with exceptions for agricultural and nursery operations, emergencies, or in proper coordination with CDFW under specific circumstances.	**Yes.** Western Joshua tree is the only state rare or endangered plant occurring in the project area. The applicant will seek take coverage under the in lieu permitting program. The additional implementation of **BIO-1** through **BIO-12** would ensure that impacts to western Joshua trees are reduced to less than significant and ensure compliance with Fish and Game Code sections 1900 et seq.
California Desert Native Plant Act (California Food and Agriculture Code §§ 80001 – 80201)	
Protects California native desert plants from unlawful harvesting on both public and privately owned lands.	**Yes.** The project is exempt from the act as a privately owned public utility.
Western Joshua Tree Conservation Act (Fish and G. Code, § 1927)	
Prohibits the importation, export, take, possession, purchase, or sale of any western Joshua tree in California unless authorized by CDFW.	**Yes.** Under **BIO-12,** the project owner would seek take under the in lieu permitting program to ensure compliance with the WJTCA.
Porter-Cologne Water Quality Control Act (California Water Code Division 7)	
Directs responsibility to RWQCBs for granting Waste Discharge Requirements (WDRs) or National Pollutant Discharge Elimination System (NPDES) permits for discharges to waters of the state. The Act also establishes water quality objectives to protect the beneficial uses of surface and groundwater resources.	**Yes.** The project owner would obtain the appropriate WDRs or NPDES permits through the LRWQCB prior to impacting and jurisdictional features to ensure compliance with the Porter-Cologne WQCA. The additional implementation of **BIO-24** which provide conditions, such as installation of BMPs to control erosion and sedimentation, refueling requirements, and weed control, would further reduce impacts to these features.
California Lake and Streambed Alteration Notification/Agreement (Fish and G. Code, § 1602)	
Prohibits alteration of any water body meeting the CDFW jurisdictional requirements of the CFGC without the appropriate permits.	**Yes.** The project owner would seek coverage for impacts to CDFW jurisdictional streambeds through the in lieu permitting program to ensure compliance with CFGC § 1602. The additional implementation of **BIO-24** provides conditions, such as installation of BMPs to control erosion and sedimentation, refueling

TABLE 5.2-14 CONFORMANCE WITH APPLICABLE LORS	
	requirements, and weed control, would further reduce impacts to these features.
Local	
Kern County General Plan – Land Use, Open Space, and Conservation Element (Threatened and Endangered Species)	
Policy 27: Threatened or endangered plant and wildlife species should be protected in accordance with state and federal laws. Policy 28: The County should work closely with state and federal agencies to assure that discretionary projects avoid or minimize impacts on fish, wildlife, and botanical resources. Policy 29: The County will seek cooperative efforts with local, state, and federal agencies to protect listed threatened and endangered plant and wildlife species using conservation plans and other methods promoting management and conservation of habitat lands. Policy 30: The County will promote public awareness of endangered species laws to help educate property owners and the development community of local, state, and federal programs concerning endangered species conservation issues. Policy 32: Riparian areas will be managed in accordance with the USACE and the CDFW rules and regulations to enhance the drainage, flood control, biological, recreational, and other beneficial uses while acknowledging existing land use patterns. Measure Q: Discretionary projects shall consider effects to biological resources as required by CEQA. Measure R: Consult and consider the comments from responsible and trustee wildlife agencies when reviewing a discretionary project subject to CEQA. Measure S: Pursue the development and implementation of conservation programs with state and federal wildlife agencies for property owners desiring streamlined endangered species mitigation programs.	**Yes.** The project would include **BIO-1** through **BIO-24** to ensure that impacts to threatened and endangered plants and wildlife and other sensitive biological resources are reduced and ensure compliance with the Kern County General Plan – Land Use, Open Space, and Conservation Element.
Kern County General Plan – Energy Element (Importance of Energy to Kern County)	

TABLE 5.2-14 CONFORMANCE WITH APPLICABLE LORS	
Policy 8: The County should work closely with local, state, and federal agencies to assure that energy projects (both discretionary and ministerial) avoid or minimize direct impacts to fish, wildlife, and botanical resources, wherever practical. Policy 9: The County should develop and implement measures which result in long-term compensation for wildlife habitat, which is unavoidably damaged by energy exploration and development activities.	**Yes.** The project would include **BIO-1** through **BIO-24**, which include measures to reduce impacts to biological resources and provide long-term compensatory mitigation for wildlife habitat, thus ensuring compliance with the Kern County General Plan – Energy Element.
Rosamond Specific Plan – Open Space/Conservation Element	
Goal 3: To maintain open space qualities of the plan area.	**Yes.** The project would include **BIO-1** through **BIO-24**, which include measures to provide long-term compensatory mitigation to maintain open space surrounding the project area at to ensure compliance with the Rosamond Specific Plan – Open Space/Conservation Element.
Willow Springs Specific Plan – Resource Element	
Policy 3: To ensure compliance with applicable state and federal laws and to protect the biological resources present in the Specific Plan area. Measure 15: Where possible, project development within the Specific Plan Update area shall be designed to avoid displacement or destruction of western Joshua tree habitat, to the satisfaction of the Kern County Agricultural Commissioner's Office. Areas adjacent to the woodland shall have a 50-foot setback from the western Joshua tree plants. Within that setback, a native plant cover should be restored to natural habitat values to serve as a buffer, if such plant cover is not present. Measure 16: A Joshua Tree Preservation and Transportation Plan shall be developed by the applicants for each parcel where Joshua trees are located on site. The plan shall be submitted to the Kern County Agricultural Commissioner's Office for review and approval prior to grading permit issuances. Measure 21: Whether desert tortoises occur on site or not, garbage shall be hauled to a facility where it is immediately buried and not left above ground where ravens can congregate. If garbage service is not available, County road	**Yes.** The project would include **BIO-1** through **BIO-24**, which include measures to reduce impacts to biological resources, including western Joshua tree, desert tortoise, and potentially jurisdictional drainage features, thus ensuring compliance with the Willow Springs Specific Plan – Resource Element.

TABLE 5.2-14 CONFORMANCE WITH APPLICABLE LORS	
maintenance or other utility services shall be made contingent upon parcel owners removing visible trash on their property. The objective of these measures is to minimize the potential for increased raven predation of tortoises in the region subsequent to development. Measure 23: A Joshua Tree Preservation and/or Transplantation Plan shall be developed by the applicants of discretionary projects for each parcel where Joshua trees are located on site. The plan shall be submitted to the Kern County Agricultural Commissioner for review and approval prior to grading permit issuance. Measure 24: Prior to issuance of any grading permits for individual projects, individual project applicants shall consult with the Regional Water Quality Control Board, state Department of Fish and Game and/or U.S. Fish and Wildlife Service, and the Army Corps of Engineers to identify potentially required permits. Compliance with this measure will be confirmed through the submittal of a letter (in conjunction with submittal of grading permit applications) to the County demonstrating compliance with the above-mentioned agencies. Measure 25: Prior to the issuance of grading permits, individual project applicants shall obtain all appropriate permits as determined necessary by the Regional Water Quality Control Board, U.S. Fish and Wildlife Service, state Department of Fish and Game, and he Army Corps of Engineers.	
Willow Springs Specific Plan – Biological Resource Element	
Policy 1: Where possible, development shall be designed to avoid displacement of sensitive species. Policy 2: Focused surveys shall be conducted by a County-approved biologist to establish the presence or absence of sensitive species. Policy 3: Initial development within the Update area shall, when possible, be directed towards previously impacted areas (i.e., agricultural fields). Measure 2: Prior to tentative tract map approvals or additional development plan	**Yes.** The project would include **BIO-1** through **BIO-24**, which include measures to reduce impacts to biological resources, including western Joshua tree, desert tortoise, and potentially jurisdictional drainage features, thus ensuring compliance with the Willow Springs Specific Plan – Biological Resource Element.

TABLE 5.2-14 CONFORMANCE WITH APPLICABLE LORS	
approvals, focused surveys shall be conducted by a qualified biologist (subject to the approval of the California Department of Fish and Game and the U.S. Fish and Wildlife Service) to establish the presence or absence of sensitive plant or wildlife species on the tract. Should sensitive species be present, applicable mitigation shall be implemented per federal, state, and local Endangered Species Protection regulations, as determined necessary by the County Agricultural Commissioner. Measure 3: Initial development within the Willow Springs Specific Plan Update area shall, when possible, be directed towards previously impacted areas (i.e., agricultural fields). Portions of the plan area with native vegetation, especially along the northern and western borders, shall be developed in the later phases of project buildout. Measure 4: Project site plans shall be encouraged by the County Agricultural Commissioner to be designed to preserve shrub communities where the Le Conte's thrasher is known to be located, in accordance with state and federal regulations. Measure 5: Although there is a low potential for the occurrence of desert tortoise in the Specific Plan area, desert tortoises may occur on site. If tortoises are discovered during subsequent surveys, the state Department of Fish and Game and the U.S. Fish and Wildlife Service shall be contacted immediately, and appropriate mitigation shall be developed and implemented prior to resumption of development activities.	
Kern County Zoning Ordinance	
Objective 2: Promote a reduction in unnecessary light intensity and glare, and to reduce light spillover onto adjacent properties. Objective 3: Protect the ability to view the night sky by restricting unnecessary upward projections of light.	**Yes.** The project would include **VIS-3** and **BIO-7** to reduce impacts associated with glare and nighttime lighting and ensure compliance with the Kern County Zoning Ordinance.

5.2.4 Comments and Responses on the Preliminary Staff Assessment

This section presents the written comments related to Biological Resources received on the Preliminary Staff Assessment during the public review period. Each of the comments has been identified and summarized followed by staff's response to each comment. In addition, some of the comments requested or suggested revisions should be made to the content of the Staff Assessment or specific conditions of certification to address a particular comment or provide further clarification. Where revisions to the language of the Staff Assessment have been made, the response to comment identifies that the language has been updated.

Defenders of Wildlife and California Native Plant Society (TN 264240)

TN 264240 Comment 1: Climate Resiliency

The commenter suggests that the location of the project should be avoided based on its climate resiliency ranking as designated by CDFW's Areas of Conservation Emphasis (ACE) project. The ACE program includes examining the probability of a location to function as a climate refugia, where the area is relatively buffered from the effects of climate change..."

The commenter indicated that the ACE data is utilized by the CEC to provide screening during state electricity planning. As illustrated in the figure provided by the commenter, the project is located within an area with an ACE ranking of 4, which is one of the highest ACE scores and is used as an exclusion for statewide modeling and planning to avoid lands that have a high potential to act as climate refugia.

The commenter states that it is challenging and costly to mitigate the loss of land that serves as a climate refugia when a project is located within a high ACR ranking area.

The commenter suggests that the PSA fails to analyze the importance of the project location as a climate change refugia with respect to species resilience, including but not limited to, Crotch's bumble bee, desert kit fox, Mohave ground squirrel, and Swainson's hawk, thus presenting an incomplete assessment of long-term impacts.

Response to TN 264240 Comment 1: The ACE program referenced by the commenter is a non-regulatory guidance document that is used as a broad tool to provide information for planning and climate resiliency. The program states that ACE does not replace the need for site-specific evaluation of biological resources and should not be used for regulatory purposes. Staff is aware of the ACE program and conducted an independent review of baseline conditions for the Staff Assessment.

Staff considered the location of the project site and adequately disclosed potential impacts to sensitive plant and wildlife species in the analysis including but not limited to, Crotch's bumble bee, desert kit fox, Mohave ground squirrel, and Swainson's hawk. As described in Section 5.2.2 (Environmental Impacts), the Staff Assessment presented

a detailed evaluation of impacts to these and other species and recommended a series of mitigation measures or conditions of certification to avoid, minimize, and mitigate impacts on these species. In addition, staff recommended the acquisition of mitigation lands to off-set habitat loss at the project site. It should be noted that all mitigation lands would be approved by the CEC Compliance Project Manager (CPM) prior to acquisition, which would ensure they adequately conserve lands that are equal to or better than those disturbed by the project.

Staff notes that in its June 16, 2025, comment letter on the PSA, CDFW concurred with CEC staff's overall analysis and mitigation measures and did not raise the ACE guidance as an issue.

No revisions to the Staff Assessment have been made in response to this comment.

TN 264240 Comment 2: Biological Confidential Data

The commenter suggests that it is impossible to fully analyze all impacts on special-status species when the mapped locations and other biological information are kept confidential.

The commenter states that biological data, location and information should be available to the public and other stakeholders to enable review of the scientific evidence and adequacy of avoidance, minimization, and mitigation measures, including the obtainment of incidental take permits.

The commenter states that, while CEQA statutes allow for tribal cultural resources to be made confidential, there is no language allowing for other types of information to be made confidential.

The commenter states that withholding information needed to understand or meaningfully comment on the PSA conflicts with the legislative intent of CEQA.

The commenter states that disclosing the locations of sensitive resources is essential to understanding whether developing an alternative that avoids sensitive resources while achieving the majority of project objectives would be feasible.

The commenter requests that confidential biological resource documents be made available for public review and comment. The commenter suggests that the COCs that rely on confidential documents be revised and supported by publicly available scientific information and research.

Response to TN 264240 Comment 2: Staff used both publicly available sources such as CNDDB, iNaturalist, and regional biological surveys, as well as confidential data, to inform the biological resources analysis in the Staff Assessment. Confidential data were used in accordance with agency protocols to protect sensitive species from potential harm, including collection, disturbance, or habitat degradation.

The CEC granted confidentiality for specific biological figures under California Code of Regulations, title 20, section 2505(a)(3)(A), based on a reasonable claim that disclosure would risk harm to sensitive resources and consistent with requirements set forth by CDFW for biological resources maps obtained from the California Natural Diversity Data Base (CNDDB). The CNDDB licensing agreement, https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=27285&inline, identifies the map scale that can be publicly released. CEC staff conferred with CDFW for each CNDDB map submitted by the applicant and made public versions of those maps, where appropriate.

The Staff Assessment contains sufficient publicly available information to support evaluation of project impacts, alternatives, and mitigation measures. Conditions of Certification that rely on confidential data are supported by publicly disclosed findings and will be subject to agency review and approval.

No revisions to the Staff Assessment have been made in response to this comment.

TN 264240 Comment 3: Noise Impacts

The commenter states that the PSA inadequately assesses noise impacts during construction and operation on wildlife, particularly sensitive avian species.

The commenter states that the PSA only provides mitigation for noise impacts to burrowing owls, which requires a 3:1 mitigation ratio that will offset impacts to owls that may abandon habitat in adjacent areas due to noise and ground vibration.

The commenter states that it is difficult to determine if the proposed 3:1 ratio is adequate to offset all impacts, including noise to burrowing owls.

The commenter states that the PSA fails to provide mitigation for any other species explicitly related to noise. The commenter states that the PSA does not provide seasonal restrictions limiting controlled detonation activities.

The commenter states that enforceable mitigation measures aimed at decreasing noise and vibration impacts on wildlife species were recommended by CDFW in their scoping comments. The commenter requests adhering to the CDFW recommendations. The commenter specifically requests limiting construction activities to non-nesting periods for burrowing owl and Swainson's hawk to minimize construction-related noise impacts.

The commenter recommends that the Final Staff Assessment (FSA) examine the possibility of designing and installing effective noise barriers.

Response to TN 264240 Comment 3: The Staff Assessment disclosed the impacts of noise and vibration to both common and sensitive wildlife and does not limit the discussion to a particular species. This included a general discussion of construction and operational impacts (page 5.2-144-145), an analysis of noise impacts on common species used to further illustrate the noise and vibration effects from construction and

controlled detonations (pages 5.2-159-162), and specific discussion associated with special status wildlife. The analysis describes how noise and vibration may impact common and special status species and concludes that the project will likely displace some species of wildlife in adjacent habitat.

In regard to impacts to adjacent lands, staff considered the project buffer on a species-specific basis and considers the type of resource, distribution, and the species or communities' tolerance of disturbance to direct and indirect impacts. Project impacts include an analysis of sensitive species that are directly lost on the project site or indirectly disturbed on lands adjacent to the site. As stated in the Staff Assessment, to offset these impacts the staff recommends a series of conditions of certification that would protect or mitigate impacts on wildlife from exposure to noise and vibration. These conditions include, but are not limited to, limiting controlled detonations to daylight hours (See **NOISE-6**), implementing general surveys and avoidance measures (See **BIO-7** (General Impact Avoidance and Minimization Measures)), conducting pre-construction surveys and monitoring for nesting birds, small mammals, and other species (See **BIO-13** through **BIO-23**), and providing compensatory mitigation lands to offset habitat loss on the project site and in adjacent areas (See **BIO-14**). In addition, **BIO-17** (Nesting Bird Avoidance and Minimization Measures) requires monitoring of nests and the implementation of non-disturbance buffers.

The 3:1 ratio proposed by staff is also adequate to mitigate impacts to a wide variety of species and is not limited to burrowing owl or Crotch's bumble bee. Staff considered a wide range of biotic and abiotic factors when developing the mitigation approach for burrowing owls and other species. These include, but are not limited to, the existing vegetation communities; annual plant composition; percentage and distribution of weeds; level of site disturbance; soil composition; proximity to adjacent lands supporting burrowing owls; and proximity to developed lands such as Highway 14 and Sierra Highway. Staff took into consideration the number and distribution of owls near the project site and noted no active burrows were found on the project site; the scale of the project; the project's location; the site's importance for connectivity and regional movement and gene flow; and the cumulative effects of other projects.

No revisions to the Staff Assessment have been made in response to this comment.

TN 264240 Comment 4: BUOW Passive Relocation

The commenter notes that CDFW does not consider burrowing owl passive relocation a valid avoidance, minimization, or mitigation measure and recommends this be noted in the Final EIR.

Response to TN 264240 Comment 4: The Staff Assessment notes that any action in harm owls to burrowing owl due to direct impacts would constitute take under CESA. That would include passive relocation. However, the applicant has sought take coverage, which would authorize the passive relocation of any owls should they be present on the project site. Therefore **BIO-19** (Burrowing Owl Impact Avoidance,

Minimization, and Mitigation Measures for Take), which includes specific survey, monitoring, and relocation methods, would be consistent with CESA.

TN 264240 Comment 5: Protocol-Level Surveys Conducted Simultaneously

The commenter asserts that combining BUOW, rare plant, and desert tortoise surveys compromises data quality, and recommends separate, species-specific protocol-level surveys per agency guidelines.

Response to TN 264240 Comment 5: Staff agree that conducting individual species-specific surveys would likely increase the ability to detect sensitive plants and wildlife. However, based on a review of the applicant's data and following a series of site visits conducted by staff, the survey methodology was adequate considering the location of the project.

TN 264240 Comment 6: Outdated Desert Tortoise Surveys

The commenter notes that April 2024 surveys are now outdated per CDFW/USFWS standards and requests new surveys be conducted within one year of project ground disturbance.

Response to TN 264240 Comment 6: The project area is located in an area with a low potential to support desert tortoise. Protocol surveys of the project site did not detect any potential burrows or desert tortoise sign. In addition, staff coordinated with the USFWS on the potential for desert tortoise to occur in this area. Based on the results of the surveys, agency coordination, and the location of the WRESC, staff consider the surveys adequate at this time. However, staff recommends **BIO-16** (Desert Tortoise Avoidance Measures) which would require conducting additional surveys prior to ground disturbance to ensure impacts to this species are avoided.

TN 264240 Comment 7: Mohave Ground Squirrel Surveys

The commenter supports staff's conclusion that Mohave ground squirrel (MGS) may be present and disagrees with the applicant's claim of absence. The commenter strongly recommends that updated, protocol-level surveys be completed before the FSA. Early survey completion would allow the impact analysis to be updated and appropriate mitigation measures included if MGS is detected.

Response to TN 264240 Comment 7: Staff acknowledges that the surveys for this species are dated but notes that no Mohave ground squirrels were observed or detected during live- and camera-trapping components of the 2023 and 2024 protocol-level surveys conducted by the applicant. The project site is within the southern portion of the species' historic range where population densities have historically been low and entirely absent from the southwestern portion of the range since at least the mid-1990s (Leitner 2021). Staff is requiring updated surveys of the project site if work should commence prior to the first trapping season of 2026 and the project owner has committed to conducting late season surveys of the project site this year. However, the

Staff Assessment is adequate, and updated surveys would not be required prior to the issuance of the Final Staff Assessment.

TN 264240 Comment 8: Special-Status Plant Surveys

The commenter finds plant survey documentation incomplete and lacking required detail per updated CDFW protocols. They request a comprehensive species list, more robust methods, and evaluation of species potentially overlooked in the desktop review.

Response to TN 264240 Comment 8: The PSA contains adequate information to assess potential impacts to sensitive plants. Although a compendium on all plants observed during the surveys was not included in the PSA this information was available to staff during the analysis. Staff also conducted an independent review of all applicant data which included an assessment of on-line plant databases, existing literature, and other technical documents for the region. In response to Mojave paintbrush and limestone dudleya, these plants are CRPR 4.3 species which are not typically afforded protection under CEQA. These species have a low potential to occur on the project site and were not detected during surveys conducted by the applicant. Therefore, the Staff Assessment provides adequate information for the purposes of CEQA.

TN 264240 Comment 9: Worker Environmental Awareness Program (WEAP)

The commenter recommends revising COC **BIO-5** to include the requirement that the WEAP be provided in the primary languages spoken by onsite workers.

Response to TN 264240 Comment 9: Staff concurs with the commenter and has revised the text of **BIO-5** Worker Environmental Awareness Program (WEAP).

TN 264240 Comment 10: Crotch's Bumble Bee Buffers

The commenter requests that COCs **BIO-13.6** and **BIO-13.8** be revised to increase the proposed 50-foot buffer around active Crotch's bumble bee nests to a 30-meter (98-foot) buffer for consistency with CDFW scoping comments.

Response to TN 264240 Comment 10: The applicant has requested take coverage under CESA for this species and the conditions of certification were developed in consultation with CDFW. Therefore, the existing 50-foot buffer is adequate and conforms with the requirements of CESA.

TN 264240 Comment 11: Wildlife Exclusion Fencing

The commenter recommends that specifications for the wildlife exclusion fence required under COC **BIO-16.1** be finalized within the FSA.

Response to TN 264240 Comment 11: The specific requirements of fencing are described in **BIO-16** (Desert Tortoise Avoidance Measures) in Item 1 (Surveys). However, additional text that describes the type of fencing has been added to Item 2 (Desert tortoise fencing) for clarity.

TN 264240 Comment 12: Swainson's Hawk Buffers

The commenter suggests revising the 0.25-mile no-disturbance buffer around any active Swainson's hawk nests proposed under COC **BIO-20.4** to a 0.5-mile buffer recommended in the CDFW scoping comments.

Response to TN 264240 Comment 12: Staff concur with this recommendation and the buffer listed under **BIO-20, Item 4** (Swainson's Hawk Avoidance and Minimization Measures) has been increased to 0.5-miles.

TN 264240 Comment 13: Swainson's Hawk Compensatory Mitigation

The commenter states that the existing 5,432 acres of compensatory mitigation are insufficient to mitigate for loss of suitable habitat for Swainson's hawk, considering the large amount of acreage being developed. The commenter requests the FSA include compensatory mitigation for impacts to Swainson's hawk habitat at a minimum of a 2:1 ratio for nesting habitat impacted within a five-mile radius of active nests within the last five years.

The commenter states that compensatory mitigation for the loss of suitable Swainson's hawk nesting trees should include replacement of appropriate native tree species at a 3:1 ratio.

The commenter states that compensatory mitigation lands must contain suitable habitat for Swainson's hawk and be managed in perpetuity by a qualified conservation organization as defined by California Civil Code Section 815.3. The commenter suggests that, alternatively, credits could be purchased in a CDFW-approved mitigation bank.

Response to TN 264240 Comment 13: The Staff Assessment disclosed potential impacts to foraging habitat for this species and proposed **BIO-14** (Habitat Management Land Acquisition for Crotch's Bumble Bee and Western Burrowing Owl), which requires the project owner to mitigate for impacts to these species and to obtain mitigation lands to replace habitat lost from the development of the project and provide full mitigation as required by CESA. CESA requires that project impacts that result in take include all impacts on the species that result from any act that would cause the proposed take. Land acquisition that supports habitat for the species is one component of mitigation that is used to offset take. This requirement would ensure that foraging habitat for Swainson's hawk is also preserved in the broader region. In addition, although no nest trees currently utilized by this species would be removed, all impacts to western Joshua trees would be fully mitigated by the implementation of revised COC **BIO-12** (Western Joshua Tree Avoidance, Minimization, and Mitigation Measures). Based on the distance from known nests, the location of the project site, and the proposed mitigation, impacts to this species would be fully avoided or mitigated.

TN 264240 Comment 14: Desert Kit Fox Buffers

The commenter requests clarification on whether the 250-foot avoidance buffer for desert kit fox dens proposed under COC **BIO-22.2** was developed in consultation with

USFWS. The commenter recommends coordination with USFWS to ensure that the proposed buffers are adequate.

Response to TN 264240 Comment 14: The desert kit fox is not offered protection under the federal ESA. For the purposes of the Staff Assessment, this species is being treated as subject to protections in accordance with the regulations identified in California Code of Regulations, Title 14, section 460. Staff disclosed potential impacts to this species and minimization and avoidance measures were developed in coordination with CDFW.

TN 264240 Comment 15: Special-Status Plants

The commenter states that COC **BIO-12** should include species-specific mitigation plans for the special-status plant species that are anticipated to be impacted by project activities rather than defer the development of specific mitigation measures to post approval.

The commenter states that, if compensatory mitigation is needed, COC **BIO-12** should include language to require that sufficient lands for compensatory mitigation be identified prior to ground disturbance for any known special-status plant occurrences of special-status plants, or for occurrences discovered during pre-implementation of surveys, that would not be avoided by project impacts.

The commenter states that any offsite introduction efforts of special-status plant species should also require the identification of sufficient suitable habitat to meet mitigation needs prior to ground disturbance.

The commenter states that any area proposed for the introduction of a special-status species should be surveyed to ensure that the site contains proper conditions for successful introduction (i.e., soil type, hydrology, aspect, elevation) and is free of invasive species that could inhibit establishment.

The commenter states that any offsite land acquisitions or introductions should be managed and monitored for a minimum of five years to ensure that mitigation is meeting clearly defined success criteria. The commenter states that management may include, but not be limited to, weed suppression, irrigation, and protection of introduced species from herbivory. The commenter states that, after five years of management, yearly monitoring should occur during years six through eight. The commenter suggests that, if populations are self-sufficient and are meeting success criteria for three consecutive years post management, the monitoring should occur every other year throughout the life of the project. The commenter states that if, at any point, monitoring shows that success criteria is not being met then management should resume to every other year after yearly monitoring shows stable populations that meet success criteria for three consecutive years. The commenter requests that monitoring reports be made publicly available and easily accessible. The commenter states that the

project owner should provide financial assurances for all management and monitoring requirements.

Response to TN 264240 Comment 16: BIO-12 (Special-Status Plant Avoidance Measures) was developed to provide a variety of options to mitigate impacts to sensitive plants. However, staff agrees that the project owner shall submit the Compensatory Management Plan to the CPM for review and approval prior to ground disturbance. COC **BIO-12** has been renumbered as **BIO-11** to reflect the creation of a new, separate measure specifically addressing the western Joshua tree, which is now designated as **BIO-12**. The text of **BIO-11** (Special-Status Plant Avoidance Measures) has been updated to reflect this comment. These revisions have been made to ensure that western Joshua tree mitigation under the Western Joshua Tree Conservation Act can be assessed separately from other special-status plants. Staff does not concur that the impacts to these plants warrant the level of long term monitoring requested by the commenter as the condition follows the language of the Western Joshua Tree Conservation Act.

TN 264240 Comment 17: Integrated Weed Management and Invasive Species

The commenter states that the development of the Integrated Weed Management Plan and Invasive Species Management Plan should not be deferred and should be made available for public review prior to project approval.

The commenter states that these management plans should include active monitoring and rapid response to invasive plant species and revegetation of disturbed areas with locally sourced and genetically appropriate materials.

Response to TN 264240 Comment 17: The Integrated Weed Management Plan and the Invasive Species Management Plan are required under **BIO-9** and **BIO-10** and are appropriately finalized after project approval because both plans rely on actual on the ground conditions near the time of construction to maximize effectiveness of the plans. As indicated in the Verification, the CEC CPM, in coordination with CDFW, would review and approve the plans and would ensure compliance with the approved plans. While final plan approval would be after project certification, both conditions contain ample details, definitions, performance criteria, metrics, and other plan elements to apprize the public as to the nature of these plans and how they support project mitigation. Deferred mitigation relates to an agency either determining impacts after project approval or relying on a mitigation measure of unknown efficacy in concluding that a significant impact will be mitigated to a less than significant level. Staff disagrees that these standard conditions are deferred mitigation or are inconsistent with CEQA.

Center for Biological Diversity (TN 264342)

TN 264342 Comment A: The PSA fails to reflect the Applicant's most recent preferred transmission line route

The commenter states that the Project Description (page 3-6) and Appendix C provided in the PSA rely on outdated maps that do not reflect the applicant's most recent preferred gen-tie route. The commenter further states that the PSA's omission of the correct preferred transmission line route raises concerns regarding the adequacy of the project description, including the delineation of the "project area" and "study area", as well as the accuracy and completeness of the impact analysis.

The commenter requests that the PSA be revised to incorporate the applicant's current preferred and optional gen-tie routes and ensure that the environmental analysis evaluates the full range of potential impacts associated with these alignments, and, where necessary, identify and propose feasible minimization and mitigation measures.

Response to TN 264342 Comment A: Staff acknowledge there are two small areas identified in the applicants updated preferred alternatives identified by the commenter. These deviations are located just west of Mojave Tropico Road and where the proposed right of way transitions along Rosamond Boulevard. However, these areas consist of minor deviations and were considered by staff in the analysis. In addition, staff evaluated all proposed access routes and gen-tie alignments which were field verified by staff prior to conducting the analysis.

TN 264342 Comment B: The PSA fails to accurately identify and analyze impacts to Joshua tree woodland

The commenter states that the applicant appears to have adopted an ambiguous and unsupported definition of Joshua tree woodland, characterizing it as limited to dense stands of Joshua trees with little to no other dominant or codominant vegetation (page 5.2-6). The commenter states that this approach risks underrepresenting the true extent of Joshua tree woodland in the project area and that the analysis is deficient to the extent that Joshua tree woodland was identified based solely on modeled habitat data.

The commenter states that a defensible assessment must be grounded in site-specific vegetation mapping and quantified tree density data to accurately determine the number of acres that would be subject to permanent and temporary impacts. The commenter states that the PSA is unclear in providing the number of acres of Joshua tree woodland that would be affected by project activities. The commenter states that this makes it impossible to determine whether the proposed avoidance, minimization, and mitigation measures are sufficient to reduce impacts to less than significant levels.

Response to TN 264342 Comment B: Staff considered the mapping conventions used by the applicant and adequately assessed potential impacts to Joshua trees and potential Joshua tree woodland in the PSA. As disclosed in the PSA impacts to Joshua tree woodland could occur should one of the optional alignments be used. For clarification staff have included estimates for potential impacts that range from approximately 0.5 acres to 2 acres depending on the width of the road and which alternative alignment is used. In addition, staff's proposed mitigation **BIO-12** (Western

Joshua Tree Impact Avoidance, Minimization, and Mitigation Measures) would require an accounting of any trees taken and would require full mitigation for western Joshua trees. Therefore, the mitigation is adequate to offset impacts from the project.

TN 264342 Comment C: The PSA fails to adequately identify, avoid, minimize, and mitigate impacts to individual western Joshua trees

1. Regulatory context and proposed revisions to the PSA's narrow description of the WJTCA. The commenter states that the PSA should be updated to accurately reflect the full scope of the WJTCA which should include the express reference to parts or products of the tree.

2. WJT census data gaps undermine WJTCA compliance. The commenter notes that the WJT census data appears incomplete, even where gen-tie alignment where right-of-entry was granted. The commenter also states that ground disturbance areas (e.g. pull and tensioning sites), are likely to impact unmapped WJTs.

The commenter states that without complete baseline data, it is not possible to determine the full extent of potential impacts or to ensure that the project complies with statutory obligations to avoid, minimize, and mitigate impacts to WJT.

3. The PSA fails to demonstrate adequate avoidance or minimization. The commenter notes that the Applicant's 2024 verification census recorded 3,970 WJTs; however, it also states this figure likely underrepresents the actual number of WJTs present based on the data gaps described under Comment 2.

The commenter refers to CDFW's initial comments that a 290-foot buffer for WJT is warranted to avoid direct impact to individual trees and seedbanks. The commenter refers to CDFW literature recommending a 50-foot or 25-foot buffer from WJTs to avoid root zone damage, depending on tree height. The commenter states that the PSA's fails to account for WJTs that would be preserved in place but still subject to potential impacts and represents a significant gap in compliance with the WJTCA's mitigation mandate. The commenter states that the PSA has not demonstrated optional berm and laydown, staging, and parking areas, and that these components could not be sited to avoid WJT impacts. The commenter states that the PSA should be updated to reflect recommended buffer distances and address broader ecological impacts to pollinators, seed dispersers, and supporting plant communities critical to WJT recruitment and long-term viability.

Response to TN 264342 Comment C: Staff concurs supplemental surveys for Western Joshua tree should be required and has revised the text of **BIO-12** (Western Joshua Tree Avoidance, Minimization, and Mitigation Measures) to a specifically address impacts to western Joshua tree. The revised **BIO-12** includes a requirement for updated surveys prior to ground disturbance to account for newly sprouted or missed trees. In addition, any area that has not been subject to surveys within the past three years would require additional surveys prior to ground disturbance.

CDFW's recommended buffers are included in **BIO-12**. The PSA provided a comprehensive analysis in consultation with CDFW identifying impacts to Western Joshua trees and developing mitigation consistent with the WJTCA and incorporating the requirements of an incidental take permit. This mitigation and incidental take package is set forth in **BIO-12** and includes multiple strategies to support the thriving of area Western Joshua trees including surveying, avoidance, relocation, prescribed buffers, compensation, and other measures. The Staff Assessment also analyzed a reasonable range of alternatives consistent with CEQA.

TN 264342 Comment D: The PSA fails to fully analyze and substantiate wildlife impact avoidance measures for the surface reservoir

The commenter states that the PSA fails to fully analyze the effectiveness, enforceability, or long-term adequacy of COC **BIO-7** in reducing impacts from the surface reservoir to a less than significant level. The commenter states that the PSA lacks performance standards, design details, and adaptive measures for reservoir-related features.

The commenter states that the potential for the reservoir to act as a long-term raven or other predator subsidy is acknowledged in the PSA but not meaningfully evaluated. The commenter states that the PSA lacks any discussion of monitoring protocols specific to wildlife interactions with the reservoir (e.g., raven and coyote presence, wildlife mortality, reservoir access attempts) or any adaptation management triggers that would require mitigation refinement if the reservoir contributes to increased wildlife conflict.

The commenter states that the PSA should be revised to specify standards, require long-term monitoring, and evaluate alternatives to further reduce or offset wildlife impacts. The commenter states that without these revisions, the PSA's treatment of the surface reservoir remains speculative and insufficient to ensure long-term protection of wildlife species in and around the project area.

Response to TN 264342 Comment D: The Staff Assessment described that the 600-acre foot hydrostatic compensating surface reservoir with the interlocking shape floating cover could entrap wildlife species or act as a raven subsidy in several locations. As presented in the analysis, the applicant indicated in Data Request DR-146 that in addition to the floating cover, other wildlife prevention measures include the installation of a perimeter fence/walls and rescue ramps. This fence/wall would prevent wildlife from accessing the reservoir. For those few wildlife species that manage to enter the reservoir, escape ramps would be placed periodically around the outer edge of the reservoir to ensure that wildlife species have a way to escape the reservoir (GA 2023c). Staff has included specific measures in **BIO-7** (General Impact Avoidance and Minimization Measures) that include ensuring that appropriate fencing and wildlife ramps are installed in the facility to reduce entrapment and limit access to the reservoir.

However, staff concur with the commenter that additional specification should be included, and **BIO-7** has been revised to require the preparation of a Reservoir

Management Plan to ensure that wildlife entrapment measures are reviewed and approved by the CPM. Evaporation ponds are common at industrial facilities, including other CEC jurisdictional facilities, and the strategies to prevent wildlife access and ultimately injury are well understood. The specific measures from the standard menu of options would be described in the Reservoir Management Plan with details such as fencing height, type of fencing material (e.g., privacy slats, mesh size) and number and location of wildlife escape ramps. The plan would be used to ensure implementation of measures and compliance.

California Department of Fish and Wildlife (CDFW) (TN 264309)

TN 264309 Comment 1: Project Description

CDFW addresses concerns regarding the installation of a floating cover at the 600-acre-foot surface reservoir and potential wildlife entrapment. The commenter recommends that submittal of a Reservoir Management Plan to the CEC CPM and CDFW for review and approval prior to the installation of the reservoir cover be incorporated into COCs in the FSA. The commenter suggests that the plan include details regarding the design of the floating cover and measures to be implemented to avoid and minimize any potential impacts to fish and wildlife resources, such as regular monitoring, appropriately sloped berms to allow for wildlife escape, and privacy slats within the perimeter fencing of the reservoir.

Response to TN 264309 Comment 1: Staff concurs with the commenter and has added a Reservoir Management Plan to the existing language to address potential wildlife entrapment impacts in **BIO-7** (General Impact Avoidance and Minimization Measures).

TN 264309 Comment 2: Streambed Alteration

The commenter (CDFW) does not concur with the applicant's determination that the project would not impact any streams regulated under Fish and Game Code, section 1602. The commenter does concur with CEC staff that additional site-specific information and field verification are required to determine if project activities would or would not impact areas subject to Fish and Game Code, section 1602. The commenter recommends that the applicant provide additional information, including updated stream mapping and detailed project design layouts, to facilitate this determination. If this additional information demonstrates that the project would result in impacts subject to Fish and Game Code, section 1602, the commenter requests that the impacts analysis and COCs are updated in the FSA to ensure compliance with Fish and Game Code, section 1602 and reduce any impacts to less than significant.

Response to TN 264309 Comment 2: The Staff Assessment disclosed the types of potential impacts to jurisdictional resources but concurs that the applicant must provide additional information regarding the nature of specific impacts on jurisdictional features such as if a culvert would be placed to allow safe vehicle or equipment passage over roadside drainages. While this specific information is not required to comply with CEQA,

this requirement is included as a component of **BIO-24** (Lake and Streambed Equivalency Conditions) to ensure consistency with Fish and Game Code, section 1602.

TN 264309 Comment 3: Western Joshua Tree

The commenter (CDFW) recommends that relevant COCs, including COC **BIO-12** are updated in the FSA to require the applicant to survey all portions of the project site that were not covered in the previously prepared WJT census reports, including all portions of the gen-tie alignment. The commenter states that the WJT incidental take permit should incorporate measures that avoid and minimize impacts to and the taking of WJT to the maximum extent practicable, including the submittal of a WJT Relocation Plan for approval by the CEC and CDFW. The commenter recommends that COC **BIO-12** be updated in the FSA to require the applicant to implement maintenance, monitoring, and reporting measures for relocated WJT for the three-year maintenance period consistent with requirements of CDFW's Western Joshua Tree Relocation Guidelines and Protocols (updated April 2025), or the most recent guidelines. The commenter notes that the PSA does not analyze potential project impacts to new WJT individuals, including any WJT stem or trunk that arises from the ground (e.g., resprouts) during or subsequent to project construction or operations. The commenter recommends that the FSA include analysis of the potential for new WJT individuals to occur within the project site and the COCs include details for avoidance, minimization, and mitigation for impacts to any new stems or trunks that are not included in the WJT CA census associated with adopted COCs. The commenter recommends that COC **BIO-12** be updated in the FSA to require the applicant to implement maintenance, monitoring, and reporting measures for relocated WJT for the three-year maintenance period consistent with requirements of CDFW's Western Joshua Tree Relocation Guidelines and Protocols (updated April 2025), or the most recent guidelines. The commenter recommends that the above-mentioned items be completed by the applicant and/or CEC staff for review and CDFW consultation prior to issuance of the FSA.

Response to TN 264309 Comment 3: Staff concur with the commenter that supplemental surveys for western Joshua tree should be required and has revised the text of **BIO-12** (Western Joshua Tree Avoidance, Minimization, and Mitigation Measures), to specifically address impacts to WJT. The revised **BIO-12** includes a requirement to provide updated surveys prior to ground disturbance to account for newly sprouted or missed trees. Staff notes this requirement would not be necessary prior to the issuance of the Final Staff Assessment because the existing mitigation framework can cover any additional trees that are discovered. Staff has required that additional surveys be conducted over the 5-year development phase of the project as part of **BIO-12**.

TN 264309 Comment 4: Water Resources

The commenter recommends that the FSA include specific COCs to ensure the project will comply with the Antelope Valley groundwater basin adjudication during construction and operation and comply with any directives from the Antelope Valley Watermaster Board regarding groundwater production or management.

Response to TN 264309 Comment 4: Please see **Section 5.16, Water Resources** for information related to drawing water from the adjudicated basin.

TN 264309 Comment 5: General Comment

The commenter recommends that the FSA require regular monitoring and evaluation of the success of the avoidance, minimization, and mitigation measures. The commenter recommends that the FSA include COCs requiring the applicant to provide an adaptive management plan for controlled detonations and nightwork activities to the CEC for review and approval. The commenter recommends that this plan include monitoring of controlled detonation activities to better inform future blast design and revisions to avoidance and minimization measures as necessary to mitigate impacts to biological resources not previously identified. The commenter suggests that the plan provides noise, vibration, and lighting thresholds and implements a system of monitoring to ensure that project activities do not exceed the identified thresholds.

Response to TN 264309 Comment 5: The Staff Assessment includes numerous conditions of certification that require regular monitoring, inspections, and reporting. These include, but are not limited to, monitoring for disturbance of general wildlife, nesting birds, and special-status species. The monitors also have the authority to halt construction and expand buffers to protect nesting birds and sensitive wildlife. In addition, **BIO-7** (General Impact Avoidance and Minimization Measures) includes specific measures to limit controlled detonations at night. However, staff has revised the text of **BIO-7** (General Impact Avoidance and Minimization Measures) to include specific monitoring of wildlife when controlled detonations occur.

California Unions for Reliable Energy (TN 264343)

TN 264343 Biological Resources Comment A: The PSA Fails to Adequately Analyze the Existing Environmental Setting for Biological Resources

The commenter states that the PSA's discussion of the existing environmental setting on and around the project site relies on surveys and studies provided by the applicant with respect to biological resources. The commenter states that, in many instances, the information provided by the applicant is vague, misleading, or contradictory and that these shortcomings prevent the PSA from providing adequate impact assessments or determining the efficacy of proposed mitigation measures.

Response to TN 264343 Comment A: Staff disagree with the commenter's assertion that the baseline description in the PSA is inadequate. The Staff Assessment provides an accurate baseline for the purposes of CEQA. The baseline was developed using a combination of applicant data and independent research conducted by staff. In addition, several field investigations and site visits were conducted by staff and CDFW to verify baseline conditions. Staff also utilized data requests directed at the applicant to supplement and clarify information on biological resources provided in the applicant's supplemental AFC to support staff's preparation of the PSA.

TN 264343 Comment A1: The PSA Fails to Adequately Analyze the Existing Baseline for Rare Plants

The commenter states that the PSA fails to adequately analyze the existing environmental setting with respect to rare plants, as the survey efforts by the applicant's biological consultants are not accurately documented or reported. The commenter notes that while the PSA acknowledges that there are portions of the project study area that could not be surveyed due to lack of access, it fails to identify the specific areas that staff believes were not surveyed. The commenter states that this has implications on the adequacy of the information used to describe the project's environmental setting, which in turn has implications on the adequacy of the PSA's impact assessment and proposed mitigation. The commenter states that there are inconsistencies between the PSA and information provided by the applicant for occurrences of sagebrush loeflingia and alkali mariposa lily which undermine the PSA's analysis and proposed mitigation of project impacts to rare plants. The commenter refers to COC **BIO-12** which requires compensatory mitigation if more that 10 percent of a CRPR 1 or 2 ranked plant occurrence is subject to loss from project disturbance. The commenter states that accurate abundance, distribution, and location of special-status plants that would (or could) be impacted by project activities is critical to ensuring effective mitigation. The commenter states that the PSA should be revised and recirculated to accurately characterize the existing environmental setting concerning rare plants to ensure proper assessment of the project's impacts.

Response to TN 264343 Comment A1: Staff acknowledge some portions of the gen-tie line were not subject to pedestrian surveys; however, this does not make the document deficient or otherwise inconsistent with the requirements of the CEC's regulations or CEQA. The vast majority of the project site was surveyed, and ample sensitive plant data was submitted as part of the application. However, staff agree that supplemental surveys for rare plants and western Joshua trees would be required for areas that were not surveyed prior to construction or have not been surveyed within the past three years. In addition, updated western Joshua tree surveys would be required to account for any new recruitment that has occurred since the original surveys were conducted. The additional rare plant surveys have been included in renumbered and revised **BIO-11** (Special-Status Plant Avoidance Measures). Note that **BIO-12** has been renumbered as **BIO-11** to reflect the creation of a new, separate measure specifically addressing the western Joshua tree, now designated as **BIO-12** (Western Joshua Tree Impact Avoidance, Minimization, and Mitigation Measures). CEC staff has proposed the use of a 10 percent threshold for assessing impacts to CRPR Rank 1 and 2 species, that are not state or federally listed, for the project because it provides a conservative benchmark that helps ensure that even small impacts to sensitive plants are not overlooked. This percentage or threshold requires consideration of the local occurrence and CEQA allows agencies to determine significance based on context, including number and species of plant, existing threats, and other factors. This rationale aligns with guidance from the CDFW and the CNPS, which emphasize the importance of evaluating the proportion of individuals affected and the ecological context of the impact.

TN 264343 Comment A2: The PSA Fails to Adequately Analyze the Existing Baseline for Western Joshua Tree

The commenter refers to the 2024 WJT verification census performed by the applicant and states that the applicant did not conduct a census of all WJTs in the survey area, nor did all surveys adhere to CDFW's census instructions. The commenter states that the WJT data provided by the applicant and incorporated into the PSA do not provide an accurate census of the number of trees that could be directly or indirectly impacted by the project. The commenter states that the PSA should be revised and recirculated to accurately characterize the existing environmental setting with respect to WJTs to ensure a legally adequate assessment of project impacts.

Response to TN 264343 Comment A2: Staff acknowledge there are some Joshua trees that were either overlooked during the surveys or occurred in areas that had not been surveyed due to access constraints. Staff notes that this missing data does not alter the analysis or change the conclusions identified in the Staff Assessment because of the large number of Joshue trees in the area and the existing mitigation framework set forth in the COCs. The collection of the missing tree data would only alter the final compensatory mitigation required under the WJTCA. Staff concur with the commenter that supplemental surveys for western Joshua tree should be required and has revised the text of **BIO-12** (Western Joshua Tree Avoidance, Minimization, and Mitigation Measures), to specifically addressing impacts to WJT. The revised **BIO-12** includes a requirement to provide updated surveys prior to ground disturbance to account for newly sprouted or missed trees. Staff notes this requirement would not be required prior to the issuance of the Final Staff Assessment and notes that additional surveys would be required over the 5-year development phase of the project.

TN 264343 Comment A3: The PSA Fails to Adequately Analyze the Existing Baseline for Swainson's Hawk

The commenter states that the PSA fails to adequately analyze the existing environmental setting with respect to Swainson's hawk. Specifically, the commenter refers to the PSA's characterization of the applicant's Swainson's hawk surveys as "generally consistent" with applicable protocols. They claim this statement is misleading due to the implementation of a 0.5-mile buffer rather than a 5.0-mile buffer and e that roads the applicant illustrates were used during the surveys do not exist or have limited to no access. The commenter states these issues provide strong evidence that the applicant's surveys were far less extensive than suggested, did not cover all areas that could contain nest sites, and were not sufficient to conclude absence of Swainson's hawk nests within the project site and 0.5-mile buffer.

The commenter states that the CEC and CDFW have determined that Swainson's hawk nests require a 0.5-mile no-disturbance buffer to prevent nest abandonment or forced fledging, and if the 0.5-mile buffer cannot feasibly be implemented, take authorization may be necessary to comply with CESA. The commenter states that the applicant must assume presence and acquire an Incidental Take Permit if there is insufficient evidence to conclude absence of nests within 0.5 miles of the project site. The commenter states

that the PSA does not require the applicant to apply for take authorization for Swainson's hawk, and as a result, does not ensure compliance with CESA.

The commenter states that the PSA lacks an adequate description of the existing environmental setting with respect to Swainson's hawk, which precludes an adequate analysis of the project's impact to this species. The commenter states that the PSA must be revised and recirculated with an accurate, CEQA-compliance discussion of the environmental setting.

Response to TN 264343 Comment A3: The Staff Assessment adequately disclosed, analyzed, and presented mitigation to avoid impacts to nesting Swainson's hawk. In addition, proposed **BIO-14** (Habitat Management Land Acquisition for Crotch's Bumble Bee and Western Burrowing Owl) requires the project owner to obtain mitigation lands to offset impacts to these species from the project development, which will also benefit Swainson's hawk by preserving foraging habitat in the region. This requirement would ensure that foraging habitat for this species is preserved in the broader region. Staff have revised the avoidance buffer in **BIO-20** (Swainson's Hawk Avoidance and Minimization Measures) from 0.25 miles to 0.5 miles. The original buffer of 0.25 miles was an oversight and the revised 0.5 mile buffer in **BIO-20** ensures construction activities avoid impacts to Swainson's hawk.

TN 264343 Comment B: The PSA Fails to Adequately Analyze the Project's Impacts to Biological Resources

TN 264343 Comment B1: The PSA Fails to Adequately Analyze the Project's Impacts to Special Status Plants

The commenter states that the PSA uses an unsupported and inconsistent significance threshold for impacts for sagebrush loeflingia and alkali mariposa lily, specifically the PSA considers impacts to be significant without mitigation if project activities result in the loss of more than ten percent of the known individuals within an occurrence. The commenter states this significance threshold is unjustified and conflicts with the CEQA thresholds of significance established in the PSA.

The commenter states COC **BIO-12**, which requires that the "measurement for percent avoidance shall be based on population for perennials and on habitat for annuals (habitat containing the species' microhabitat preferences, such as soil types and moist depressions)" and further explains that the local population shall be measured by the number of individuals occurring on the project site or all plants within a 0.25-mile buffer. The commenter states the PSA does not provide accurate population or habitat data and **BIO-12** does not incorporate a mechanism for collecting information prior to impacts to special-status plants.

The commenter states that, at a minimum, the project activities at the P1 site (under the No Berm Option) would alter soil conditions and existing hydrologic properties while impacts to hydrology would extend offsite under the Berm Option, thus resulting in

impacts to sagebrush loeflingia. The commenter states that the applicant has not identified the number of sagebrush loeflingia that occur within the P1 site and it unclear whether impacts would trigger mitigation under **BIO-12**.

The commenter also states that the population of sagebrush loeflingia occurring along the western border of the P1 site is unlikely to remain viable due to changes in hydrology, dust, and other indirect impacts. The commenter states that the PSA provides no mechanism for significant indirect impacts to special-status plants should they result in loss of the plant or its habitat. The commenter states that COC **BIO-12** does not require long-term monitoring of indirect impacts to determine whether additional compensatory mitigation is necessary nor impose a mechanism for additional mitigation should sagebrush loeflingia plants succumb to indirect impacts.

The commenter states that **BIO-12** does not ensure impacts to special-status plants would be reduced to less than significant levels.

Response to TN 264343 Comment B1: The lead agency has discretion in determining impact criteria and assessing whether an impact is significant. CEC staff proposed the 10 percent threshold as a conservative benchmark for the project for assessing impacts to CRPR Rank 1 and 2 species, that are not state or federally listed. This threshold is intended to ensure that even small impacts to sensitive plants are not overlooked. It also requires consideration of the local occurrence, and CEQA allows agencies to determine significance based on context, including number and species of plant, existing threats, and other quantitative and qualitative factors.

This rationale aligns with guidance from the CDFW and the CNPS, which emphasize the importance of evaluating the proportion of individuals affected and the ecological context of the impact. CEQA requires mitigation for impacts to sensitive plants that are proportional to the impact but does not but does not require full mitigation for non-listed plants. In relation to sensitive plants, COC **BIO-12** as proposed in the PSA requires avoidance within 50-feet which would account for plants in adjacent areas and a site specific monitoring plan would be required should a smaller buffer be required. Long-term monitoring has not been proposed for this location because it is not warranted as the adjacent occurrence would be avoided and plants would be expected to persist under natural conditions as there is no evidence that project activity will be detrimental to offsite plants. These measures from the PSA are included in the renumbered and revised **BIO-11** (Special-Status Plant Avoidance Measures).

TN 264343 Comment B2: The PSA Fails to Adequately Analyze Impacts to Western Joshua Tree

The commenter states that the PSA's analysis and conclusions with respect to project impacts to western Joshua trees are not supported by substantial evidence because PSA fails to disclose the full extent of impacts to the species, and the measures in COC **BIO-12** do not comply with the requirements of the WJTCA.

The commenter states that the PSA fails to identify the number of western Joshua trees that would need to be removed or relocated for construction of the project's 19-mile gen-tie line and associated access roads.

The commenter states that the CEC cannot make a determination on whether the project's impact to western Joshua trees will be fully mitigated as required by the WJTCA without first fully assessing and disclosing the total number of western Joshua trees that would be taken by the project.

The commenter suggests that the PSA lacks substantial evidence to support the conclusion that the implementation of mitigation measures in COC **BIO-12** will mitigate impacts to western Joshua trees to the greatest extent feasible. The commenter refers to COC **BIO-12** which includes annual monitoring for each relocated western Joshua tree for a period of 3 years along with reporting requirements, but the PSA lacks any further discussion or explanation as to how these monitoring measures are expected to mitigate the project impacts. The commenter states that COC **BIO-12** lacks any performance standards by which the adequacy of the mitigation can be assessed. The commenter states that, for these reasons, the mitigation measures relating to western Joshua tree are impermissibly deferred under CEQA and the PSA lacks substantial evidence to support the conclusion that project impacts to western Joshua tree will be adequately mitigated to less than significant levels.

Response to TN 264343 Comment B2: Staff concur with the commenter that the PSA lacks sufficient western Joshua tree data due to inaccessible areas along the gen-tie alignment during the 2024 verification census. Staff have revised COC **BIO-12** (Western Joshua Tree Avoidance, Minimization, and Mitigation Measures), which requires an updated western Joshua tree census consistent with WJTCA requirements prior to ground disturbance to account for any missed or newly sprouted trees. In addition, any area that has not been subject to surveys within the past three years would require additional surveys prior to ground disturbance. The collection of the missing tree data would only alter the final compensatory mitigation required under the WJTCA.

Staff contends the Staff Assessment disclosed and assessed impacts to this species and proposed mitigation that would follow the WJTCA. While the initial buffers proposed by CDFW would be required if the project did not seek take of the species, the proposed COCs incorporate the mitigation required for take under the WJTCA. The Staff Assessment also analyzed a reasonable range of alternatives consistent with CEQA.

Staff concurs with the commenter that supplemental surveys for western Joshua tree should be required and has revised the text of **BIO-12** (Western Joshua Tree Avoidance, Minimization, and Mitigation Measures), to include updated surveys prior to ground disturbance to account for newly sprouted or missed trees. Staff notes this requirement would not be required prior to the issuance of the Final Staff Assessment and notes that additional surveys would be required over the 5-year construction phase of the project.

TN 264343 Comment B3: The PSA Fails to Adequately Analyze Impacts to Special-Status Birds

The commenter states that the PSA lacks any mitigation for the loss of nesting bird habitat. The commenter states that the PSA, while requiring habitat compensation for the loss of burrowing owls, it has no provisions to compensate for habitat loss to any other special-status birds.

Response to TN 264343 Comment B3: The PSA adequately assesses direct and indirect impacts to sensitive birds from the construction and operation of the project. As described in the PSA, **BIO-14** (Habitat Management Land Acquisition for Crotch's Bumble Bee and Western Burrowing Owl) requires the project owner to obtain mitigation lands to offset impacts to Crotch's bumble bee and western burrowing owl from the development of the project. While **BIO-14** is specifically required for burrowing owl and Crotch's bumble bee, the habitat compensation lands would be expected to benefit sensitive birds that utilize the same types of habitat. Obtaining mitigation lands for the target species would benefit other birds as the habitat would be required to support extensive native flowering plants and shrubs which provide foraging and nesting habitat. In addition, burrowing owl habitat would be support burrows from fossorial mammals which also provide habitat and prey items for native species. For example, loggerhead shrike prefers open habitats with scattered shrubs, similar to burrowing owl habitat. In addition, participation in the WJTCA as required by **BIO-12** would contribute the conservation of important nesting trees for many birds.

TN 264343 Comment B4: The PSA Fails to Adequately Analyze Impacts to Swainson's Hawk

The commenter suggests that the PSA is misleading to state that the project site could be used by Swainson's hawk for foraging as the applicant's Biological Resources Assessment states that Swainson's hawks were observed foraging on site, which definitively establishes that the project site includes foraging habitat.

The commenter states that there is no evidence that habitat management lands acquired to mitigate for Crotch's bumble bee and burrowing owl habitat under COC **BIO-14** will be suitable foraging habitat for Swainson's hawk. The commenter states that there is no requirements that lands acquired for habitat compensation under COC **BIO-14** be located in the Antelope Valley near Swainson's hawk nesting territories.

The commenter states that the PSA fails to adequately analyze and mitigate project impacts to Swainson's hawk and must be revised to correct these errors.

Response to TN 264343 Comment B4: Staff acknowledges the importance of Swainson's hawk foraging habitat in the Antelope Valley and confirms that the Staff Assessment adequately disclosed, analyzed, and presented mitigation to avoid impacts to nesting Swainson's hawk. In addition, proposed COC **BIO-14** (Habitat Management Land Acquisition for Crotch's Bumble Bee and Western Burrowing Owl) requires the project owner to obtain mitigation lands to offset impacts to these species from the

project development, which will also benefit Swainson's hawk by preserving foraging habitat in the region. This requirement would ensure that foraging habitat for this species is preserved in the broader region. Obtaining mitigation lands for the target species would benefit other birds such as Swainson's hawk as this species uses grasslands and desert scrub communities for foraging. However, staff have revised the language of COC **BIO-14** to clarify that land must be obtained in the Antelope Valley or Western Mojave.

TN 264343 Comment C: The PSA Fails to Adequately Analyze Cumulative Biological Resources Impacts

TN 264343 Comment C1: The PSA Fails to Adequately Analyze Cumulatively Considerable Impacts on Habitat

The commenter states that the PSA does not establish any geographic limits on the location of the habitat acquisition required under COC **BIO-14** and therefore, if the applicant acquires habitat management land outside the Antelope Valley (e.g., in San Bernardino County), it would not mitigate the project's contributions to cumulative impacts in the Antelope Valley.

The commenter suggests under COC **BIO-14** requires acquisition of lands for Crotch's bumble bee and burrowing owl and there are no requirements or assurances that lands support the other special-status species subject to significant cumulative impacts. The commenter states that the conclusion that COC **BIO-14** will adequately mitigate cumulative impacts to habitat is not supported by substantial evidence.

The commenter states that the PSA does not establish any restrictions on the habitat types acquired under COC **BIO-14**; therefore, the statement that the land acquired under the measure would offset impacts to scrub communities is unfounded.

Finally, the commenter states that COC **BIO-8** does not offset impacts to scrub communities because there are no requirements that "temporarily" impacted scrub communities be restored.

Response to TN 264343 Comment C1: The PSA adequately disclosed impacts to native vegetation communities and provided mitigation that can be reasonably expected to provide habitat for the sensitive species that inhabit non-sensitive vegetation. As described in the PSA, both permanent and temporary impacts to vegetation are being treated as a permanent impact because the applicant is assuming presence of both burrowing owl and Crotch's bumble bee. Impacts to non-sensitive common vegetation such as creosote bush scrub and saltbush scrub are typically not considered a significant impact unless they are occupied by listed species. For the purposes of the PSA, the applicant elected to assume presence for Crotch's bumble bee and burrowing owl and provide compensatory mitigation to fully mitigate impacts to those species. As described in the PSA the applicant would still be required to provide basic restoration of temporarily disturbed areas which would provide some habitat value to native species.

It is reasonable to conclude that obtaining mitigation lands for Crotch's bumble bee and burrowing owl and participating in the WJTCA required under COC BIO-12 would conserve similar habitats to those disturbed by the project as the habitat would be required to support extensive native flowering plants and shrubs. Since these and other species would be expected to occupy the proposed mitigation lands, and these lands must be approved by the CPM, COC **BIO-14** would be reasonably likely to support habitat for other non-listed species that may occur in the project area. In addition, because these lands would be mitigated at a 3:1 ratio, COC **BIO-8** would adequately reduce impacts to non-sensitive scrub communities because these are common and likely occur at the proposed mitigation sites.

TN 264343 Comment C2: The PSA Fails to Adequately Analyze Cumulatively Considerable Impacts to Rare Plants

The commenter refers to text in the PSA that states, "…the small number of other sensitive plants that would be potentially impacted by the project would be mitigated through seed collection and other measures that would contribute to their preservation in the region." The commenter states that the PSA's conclusion that impacts to special-status plants would not be cumulatively considerable is unsupported because none of the proposed COCs require seed collection or other measures that would contribute to the impacted plant's preservation in the region.

The commenter states that, although COC **BIO-12** requires compensatory mitigation if more than 10 percent of a CRPR 1 or 2 plant occurrence is subject to loss from project impacts, it does not require acquisition of compensation lands in the region, nor does it require that compensation land provide habitat for the specific plant(s) impacted by the project. The commenter states that, if each project in the region is allowed to eliminate up to 10 percent of a plant occurrence, defined in the PSA as all plants within a 0.25-mile buffer, these incremental losses could easily become cumulatively significant.

The commenter states that mitigation of impacts to the fullest extent feasible requires an agency to accurately quantify the severity of project impacts, and because the PSA's inadequate analyses underestimate the severity of the project's impacts, CEC has failed to comply with CEQA and must revise and recirculate the PSA.

Response to TN 264343 Comment C2: The PSA has adequately assessed and mitigated for impacts to sensitive plants. In addition, the proposed mitigation identified in CEC staff's **BIO-11** (Special-Status Plant Avoidance Measures) (formerly **BIO-12)**, includes requirements for compensatory land acquisition should either unexpected plants be detected and/or more than 10 percent of the CRPR Rank 1 or 2 plant occurrence be subject to loss due to project activities. CEC staff proposed the 10 percent threshold as a conservative benchmark for the project for assessing impacts to CRPR Rank 1 and 2 species, that are not state or federally listed. This threshold is intended to ensure that even small impacts to sensitive plants are not overlooked. It also requires consideration of the local occurrence, and CEQA allows agencies to

determine significance based on context, including number and species of plant, existing threats, and other quantitative and qualitative factors.

This rationale aligns with guidance from the CDFW and the CNPS, which emphasize the importance of evaluating the proportion of individuals affected and the ecological context of the impact. CEQA requires mitigation for impacts to sensitive plants that are proportional to the impact but does not but does not require full mitigation for non-listed plants. In addition, BIO-11 provides a reasonable context to protect and or mitigate cumulative impacts by protecting and or mitigating impacts to any other sensitive plant species that may be found in the project area over time.

TN 264343 Comment D: The commenter notes information and maps provided by Applicant strongly suggest that the PSA substantially underestimates the amount of ground disturbance associated with construction and operation of the project's gen-tie line. Specifically, the PSA estimates the project would require constructing 1.5 to 1.75 miles of new access roads. This appears to be consistent with the length of the "proposed access roads" depicted in Attachment DR125-1 (TN 261516). However, there are three reasons why the PSA's estimate does not appear to be accurate.

First, the applicant stated that it does not anticipate needing to widen, grade, or make other improvements to existing roads along the project's gen-tie line route. However, many of the existing roads that the applicant intends to use for installation and maintenance of the gen-tie line are narrow dirt roads (approximately 10 feet wide) that are not maintained by the County. At a minimum, these roads would need to be widened to accommodate the heavy equipment need to transport and install the poles.

Second, the figures provided by the applicant depict several proposed transmission poles (and associated pole construction sites) that are not adjacent to an existing road, and for which no access roads have been proposed. Road construction or other forms of ground disturbance would be required to access these pole locations and construction sites.

Third, Condition of Certification ("COC") **BIO-18** requires installation of bird flight diverters on the transmission line in all areas within 5 miles of Swainson's hawk nests. A bucket truck is typically used to install bird flight diverters on transmission lines. Because portions of the preferred transmission line route would be set back from the associated access road, use of a bucket truck to install flight diverters would require construction of spur roads (or other forms of ground disturbance), which were not accounted for in the PSA. As a result, it is critical that the PSA provide accurate information on the amount of road construction and widening needed to install and maintain the project's gen-tie line.

Response to TN 264343 Comment D: The PSA describes that direct impacts to Joshua tree woodland and other native vegetation communities would be subject to permanent and temporary impacts should the optional northern section of the gen-tie alignment be constructed and from access to pole and other locations. Staff notes that

the total acreages may vary based on the proposed alignment and construction method, however the acreage variation would not alter the significance conclusions in the PSA. In addition, to account for any uncertainties and to ensure that any surveyed areas are accounted for Staff proposed COC **BIO-7** Condition 9 which requires the applicant to provide a final accounting of the before/after whole acreages and a determination of whether more or less habitat compensation is necessary would be determined.

WSP USA Inc. (TN 264316)

TN 264316 Comment 1: The commenter notes inconsistencies between Table 5.2-4 on Page 5.2-21 of the PSA which indicates that Joshua tree woodland occurs in the P1 and P2 sites and information provided on Page 5.2-6 which reports that the applicant mapped Joshua tree woodland along the norther portion of the gen-tie line.

Response to TN 264316 Comment 1: Staff reviewed the comment and the text in Table 5.2-4 has been revised.

TN 264316 Comment 2: The commenter requests that the reference to the loss of nursery sites be removed from Table 5.2-9 on Page 5.2-144 of the PSA.

Response to TN 264316 Comment 2: Staff reviewed the comment and the text in Table 5.2-9 has been revised.

TN 264316 Comment 3: The commenter requests that all references to the presence of Joshua tree woodland, with the exception of locations along the northern portion of the gen-tie alignment mapped by the applicant, be deleted from the PSA.

Response to TN 264316 Comment 3: Staff reviewed the comment and the text regarding Joshua tree woodland has been revised.

TN 264316 Comment 4: The commenter requests that the reference to silver cholla on Page 5.2-153 of the PSA be deleted.

Response to TN 264316 Comment 4: Staff reviewed the comment and the text on Page 5.2-153 has been revised.

TN 264316 Comment 5: The commenter refers to potential direct loss of high and medium-low quality Crotch's bumble bee habitat under the berm and no berm options discussed on Page 5.2-165 of the PSA. The commenter states that it is not clear how compensation ratios identified in **BIO-14** are considered different habitat quality across the project site.

Response to TN 264316 Comment 5: Staff considered a wide range of biotic and abiotic factors when developing the mitigation approach for burrowing owls and Crotch's bumble bee. While staff notes there are different levels of habitat quality on the site, the bee is a habitat generalist who will utilize a wide variety of species over the

season. As this species was detected on site and has the potential to nest there, staff assumes the project has the potential to result in the loss of an active colony.

The 3:1 ratio proposed by staff was developed in consultation with CDFW. The 3:1 ratio proposed by staff ensures full mitigation under CESA. Fish and Game Code, section 2081(b) requires permittees to minimize and fully mitigate all impacts of the authorized take, and mitigation must be roughly proportional in extent to the impact. The ratio accounts for the initial replacement of lost habitat, ensures functional equivalency is achieved, accounts for uncertainty and risk, and promotes resilience across the landscape by supporting habitat connectivity and ecosystem integrity.

By employing preservation, enhancement, and long-term management, this mitigation framework supports regulatory compliance and long-term conservation success, helping ensure the impacted species have sufficient, sustainable habitat to persist. This scientifically grounded strategy is a proactive response to habitat fragmentation, climate change, and species-specific habitat sensitivity. The proposed 3:1 mitigation ratio is scientifically defensible, risk-adjusted, and aligned with CDFW standards for full mitigation. This approach not only compensates for the loss of habitat but ensures the replacement of ecological functions critical to listed species persistence and survival.

TN 264316 Comment 6: The commenter refers to Page 5.2-170 of the PSA, which states, “the project owner would be required to include suitable milkweed species as part of the seed mix along with other flowering plants used by pollinators such as monarchs.” The commenter states that it is unclear why the COC requires the project owner to plant larval foodplant for monarch butterfly given the conclusions in the PSA that the project site does not provide suitable tree groves or milkweed required to the species and the project site is outside of the overwintering range for the species.

Response to TN 264316 Comment 6: Monarch butterflies are known from the region and have the potential to occur on the project site and linear facilities. This species is known to forage in the area and would benefit from the inclusion of foraging and egg laying species on the project site during revegetation. Staff recommends no revisions to the condition. Therefore, the text has not been changed.

TN 264316 Comment 7: The commenter requests that the verification of the submittal of the information specified for Designated Biologist(s) approval under COC **BIO-1** be modified from 75 days to 30 days prior to the start of site mobilization or construction related ground-disturbance activities.

Response to TN 264316 Comment 7: The requests conflicts with conditions defined under COC **BIO-2** and COC **BIO-6**, which requires the Designated Biologist to assist in preparing the Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP). Submittal of the draft BRMIMP to the CPM for review and approval is required at least 45 days prior to start of any site mobilization and submittal of the final BRMIMP to the CPM and CDFW at least 10 days prior to start of any site mobilization. This request does not give the CPM, in consultation with CDFW, enough time for

adequate review and approval of the Designated Biologist. Therefore, the text has not been changed.

TN 264316 Comment 8: The commenter requests that COC **BIO-2** be revised to allow for the removal of the Designated Biologist requirement during operations of the project.

Response to TN 264316 Comment 8: COC **BIO-2** allows for the project owner to request approval from the CPM to terminate the Designated Biologist's function during plant operation with adequate justification of the request. It is typical for a project to retain a Designated Biologist throughout the duration of operation to perform the following duties such as conducting inspections of the reservoir and exclusion fencing, removing snakes or other trapped species from the site, and ensuring nesting birds do not result in operational impacts to the project. Given the proximity of the project site to known occurrences of state-listed species and their habitat along with the project site's location within a relatively undeveloped area, the Designated Biologist would be required until there is adequate justification after construction for there to no longer be a need. Therefore, the text has not been changed.

TN 264316 Comment 9: The commenter requests that the verification for CPM approval and CDFW review of the specified information for Biological Monitor(s) under COC **BIO-3** be revised from 45 days prior to the start of any project-related site disturbance activities to 30 days.

Response to TN 264316 Comment 9: Staff reviewed the comment and the text in COC **BIO-3** has been revised.

TN 264316 Comment 10: The commenter requests that a list of conditions for which the Designated Biologist should halt work be incorporated under COC **BIO-4**.

Response to TN 264316 Comment 10: COC **BIO-4**, Item 4, states that, if required, the Designated Biologist or Biological Monitor(s) shall have the authority to halt all site mobilization, ground disturbance, grading, construction, and operation activities in any area when determined that there would be an unauthorized adverse impact to biological resources if the activities continued.

The conditions for which a halt would be implemented would be determined onsite by the approved Designated Biologist or Biological Monitor(s) based on the potential for any unauthorized adverse impact to biological resources to occur. While staff acknowledge the commenter's interest in a defined list of conditions, such impacts are highly dependent on site-specific and real-time factors. Therefore, the text has not been changed.

TN 264316 Comment 11a: The commenter requests that the text of COC **BIO-4**, numbered item 4, be revised to include "or the next business day in the event of a

holiday" for reporting of any non-compliance incident or work stoppage to the CPM if the incident or stoppage cannot be immediately reported due to a weekend or holiday.

Response to TN 264316 Comment 11a: Staff reviewed the comment and the text in COC **BIO-4** has been revised.

TN 264316 Comment 11b: The commenter requests that the verification text of COC **BIO-4** be revised to include "or the next business day in the event of a holiday" for reporting of any non-compliance incident or work stoppage to the CPM if the incident or stoppage cannot be immediately reported due to a weekend or holiday.

Response to TN 264316 Comment 11b: Staff reviewed the comment and the verification text in COC **BIO-4** has been revised.

TN 264316 Comment 12: The commenter suggests that the Worker Environmental Awareness Program (WEAP) be limited to individuals performing or supervising manual work on site. The commenter also recommends that the WEAP be administered within 10 days of the project's commencement.

Response to TN 264316 Comment 12: The WEAP should not be limited to only those performing or supervising manual labor. All workers who would be present on the project site, including administrative, technical, and support staff, are required to receive WEAP training. This ensures that everyone on site is aware of the environmental sensitivities, compliance requirements, and protective measures in place. Therefore, no change has been made in response to this comment. The WEAP is already required to be implemented at least 10 days prior to site mobilization. Therefore, the text has not been changed.

TN 264316 Comment 13: The commenter requests revisions to COC **BIO-5** to remove "firefighting crews" and "delivery personnel" as project personnel requiring WEAP or WEAP Light training. The commenter also requests the COC **BIO-5** be revised to include the WEAP and WEAP Light training may be recorded for later electronic viewing by new workers who begin work after the initial presentation.

Response to TN 264316 Comment 13: Staff reviewed the comment and the text of COC **BIO-5** has been revised. It should be noted that "delivery personnel" strictly refers to small-scale deliveries of packages and does not include large deliveries of building materials, heavy equipment, or concrete. Personnel conducting these deliveries will require WEAP or WEAP Light training as described in COC **BIO-5**.

TN 264316 Comment 14: The commenter requests that COC **BIO-5**, numbered item 12, be revised to replace "transmission line" with "generation tie-line".

Response to TN 264316 Comment 14: Staff reviewed the comment and the text of COC **BIO-5** has been revised.

TN 264316 Comment 15: The commenter requests that the verification of COC **BIO-5** be revised to state that, throughout the life of the project, the WEAP shall be repeated annually for permanent "operational" employees,...".

Response to TN 264316 Comment 15: Staff reviewed the comment and the text of COC **BIO-5** has been revised.

TN 264316 Comment 16a: The commenter requests clarification regarding what type of aerial imagery is considered sufficient.

Response to TN 264316 Comment 16a: Staff reviewed the comment and the text of COC **BIO-6**, Item 8 has been revised.

TN 264316 Comment 16b: The commenter requests that COC **BIO-6**, Item 7, stating, "A discussion of biological resources related facility closure measures including a description of funding mechanism(s)" be removed.

Response to TN 264316 Comment 16b: Staff reviewed the comment and the text of COC **BIO-6**, numbered item 7, has been revised.

TN 264316 Comment 17: The commenter requests that the verification of COC **BIO-6** be edited to state that the BRMIMP be submitted to the CPM for "review and" approval and the CDFW for review and comment at least 45 days prior to start of any site mobilization.

Response to TN 264316 Comment 17: Staff reviewed the comment and the text of COC **BIO-6** has been revised.

TN 264316 Comment 18: The commenter requests that the verification of COC **BIO-6** be edited to state that, "Under no circumstances shall ground disturbance proceed without implementation of all *applicable* permit conditions."

Response to TN 264316 Comment 18: Staff reviewed the comment and the text of COC **BIO-6** has been revised.

TN 264316 Comment 19a: The commenter requests scope and scale of aerial imagery required under **BIO-6**, Item 4.

Response to TN 264316 Comment 19a: Staff reviewed the comment and the text of COC **BIO-6** has been revised.

TN 264316 Comment 19b: The commenter requests that the verification of COC **BIO-6** be revised so that the project owner shall provide GIS shape files of all pre- and post-disturbance areas no later than 90 after completion of construction rather than 30 days.

Response to TN 264316 Comment 19b: Staff reviewed the comment and concluded that the GIS shape files are a component of the construction termination report, which is due no later than 30 days after the completion of construction. The CEC frequently receives electronic transmission of GIS shape files and has qualified staff that can assist in the transmission of these larger files expediting the process. Without justification, this requirement has not been revised.

TN 264316 Comment 20: The commenter requests that COC **BIO-7** be revised to replace "blasting" with "controlled detonations". The commenter also requests that text in COC **BIO-7** be revised to permit controlled detonations at night if conducted more than 50 feet from the surface.

Response to TN 264316 Comment 20: Staff reviewed the comment and the text of COC **BIO-7** has been revised to replace "blasting" with "controlled detonations". However, in the absence of justification for revising the content of COC **BIO-7** to allow for nighttime controlled detonations at depths greater than 50 feet below the surface and without providing demonstrable evidence to the record that these controlled detonations would not change the baseline analysis or result in impacts to biological resources, the remaining text of COC **BIO-7** has not been changed.

TN 264316 Comment 21: The commenter requests that COC **BIO-7**, numbered item 1, be revised to replace "transmission line" with "generation tie-line".

Response to TN 264316 Comment 21: Staff reviewed the comment and the text of COC **BIO-7**, numbered item 1, has been revised.

TN 264316 Comment 22: The commenter provides editorial corrections for COC **BIO-7**, numbered item 6, replacing "wildlfire" with "wildlife".

Response to TN 264316 Comment 22: Staff reviewed the comment and the text of COC **BIO-7**, numbered item 6, has been edited.

TN 264316 Comment 23: The commenter requests a definition of unexpected wildlife and provides editorial corrections for COC **BIO-7**, numbered item 7, adding the following italicized text, "Should a State or federally listed, proposed, candidate, or fully protected species be *identified on the project site*, the DB or Biological Monitor shall notify the CPM immediately by phone and in written form within 24 hours".

Response to TN 264316 Comment 23: Staff reviewed the comment and the text of COC **BIO-7**, numbered item 7, has been revised. Staff has provided additional edits to include the following italicized text, "...fully protected species be identified on *or near* the project site,...".

TN 264316 Comment 24: The commenter requests that COC **BIO-7**, numbered item 9, stating, "Because bat activity is highly variable (both spatially and temporally) across

the landscape and may move unpredictably among several roosts, several separate survey visits shall be required" be removed.

Response to TN 264316 Comment 24: Staff reviewed the comment and added additional language to **BIO-7** to clarify what actions are needed to protect bats should they occur.

TN 264316 Comment 25: The commenter requests that the item in COC **BIO-7**, numbered item 10, stating, "If removal of or disturbance of trees or other potential roost sites cannot be avoided, removal shall be conducted outside the maternity season to avoid mortality of maternity colonies" be revised to remove "or disturbance of trees or other potential…".

Response to TN 264316 Comment 25: Staff included this language to protect bats over the five year construction period. While the potential for bat roosting is currently low it is possible that bats could occur after the introduction of project structures and or cavities. Therefore, the text of **BIO-7** has not been revised per the applicant's comment.

TN 264316 Comment 26: The commenter requests that COC **BIO-7**, numbered item 11, be revised to include "incidentally" and "incidentally encountered" to describe common and sensitive wildlife that may be located within the project area and that may require salvage or relocation during ground disturbing activities.

Response to TN 264316 Comment 26: Staff reviewed the comment and do not believe the revisions are required. The intent of the condition is to ensure that any sensitive or common wildlife be protected to the degree possible. Therefore, no revision to the text has been made.

TN 264316 Comment 27: The commenter requests that COC **BIO-7**, numbered item 16, be revised to include "identifiable" to qualify physical characteristics that require reporting in the event that a dead special-status species is encountered.

Response to TN 264316 Comment 27: Staff reviewed the comment and the text of COC **BIO-7**, numbered item 16, has been revised.

TN 264316 Comment 28: The commenter requests that COC **BIO-7**, numbered item 23, be revised to replace "Transmission lines" with "Generation tie-line" and make this measure specific to the generation tie-line rather than all electrical components.

Response to TN 264316 Comment 28: Staff reviewed the comment and the text of COC **BIO-7**, numbered item 23 has been revised.

TN 264316 Comment 29: The commenter requests that the verification of COC **BIO-7** be revised to remove the following italicized text, "The project owner shall maintain written records of vehicle and equipment inspection and maintenance, *and shall provide summaries in each monthly and annual compliance report. The complete written vehicle*

maintenance record shall be available for the CPM's inspection during normal business hours.

Response to TN 264316 Comment 29: Staff reviewed the comment and the text of the verification of COC **BIO-7** has been revised. Additionally, the text has been moved from the verification section to item number 26 of COC **BIO-7**.

TN 264316 Comment 30: The commenter requests that the title of COC **BIO-8** be revised from "Habitat Restoration and Vegetation Management Plan" to "Vegetation Management Plan".

Response to TN 264316 Comment 30: Staff reviewed the comment and the title of COC **BIO-8** has been revised.

TN 264316 Comment 31: The commenter requests that COC **BIO-8** be revised to replace "…the following categories" with "temporarily disturbed portions of the Project area".

Response to TN 264316 Comment 31: Staff reviewed the comment and the text of COC **BIO-8** has been revised.

TN 264316 Comment 32: The commenter requests that COC **BIO-8**, Item B, be revised to replace "re-contoured" with "contoured".

Response to TN 264316 Comment 32: "Recontoured" is more descriptive of the intent of COC **BIO-8** to return temporary disturbance areas to pre-project conditions. Therefore, the text of COC **BIO-8**, numbered item B, has not been changed.

TN 264316 Comment 33: The commenter requests that COC **BIO-8**, numbered item B.3.d, be revised to replace "…is very weedy" with "…is identified as weed infested using the methods outlined in BIO-9".

Response to TN 264316 Comment 33: Staff reviewed the comment and the text of COC **BIO-8**, numbered item B.3.d has been revised.

TN 264316 Comment 34: The commenter provides editorial revisions to COC **BIO-8**, numbered item B.4.e, where "course" is replaced with "coarse".

Response to TN 264316 Comment 34: Staff reviewed the edits to COC **BIO-8**, numbered item B.4.e, and the text has been revised.

TN 264316 Comment 35: The commenter requests that COC **BIO-8**, numbered item B.5 be revised to replace "restoration areas" with "temporarily disturbed areas" and "restored" with "treated". The commenter also requests that the text states, "…assess the species composition of the site and adjacent habitat to…" and "…shrub, and tree layers" be removed.

Response to TN 264316 Comment 35: Staff reviewed the comment and the text to COC **BIO-8**, numbered item B.5, has been revised.

TN 264316 Comment 36a: The commenter requests that COC **BIO-8**, numbered item B.9, be revised to include, "...unless approved by the CPM in consultation with CDFW."

Response to TN 264316 Comment 36a: Staff reviewed the comment and the text to COC **BIO-8**, numbered item B.9, has been revised.

TN 264316 Comment 36b: The commenter requests that COC **BIO-8**, numbered item B.10, be revised to remove "native coastal scrub", replace "site" with "region", and replace "grassland and coastal scrub areas" with "in desert habitat".

Response to TN 264316 Comment 36b: Staff reviewed the comment and the text to COC **BIO-8**, numbered item B.10, has been revised.

TN 264316 Comment 37: The commenter requests that taxa to be avoided be specified in COC **BIO-9**, numbered item 9.i.

Response to TN 264316 Comment 37: Staff reviewed the comment and COC **BIO-9**, numbered item 9.1, has been revised.

TN 264316 Comment 38: The commenter requests that COC **BIO-10**, numbered item 5, be revised to remove "watercraft" from decontamination requirements.

Response to TN 264316 Comment 38: Staff reviewed the comment and COC **BIO-10**, numbered item 5, has been revised.

TN 264316 Comment 39a: The commenter suggests allowing challenges to DB or biological monitor stop-work orders and limiting their authority to enforce biological conditions only.

Response to TN 264316 Comment 39a: COC **BIO-11** (Conduct Biological Monitoring During Construction) has been removed and replaced with **BIO-11** (Special-Status Plant Avoidance Measures). The specific monitoring requirements have been included in species specific and/or general biological monitoring roles. Where appropriate, text has been revised to provide clarification.

TN 264316 Comment 39b: The commenter requests that COC **BIO-11**, numbered item 1, be revised to remove the following italicized text, *fully* minimized and *safely* possible. The commenter also suggests the following italicized additions to the text, *where* possible and *in a manner* consistent with approved work limits and work conditions.

Response to TN 264316 Comment 39b: COC **BIO-11** (Conduct Biological Monitoring During Construction) has been removed and replaced with **BIO-11** (Special-

Status Plant Avoidance Measures). The specific monitoring requirements have been included in species specific and/or general biological monitoring roles. Where appropriate, text has been revised to provide clarification.

TN 264316 Comment 40: The commenter requests that COC **BIO-11**, numbered item 4, be revised to include the following italicized text, "...prior to *construction* work activities at each site, a biological monitor shall conduct clearance surveys ("sweeps")…".

Response to TN 264316 Comment 40: COC **BIO-11** (Conduct Biological Monitoring During Construction) has been removed and replaced with **BIO-11** (Special-Status Plant Avoidance Measures). The specific monitoring requirements have been included in species specific and/or general biological monitoring roles. Where appropriate, text has been revised to provide clarification.

TN 264316 Comment 41: The commenter requests that COC **BIO-11**, numbered item 9, be revised to include the following italicized text, "wildlife entrapment hazards have been covered, *are backfilled*, or have ramps installed...".

Response to TN 264316 Comment 41: COC **BIO-11** (Conduct Biological Monitoring During Construction) has been removed and replaced with **BIO-11** (Special-Status Plant Avoidance Measures). The specific monitoring requirements have been included in species specific and/or general biological monitoring roles. Where appropriate, text has been revised to provide clarification.

TN 264316 Comment 42: The commenter requests that COC **BIO-12** be revised to change "appropriate protocols" to "methodology reviewed by CPM". The commenter also requests revisions to the condition to clarify requirements for areas that have not been subject to pre-construction plant surveys.

Response to TN 264316 Comment 42: Please note that COC **BIO-12** (Special-Status Plant Avoidance Measures) has been renumbered to **BIO-11**. Staff reviewed the comment and the text to COC **BIO-11** has been revised.

TN 264316 Comment 43: The commenter requests that COC **BIO-12**, numbered item 2, be revised to remove the following italicized text, "…, *consisting of habitat occupied by the impacted acreage and number of plants for any occupied habitat affected by the project.*"

Response to TN 264316 Comment 43: Please note that COC **BIO-12** (Special-Status Plant Avoidance Measures) has been renumbered to **BIO-11**. Staff reviewed that comment and the text to COC **BIO-11**, numbered item 2, has been revised.

TN 264316 Comment 44a: The commenter requests that COC **BIO-14** be revised to indicate that the project owner will purchase mitigation or conservation bank credits

equivalent to the actual amount of direct habitat loss due to permanent or temporary loss.

Response to TN 264316 Comment 44a: COC **BIO-14** will require the acquisition of 843 acres of suitable habitat but the text of the COC has been revised to allow for an assessment of the project's final disturbance footprint and provides an 18-month timeframe for the acquisition of the lands after initial site disturbance. Staff notes that nesting of western burrowing owl and Crotch's bumble bee habitat was the intent of the condition provided the site meets the criteria identified in the condition.

TN 264316 Comment 44b: The commenter requests that the text in COC **BIO-14,** from paragraph 2 onwards be deleted as they state the initial paragraph is sufficient to outline the land acquisition requirements.

Response to TN 264316 Comment 44b: The text of COC **BIO-14** was crafted in coordination with CDFW to ensure that ITP specific conditions have been identified and would be enforceable as required by CESA. Therefore, the requested revision has not been made.

TN 264316 Comment 45: The commenter requests that COC **BIO-16**, numbered item 1, be revised to replace "protocol" with "pre-clearing" surveys, remove "Surveys shall be conducted during a time of year when desert tortoise can be detected. In addition,..." and "...and exclusion fence specifications...", and replace "be consistent with" with "consider".

Response to TN 264316 Comment 45: Staff acknowledge the low potential for desert tortoise to occur at the WRESC site and has revised the text of COC **BIO-16** (Desert Tortoise Avoidance) to require additional protocol surveys only if site mobilization occurs after the 2026 spring survey window for this species. In addition, clearance surveys would be required for all areas including the gen-tie lines.

TN 264316 Comment 46: The commenter requests that COC **BIO-16**, numbered item 2, be revised to replace "transmission line" with "generation tie-line". The commenter also requests adding text to further clarify desert tortoise fencing specifications.

Response to TN 264316 Comment 46: Staff reviewed the comments and the text to COC **BIO-16**, numbered item 2, has been revised.

TN 264316 Comment 47: The commenter requests that COC **BIO-17**, numbered item 4, be revised to replace "will likely" to "could" for the potential for shrike cache sites to be present. The commenter also requests revisions to the text describing default buffers for nesting birds and provides a process to delineate nest buffers.

Response to TN 264316 Comment 47: Staff reviewed the comment and the text to COC **BIO-17** has been revised.

TN 264316 Comment 48: The commenter requests that COC **BIO-18** be revised to replace "transmission line" with "generation tie-line".

Response to TN 264316 Comment 48: Staff reviewed the comment and the text to COC **BIO-18** has been revised.

TN 264316 Comment 49: The commenter requests that the verification for COC **BIO-18** be revised to replace "transmission line" with "generation tie-line" and to add the following italicized text, "...is within 5 miles of active *Swainson's hawk* nests no less than 45 days...".

Response to TN 264316 Comment 49: Staff reviewed the comment and the text in the verification for COC **BIO-18** has been revised.

TN 264316 Comment 50: The commenter provides an editorial correction for COC **BIO-19**, numbered item 5, to replace "BUOW" with "DB". The commenter also requests that the measure be revised to replace immediate work stoppages with increasing no-disturbance buffers at the discretion of the DB if a burrowing owl is determined to be stressed by project activities. The commenter requests that "determined" be replaced with "reviewed and approved" by the CPM if buffers require an increased distance.

Response to TN 264316 Comment 50: Staff reviewed the comment and the text to COC **BIO-19** has been revised.

TN 264316 Comment 51: The commenter requests that COC **BIO-19**, numbered item 6, be revised to add the following italicized text, "If the CPM has approved a BUOW burrow blockage *of a known BUOW burrow,* the project's owners DB shall block rather than destroy any unoccupied *known* BUOW burrow located within the buffer distances...". The commenter also requests that "while blockage is in place" to clarify monitoring of blocked burrows at least once every 48 hours.

Response to TN 264316 Comment 51: Staff reviewed the comment and the text in COC **BIO-19**, numbered item 6, has been revised.

TN 264316 Comment 52: The commenter requests that COC **BIO-19**, numbered item 11, be revised to remove "potential" from description of areas where vehicles may be parked within 50 feet of a BUOW burrow.

Response to TN 264316 Comment 52: Staff reviewed the comment and the text in COC **BIO-19**, numbered item 11, has been revised.

TN 264316 Comment 53: The commenter requests that COC **BIO-20**, numbered item 1, be revised to replace "transmission line" with "generation tie-line". The commenter also that access for protocol surveys are qualified with "..., unless otherwise prohibited due to legal access or safety issues". The commenter requests that text be

added to COC BIO-20, numbered item 1, to clarify that preconstruction surveys would occur annually "during the construction phase of the Project".

Response to TN 264316 Comment 53: Staff reviewed the comment and the text in COC **BIO-20**, numbered item 1, has been revised.

TN 264316 Comment 54: The commenter requests that COC **BIO-20**, numbered item 3, be revised to replace "territory" with "active or occupied nest" and to add that established buffers will remain in place until the DB has verified that the nest is no longer active or occupied.

Response to TN 264316 Comment 54: Staff reviewed the comment and the text in COC **BIO-20**, numbered item 1, has been revised.

TN 264316 Comment 55: The commenter requests that COC **BIO-21** be revised to remove text associated with pre-construction surveys for small mammals and to reflect that small mammals will be opportunistically salvaged when encountered. The commenter also requests that COC **BIO-21**, numbered item 2, be revised to include "incidentally" for any active ringtail natal dens that may be identified during surveys.

Response to TN 264316 Comment 55: As defined in COC **BIO-21**, pre-construction surveys are intended to identify areas that support high concentrations of small mammal burrows, including those that could be utilized by small heteromyid rodents such as pocket mice. The implementation of these surveys will increase the likelihood of salvaging animals that are encountered during project activities, thus reducing potential impacts. COC **BIO-21** has been revised to provide clarification. Additionally, conditions in COC **BIO-21** related to ringtail have been moved to COC **BIO-22**, which is the more appropriate measure for this species. Focused surveys for ringtail and other mid-sized mammals required under COC **BIO-22** are focused on identifying active natal dens for these species, which would not be considered an "incidental" observation. Therefore, this text has not been changed.

TN 264316 Comment 56: The commenter requests that COC **BIO-21**, numbered item 3, be revised to remove references to species that are addressed under COC **BIO-22**.

Response to TN 264316 Comment 56: Staff reviewed the comment and the text in COC **BIO-21**, numbered item 3, has been revised.

TN 264316 Comment 57: The commenter requests that COC **BIO-21** be revised to remove numbered item 5 which addresses salvaging pocket mice.

Response to TN 264316 Comment 57: COC **BIO-21** provides a mechanism to minimize impacts to special-status small mammals, should they be present. Staff does not consider the opportunistic relocation of these species as an onerous condition of the measure. Therefore, the text has not been changed.

TN 264316 Comment 58: The commenter requests that COC **BIO-22**, numbered item 3, be revised to qualify that an American Badger and Desert Kit Fox Eviction Plan be required if "confirmed active" dens cannot be avoided.

Response to TN 264316 Comment 58: Staff reviewed the comment and the text in COC **BIO-22**, numbered item 3, has been revised.

TN 264316 Comment 59: The commenter refers to pre-construction requirements for Mohave ground squirrel defined under COC **BIO-23** and requests that the condition be revised to removed text that requires that surveys to be completed "if the most recent surveys were performed more that a year" prior to the start of any ground-disturbing activities. The commenter also requests that the following italicized text be removed, "*To confirm the status of non-occupancy* the Designated Biologist shall conduct camera or live-trapping prior to any ground-disturbing or vegetation removal activities that will occur in suitable habitat, *following survey protocols approved by the CPM in coordination with CDFW. Trapping would be required for the WREC site, P1 north and south, P2 and the VH property or a representative site mutually agreed upon by the CPM in coordination with CDFW*. Surveys shall encompass work areas and a 50-foot buffer. Any observations will be recorded using a precision GPS unit and included on maps.

Response to TN 264316 Comment 59: Staff understand the applicant is currently proposing to conduct camera trapping for this species during the summer of 2025. This data will be used to comply with COC **BIO-23** (Mohave Ground Squirrel Avoidance and Minimization Measures). Staff has considered the comments and has identified which areas would require surveys; however, if work is not initiated on those areas for more than another year additional surveys would need to be conducted consistent with CDFW guidelines.

TN 264316 Comment 60: The commenter requests that COC **BIO-24**, numbered item 2, be revised to replace "transmission line" with "generation tie-line".

Response to TN 264316 Comment 60: Staff reviewed the comment and the text of COC **BIO-24**, numbered item 2, has been revised.

TN 264316 Comment 61: The commenter requests that COC **BIO-24**, numbered item 4, has been removed.

Response to TN 264316 Comment 61: Staff reviewed the comment and the text of COC **BIO-24**, numbered item 4, has been removed.

TN 264316 Comment 62: The commenter requests that COC **BIO-24**, numbered item 5.d, be revised to change "40 percent" to "60 percent" chance or more of a greater than 1/4-inch precipitation event within a 24-hour period. The commenter also requests that this restriction be modified to "unless otherwise approved by the CPM.

Response to TN 264316 Comment 62: Staff reviewed the comment and the text of COC **BIO-24**, numbered item 5.d, has been revised.

TN 264316 Comment 63: The commenter requests that COC **BIO-24**, numbered item 5.h, be removed.

Response to TN 264316 Comment 63: The commenter requests that COC **BIO-24**, numbered item 5.h, has been removed.

TN 264316 Comment 64: The commenter requests that COC **BIO-24**, numbered item 5.m, be revised to replace "near" to "within 50 ft. of" any stream channel or lake margin..."

Response to TN 264316 Comment 64: Staff reviewed the comment and the text of COC **BIO-24**, numbered item 5.m, has been revised.

TN 264316 Comment 65: The commenter requests that COC **BIO-24**, numbered item 5.q, be revised to remove "In addition, equipment shall be cleaned daily to ensure non-natives are not introduced into or spread throughout the project site."

Response to TN 264316 Comment 65: Staff reviewed the comment and the text of COC **BIO-24**, numbered item 5.q, has been revised.

TN 264316 Comment 66: The commenter requests that COC **BIO-24**, numbered item 8, be removed.

Response to TN 264316 Comment 66: This condition has been revised to remove redundant language reading seeding and mulch. However, the content of numbered item 8 has been retained to ensure streams and work areas are delineated and protected during construction.

TN 264316 Comment 67: The commenter requests that COC **BIO-24**, numbered item 11.a, be removed.

Response to TN 264316 Comment 67: Staff removed the reference to riparian vegetation but retained the language to mitigate for unanticipated impacts to state jurisdictional waters and or streams.

TN 264316 Comment 68: The commenter requests the following clarification on Page 5.2-261, COC **BIO-15**, numbered item 1 – Please provide clarification on and rationale for lizard surveys as this species group was not identified as a group of concern during application review. It is unclear why this species group has now been identified as requiring mitigation.

Response to TN 264316 Comment 68: Staff included these species because they are known from the region and have the potential to occur in the project area. Staff included them in the PSA to ensure potential impacts are disclosed and presented COC

BIO-15 to reduce or minimize impacts to these species should they be present during construction.

TN 264316 Comment 69: The commenter requests the following clarification on Page 5.2-263, COC **BIO-16**, numbered item 5, Specifically, the commenter requests clarification for the $105 fee per acre for long term disturbance of raven habitat. The commenter requests a rationale for the necessity of the payment if raven management measures are implemented as well as how the fee amount was determined.

Response to TN 264316 Comment 69: Staff included this fee requirement at the recommendation of the USFWS because the project is within the range of desert tortoise and ravens will be subsidized to some degree even with raven control measures. The fee is required to offset region wide impacts to desert tortoise and the fee structure is based on the acreage of project impacts within the range of desert tortoise.

TN 264316 Comment 70: The commenter requests the following clarification on Page 5.2-264, COC **BIO-17**. Specifically, the comment notes an inconsistency in the dates provided: the second paragraph references a period from February 1 to August 31, while item 3 specifies January 1 to August 31. The commenter requests that the dates be made consistent.

Response to TN 264316 Comment 70: Staff reviewed COC **BIO-17** and has revised the date to be consistent with nesting behavior observed by staff in the Antelope Valley. All nesting dates have been revised to 1 January to Aug 31 for raptors.

TN 264316 Comment 71: The commenter requests the following clarification on Page 5.2-281, COC **BIO-22.** Since the American badger and desert kit fox are covered under COC **BIO-21**, it is recommended that these species be listed under just one COC.

Response to TN 264316 Comment 71: Staff reviewed the comment and has revised COC **BIO-22** to include American badger, ringtail, and desert kit fox. COC **BIO-21** has been revised to only include pocket mice.

TN 264316 Comment 72: The commenter requests the clarification on Page 5.2-261, COC **BIO-15**, numbered item 1, specifically on and rationale for lizard surveys as this species group was not identified as a group of concern during application review. The commenter states it is unclear why this species group has now been identified as requiring mitigation.

Response to TN 264316 Comment 72: Staff included these lizard species because they have the potential to occur in the project area and could be subject to project related impacts. As described in the Staff Assessment the ranges for these species are not well understood and likely overlap in the region. Therefore, including mitigation to reduce or minimize impacts is appropriate.

5.2.5 Conclusions and Recommendations

As discussed in section 5.2.2, the construction and operation of the proposed project would result in less than significant impacts with mitigation on sensitive plants and wildlife. To mitigate impacts to sensitive plants and wildlife, staff has proposed a series of conditions of certification. Impacts to sensitive plants including western Joshua tree would be fully mitigated through participation in the WJTCA or by staff's proposed conditions of certification. Impacts to other state listed species including Crotch's Bumble Bee and Western Burrowing Owl would be fully mitigated in compliance with CESA requirements.

Significant and unavoidable impacts to any biological resource are not expected to occur.

5.2.6 Proposed Conditions of Certification

BIO-1 Designated Biologist Selection. The project owner shall assign at least one Designated Biologist to the project (multiple personnel may be required to ensure compliance with conditions of certification). The project owner shall submit the resume of the proposed Designated Biologist, with at least three references and contact information, to the California Energy Commission (CEC) Compliance Project Manager (CPM) for review and approval.

The Designated Biologist must meet the following minimum qualifications:

1. Bachelor's degree in biological sciences, zoology, botany, ecology, or a closely related field;
2. Three years of experience in field biology or current certification of a nationally recognized biological society, such as The Ecological Society of America or The Wildlife Society; and
3. At least three years of field experience with biological resources found in or near the project area.

In lieu of the above requirements, the resume shall demonstrate to the satisfaction of the CPM that the proposed Designated Biologist or alternate has the appropriate training and background to effectively implement the conditions of certification.

For work related to Crotch's bumble bee and/or burrowing owl, the above qualifications shall also apply. In addition, the Designated Biologist(s) must meet the following minimum qualifications:

1. Knowledgeable in the biology and natural history of Crotch's bumble bee or burrowing owl, or both, exclusion and/or monitoring techniques as applicable, construction and operational impact monitoring;

2. Demonstrable experience implementing exclusion and/or monitoring techniques and construction and operational impact monitoring for Crotch's bumble bee or burrowing owl, or both;
3. Demonstrable experience implementing conditions of a CDFW Incidental Take Permit or acting as a Designated Biologist, or other experience implementing a CDFW Incidental Take Permit as a Biological Monitor.

Verification: The project owner shall submit to the CPM resumes and any other relevant documentation for Designated Biologist(s) approval at least 75 days prior to the start of site mobilization and/or construction-related ground disturbance activities. No site mobilization or construction related activities shall commence until a Designated Biologist has been approved by the CPM.

If a Designated Biologist needs to be replaced, the specified information regarding the proposed replacement must be submitted to the CPM at least ten working days prior to the termination or release of the preceding Designated Biologist. In an emergency, the project owner shall immediately notify the CPM to discuss the qualifications and approval of a short-term replacement while a permanent Designated Biologist is proposed to the CPM for consideration.

BIO-2 Designated Biologist Duties. The project owner shall ensure that the Designated Biologist performs the following during any site (or related facilities) mobilization, ground disturbance, grading, construction, operation, and decommissioning activities. The project owner may request approval from the CPM to terminate the Designated Biologist's function during plant operation in writing and provide justification of the request. However, the project owner shall appoint a replacement Designated Biologist at any time as directed by the CPM and will ensure the same duties are performed during closure activities.

If no Designated Biologist is available at any time during the life of the project (including operation phase) and the CPM determines that project-related actions may affect biological resources, the CPM may direct the project owner to assign a replacement Designated Biologist, for short-term or long-term monitoring and reporting. The Designated Biologist may be assisted by the approved Biological Monitor(s) but remains the primary contact for the project owner and CPM.

The Designated Biologist Duties shall include the following:

1. Advise the project owner's Construction and Operation Managers on the implementation of the biological resource conditions of certification;
2. Ensure that all conditions of certification are met and that all reporting standards for each COC are completed and submitted to the CPM and any other regulatory agencies in compliance with specified timelines.

3. Consult on the preparation of the Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) to be submitted by the project owner;
4. Be available to supervise other biological resource staff, conduct and coordinate mitigation, monitoring, and other biological resources compliance efforts, particularly in areas requiring avoidance or containing sensitive biological resources, such as special status species or their habitat;
5. Ensure that all sensitive biological resource areas are flagged, delineated, or marked, and inspect these areas at appropriate intervals for compliance with regulatory terms and conditions;
6. Notify the CPM and CDFW of any observation of an unanticipated sensitive biological resource(s) encountered during all phases of the project. Unanticipated resources include sensitive species not addressed in the environmental document because of a perceived low potential to occur, species that are known to occur but have been proposed as a candidate for state or federal listing after the approval of the project, and common species whose range is unexpected in the project area. Notifications shall occur immediately and no later than the following morning, or Monday morning in the case of a weekend, or the next business day in the case of a state or federal holiday. The initial notification shall be followed by a formal written notification submitted to the CPM and CDFW within 48 hours of the observation.
7. Inspect or direct the site personnel how to inspect active construction areas where animals may have become trapped prior to construction commencing each day. Inspect or direct the site personnel how to inspect the installation of structures that prevent entrapment or allow escape during periods of construction inactivity. If site personnel perform these inspections, then they shall be trained by the Designated Biologist and the name of the personnel and date of training shall be included in a log in the Monthly Compliance Report.
8. Periodically inspect areas with high vehicle activity (e.g., parking lots) for animals in harm's way. Inspect soil or spoil stockpiles and dust abatement watering for compliance with **BIO-7**. Inspect erosion control materials (e.g., hay bales) to confirm weed-free certification. Inspect weed infestations and monitor eradication measures to determine success. Inspect trash receptacles, monitor site personnel compliance with trash handling, pet prohibitions, and all other WEAP components (**BIO-5**);
9. Ensure the implementation of the post construction conditions of certification;
10. Notify the project owner and the CPM and CDFW directly per the requirements of **BIO-4** of any non-compliance with any biological resources conditions of certification during all phases of the project. Notifications shall occur immediately and no later than the following morning, or Monday

morning in the case of a weekend, or the next business day in the case of a state or federal holiday. The initial notification shall be followed by a formal written notification submitted to the CPM and CDFW within 48 hours of the non-compliance incident.

11. Notify the project owner, the CPM, and CDFW directly of any special-status species injury or mortality (notifications for Crotch's bumble bee or burrowing owl, are addressed per **BIO-13** and **BIO-19**) Notifications shall occur immediately and no later than the following morning, or Monday morning in the case of a weekend, or the next business day in the case of a state or federal holiday. The initial notification shall be followed by a formal written notification submitted to the CPM and CDFW within 48 hours of the observation.
12. Respond directly to inquiries of the CPM regarding biological resource issues by phone, email, or other correspondence;
13. Maintain written records of the tasks specified above and those included in the BRMIMP. Summaries of these records shall be submitted in the Monthly Compliance Reports and the Annual Compliance Report;
14. Train the Biological Monitors as appropriate, and ensure their familiarity with the BRMIMP, Worker Environmental Awareness Program (WEAP) training, and all permits; and
15. Maintain the ability to be in regular, direct communication with the CPM and representatives of CDFW, and USFWS, including notifying these agencies of dead or injured listed species and reporting special-status species observations to the California Natural Diversity Database.

Verification: The Designated Biologist shall submit in the Monthly Compliance Reports to the CPM copies of all written reports and summaries that document construction activities that have the potential to affect biological resources. The Designated Biologist's written records will be made available for the CPM's inspection on request at any time during normal business hours. During project operation, the Designated Biologist (s) shall submit record summaries in the Annual Compliance Reports unless their duties cease, as approved by the CPM.

BIO-3 Biological Monitor Selection. The project owner's CPM-approved Designated Biologist shall submit the resume, at least three references, and contact information of the proposed Biological Monitor(s) to the CPM for approval and the CDFW for review and comment. The resume shall demonstrate, to the satisfaction of the CPM, the appropriate education and experience to accomplish the assigned biological resource tasks.

Verification: The project owner shall submit the specified information to the CPM for review and approval at least 30 days prior to the start of any site mobilization activities. Within 10 days of completion of training, the Designated Biologist shall

submit a written statement to CPM confirming that individual Biological Monitor(s) have been trained including the date when training was completed. If additional biological monitors are needed during construction or for species specific surveys, the specified information shall be submitted to the CPM for approval at least 10 days prior to their first day of monitoring activities.

BIO-4 Designated Biologist and Biological Monitor Authority. The project owner's construction/operation manager shall act on the advice of the Designated Biologist and Biological Monitor(s) to ensure conformance with the biological resource conditions of certification.

1. If required by the Designated Biologist and/or Biological Monitor(s), the project owner's construction/operation manager shall halt all site mobilization, ground disturbance, grading, construction, and operation activities in areas specified by the Designated Biologist and/or Biological Monitor. The Designated Biologist shall:
2. Require a halt to all activities in any area when determined that there would be an unauthorized adverse impact to biological resources if the activities continued;
3. Inform the project owner and the construction/operation manager when to resume activities;
4. The Designated Biologist or Biological Monitor shall notify the project owner and the CPM of any work stoppage of site mobilization, ground disturbance, grading, construction, and operation activities and associated non-compliance incidents; notifications shall occur immediately and no later than the following morning, or Monday morning in the case of a weekend, or the next business day in the case of a state or federal holiday;
5. Notify and advise the CPM of any corrective actions that have been taken or would be instituted as a result of the work stoppage; and
6. The CPM, in coordination with CDFW, as appropriate, will determine if corrective action has been effective and will direct the project owner to take further corrective action as needed.
7. If the Designated Biologist is unavailable for direct consultation, the Biological Monitor shall act on behalf of the Designated Biologist.

Verification: The project owner shall ensure that the Designated Biologist or Biological Monitor notifies the CPM immediately (and no later than the morning following the incident, or Monday morning in the case of a weekend, or the next business day in the event of a state or federal holiday) of any non-compliance or a halt of any site mobilization, ground disturbance, grading, construction, and operation activities. The project owner shall notify the CPM of the circumstances and actions being taken to resolve the problem within one (1) working day of initiating the corrective action.

BIO-5 Worker Environmental Awareness Program (WEAP). The project owner shall develop and implement a project-specific Worker Environmental Awareness Program (WEAP) and shall submit the draft WEAP for review and approval from the CPM and CDFW for review and comment. The WEAP shall be administered to all onsite personnel who will enter the project site including but not limited surveyors, construction engineers, employees, contractors, contractor's employees, supervisors, inspectors, subcontractors (but excluding delivery personnel), biologists, cultural, tribal, and paleontological monitors. An abbreviated WEAP (WEAP Light) can be provided to vendors, such as delivery personnel (e.g., building materials, concrete, heavy equipment, etc.), who periodically enter the project site and are limited to areas such as existing access roads and/or lay down areas. The WEAP Light shall also be submitted for review and approval from the CPM. The WEAP shall be implemented during site mobilization, vegetation clearing, preconstruction, construction, commissioning, operation, non-operation, and closure. All workers must complete the WEAP prior to commencing work on the project. The WEAP and the WEAP Light may be recorded for later electronic viewing by new workers who begin work after the initial presentations.

The WEAP shall:

1. Be developed by or in consultation with the Designated Biologist (See **BIO-1**) and consist of an on-site or training center presentation in which supporting written material and electronic media in English, as well as Spanish or other languages, as applicable, including photographs of protected species and their habitat, is made available to all participants;
2. Identify the lead agencies, provide an overview of the conditions of certifications, other regulatory permit requirements, and applicable LORS that must be complied with and the ramifications of non-compliance which may include fines, imprisonment, work stoppages, or loss of employment depending on the violation;
3. Identify the roles of environmental staff and define communication protocols and chain of command between environmental and construction staff. Define what actions monitors can approve such as stopping work under specific circumstances, providing guidance to comply with conditions, conducting surveys, and what actions monitors cannot approve such as directing work, expanding work areas from approved limits, changing conditions of certification requirements, or approving variances to permit conditions. Identify key field contacts and ensure that this information is posted in all break areas;
4. Provide examples of environmental signage and flagging that would be used to delineate work limits; areas for avoidance, state and or federal drainages, or other protected areas, evacuation routes, and approved staging areas;

5. Discuss the locations and types of sensitive biological resources on the Project site and adjacent areas, and explain the reasons for protecting these resources; provide information to participants that no snakes or other wildlife shall be intentionally harmed (unless posing a reasonable and immediate threat to humans);
6. Describe standard environmental commitments and best management practices that apply to the project including but not limited to: storing trash in closed receptables and removing weekly to prevent attracting animals, capping pipes and other cavities that could be used by birds and small mammals; collecting and removing the carcasses of dead animals; limiting work to daytime hours, limiting work during periods of high rainfall, preventing vehicles and equipment from operating within a stream unless specifically authorized by other permits or conditions of certification; restricting smoking to designated areas; storing chemicals and fuel in designated areas; spill prevention measures; and reporting requirements.
7. Identify project vehicle speeds on paved and unpaved access roads;
8. Place special emphasis on the protection of nesting birds, species of special concern and listed species including pictures and information on physical characteristics, distribution, behavior, ecology, sensitivity to human activities, legal protection, penalties for violations, reporting requirements, and protection measures;
9. Provide pictures of the sensitive plants and wildlife known to occur in the project area, including western Joshua tree, Crotch's bumble bee, desert tortoise, legless lizards, Swainson's hawk, bald and golden eagles, burrowing owl, loggerhead shrike, Mohave ground squirrel, American badger, desert kit fox, ringtail, and other sensitive plants and wildlife. Provide information on sensitivity to human activities, legal protection, reporting requirements, and how to identify construction avoidance zones for these species as marked by flagging, staking, or other means, as described above;
10. Provide an overview for all personnel of the risk of potential impacts to small mammals, birds, and reptiles from vehicle strikes on all project roads (paved and unpaved) during construction, operations, closure phases, reporting requirements, and protection measures;
11. Describe the risk of wildfires in desert communities and the measures that will be taken to reduce these risks such as avoiding parking in tall vegetation, limits to where workers can smoke; the locations of fire safety equipment, contact information and the procedure should a wildfire be ignited, required tools for each piece of equipment such as a shovel, Pulaski, and fire extinguisher, restrictions on welding and controlled detonations, use of the Project Activity Level (PAL) system that describes what activities can occur based on specific weather conditions including Red Flag days;

12. Provide an overview of potential impacts to avian and bat species from collisions with the cooling towers, generation tie-line, and other features associated with the operations phase, reporting requirements, and protection measures;
13. Identify whom to contact if there are further comments and questions about the material discussed in the program; and
14. Include a training acknowledgment form to be signed by each worker indicating that they received training and shall abide by the guidelines. A small wallet card or pamphlet with key contacts and resource information shall be prepared and provided after the training. A hard hat sticker shall also be provided to each worker to demonstrate to the monitors that they have participated in the training.
15. The WEAP Light shall include a summary of the items above as they relate to the limited areas that vendors need to access such as existing access roads and/or lay down areas.

The specific program can be administered by a competent individual(s) acceptable to the Designated Biologist and documented within the Monthly Compliance Reports.

Verification: At least 45 days prior to start of site mobilization the project owner shall provide to the CPM for review and approval the draft WEAP and all supporting written materials and electronic media prepared or reviewed by the Designated Biologist and a resume of the person(s) administering the program. At least 10 days prior to site mobilization the project owner shall submit the approved final WEAP and implement the training for all workers.

The project owner shall provide in the Monthly Compliance Report the number of persons who have completed the training in the prior month and a running total of all persons who have completed the training to date. Training acknowledgement forms signed during construction shall be kept on file by the project owner for at least 6 months after the start of commercial operation.

Throughout the life of the project, the WEAP shall be repeated annually for permanent operational employees, and shall be routinely administered within 1 week of arrival to any new construction personnel, foremen, contractors, subcontractors, and other personnel potentially working within the project area. Training acknowledgement forms shall be maintained by the project owner and shall be made available to the CPM upon request. Workers shall receive and be required to visibly display a hard-hat sticker or certificate that they have completed the training.

During Project operation, signed statements for operational personnel shall be kept on file for 6 months following the termination of an individual's employment.

BIO-6 Biological Resources Mitigation Implementation and Monitoring Plan. The project owner shall develop a Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP). The project owner shall provide the draft BRMIMP to the CPM for review and comment. No site mobilization or construction activities may occur prior to approval of the final BRMIMP by the CPM. Under no circumstances shall ground disturbance proceed without implementation of all applicable permit conditions.

The BRMIMP shall be prepared in consultation with the Designated Biologist and shall include the following:

1. All biological resources mitigation, monitoring, and compliance measures proposed and agreed to by the project owner;
2. All biological resources conditions of certification identified as necessary to avoid or mitigate impacts;
3. All biological resource mitigation, monitoring, and compliance measures required in state or federal agency terms and conditions, such as those provided in the National Pollution Discharge Elimination System (NPDES) Construction Activities Stormwater General Permit and Waste Discharge Certification;
4. A discussion of all sensitive biological resources that could be impacted by project site mobilization, construction, operation, and decommissioning;
5. A detailed description of measures that shall be taken to avoid or mitigate impacts on each special-status species potentially impacted by construction and operation, including remedial actions;
6. All required mitigation measures for each sensitive biological resource;
7. All locations on a map, at an approved scale (typically 1:6,000 or other scale with CPM approval), of special-status biological resource areas subject to disturbance and areas requiring temporary protection and avoidance during construction and operation;
8. Aerial photographs, at an approved scale (typically 1:6,000 or other scale with CPM approval), of all areas to be disturbed during project construction activities; include one set prior to any site or related facilities mobilization disturbance and one set subsequent to completion of project construction. The aerial photographs shall include a reference map that shows the aerial map location in reference to the project site, reference key on each aerial, and displays the project boundary. Provide planned timing of aerial photography and a description of why times were chosen;

9. Provide a final accounting of the before/after whole acreages and a determination of whether more or less habitat compensation is necessary;
10. All measures that shall be taken to avoid or mitigate temporary disturbances from construction activities;
11. Duration for each type of monitoring and a description of monitoring methodologies and frequency;
12. Performance standards to be used to help decide if/when proposed mitigation is or is not successful;
13. All performance standards and remedial measures to be implemented if performance standards are not met;
14. A process for proposing plan modifications to the CPM and appropriate agencies for review and approval;
15. All final versions of required plans including WEAP, Vegetation Management Plan, Weed Control Plan, Invasive Species Management Plan, Nesting Bird Management Plan, and all other individual biological mitigation and/or monitoring plans associated with the project shall be included as attachments; and
16. A requirement to submit any sightings of any special-status species that are observed on or in proximity to the project site, or during project surveys, to the California Natural Diversity Database (CNDDB), per CDFW requirements.

Verification: The project owner shall submit the draft BRMIMP to the CPM for review and approval at least 45 days prior to start of any site mobilization. The project owner shall provide the final BRMIMP to the CPM at least 10 days prior to start of any site mobilization.

If any federal permits have not yet been received when the final BRMIMP is submitted, these permits shall be submitted to the CPM within 5 days of their receipt, and the BRMIMP shall be revised or supplemented to reflect the permit condition(s). The project owner shall submit to the CPM and CDFW the revised or supplemented BRMIMP within 10 days following the project owner's receipt of any additional federal permits. Any changes to the approved BRMIMP shall be submitted to the CPM at least 10 days prior to implementation and must be approved by the CPM in consultation with CDFW prior to implementation.

Implementation of BRMIMP measures shall be reported in the Monthly Compliance Reports by the Designated Biologist (e.g., survey results, construction activities that were monitored, non-compliance incidences and resolution, species observed, etc.). Within 30 days after completion of project construction, the project owner shall provide to the CPM, for review and approval, a written construction termination report identifying which items of the BRMIMP have been completed, a summary of all CPM-approved modifications to

mitigation measures made during the project's site mobilization and construction activities, and which mitigation and monitoring items are still outstanding.

To verify that the extent of construction disturbance does not exceed that described in these conditions, the project owner shall submit aerial photographs, at an approved scale, taken before and after construction to the CPM and CDFW. The first set of aerial photographs shall reflect site conditions prior to any preconstruction site mobilization and construction activities and shall be submitted prior to initiation of such activities. The second set of aerial photographs shall be taken subsequent to completion of construction and shall be submitted to the CPM for review and approval, and CDFW for review and comment, no later than 30 days after completion of construction. The project owner shall also provide a final accounting in whole acres of vegetation communities/cover types present before and after construction no later than 30 days after completion of construction. Construction acreages shall be rounded to the nearest acre. The project owner shall also provide GIS shapefiles of all pre- and post-disturbance areas no later than 30 days after completion of construction.

BIO-7 General Impact Avoidance and Minimization Measures. The project owner shall ensure implementation of the following measures during site mobilization, construction, operation, and closure to manage their project site and related facilities in a manner to avoid or minimize impacts to biological resources:

1. Avoid Controlled Detonations at Night. Controlled detonations shall be limited to daylight hours and shall terminate 30 minutes before sunset and shall not resume until 30 minutes after sunrise, unless authorized by the CPM. Sunrise and sunset times are established by the U.S. Naval Observatory Astronomical Applications Department for the geographic area where the project is located. The schedule of controlled detonations shall be provided to the Designated Biologist and/or Biological Monitors. The Designated Biologist and/or Biological monitors shall monitor, observe, and record wildlife reactions during the controlled detonations to assess animal behavior and to determine how species in adjacent habitat are affected, unless approved by the CPM to discontinue monitoring.
2. Limit Disturbance Areas. The boundaries of all areas to be temporarily or permanently disturbed (including staging areas, access roads generation tie-line pole locations, etc.) shall be delineated with stakes and flagging prior to any site mobilization, vegetation clearing, ground disturbance, or construction activities in consultation with the Designated Biologist. All construction sites, laydown areas, and parking locations shall be fenced to prevent potential access to the site by small animals including but not limited to desert tortoise. Fencing shall not be required around generation tie-line line pole locations. Any deviations of the fencing requirements shall be approved by the CPM.

Spoils shall be stockpiled away from the edges of drainages and stabilized to ensure sediment laded water does not enter the drainage. All disturbances, vehicles, and equipment shall be confined to the flagged areas.

3. Minimize Road Impacts. New and existing roads that are planned for construction, widening, or other improvements shall not extend beyond the flagged impact area as described above. All vehicles passing or turning around would do so within the planned impact area or in previously disturbed areas. Where new access is required outside of existing roads or the construction zone, the route shall be clearly marked (i.e., flagged and/or staked) prior to the onset of construction.
4. Minimize Traffic Impacts. Vehicular traffic during project site mobilization, construction and operation shall be confined to existing routes of travel to and from the project site, and cross-country vehicle and equipment use outside designated work areas shall be prohibited. The speed limit shall not exceed 25 miles per hour on paved or stabilized unpaved roads within the project area, on maintenance roads for linear facilities, or on access roads to the project site. No vehicle shall exceed 10 miles per hour on unpaved areas within the project site, except on stabilized unpaved roads. Project vehicles shall abide by posted speed limits on paved public roads outside the project site.
5. Inspect Pipes and Trenches. At the end of each workday, the Designated Biologist, Biological Monitor, and/or site personnel (approved and trained by the Designated Biologist, as described under **BIO-2**) shall ensure that all potential wildlife pitfalls (trenches, bores, and other excavations) have been backfilled. If site personnel are inspecting trenches, bores, and other excavations and wildlife is trapped, they shall immediately notify the Designated Biologist and/or Biological Monitor. If backfilling is not feasible, all trenches, bores, and other excavations shall be covered to prevent wildlife entrapment or sloped at a 3:1 ratio at the ends to provide wildlife escape ramps. Should wildlife become trapped, the Designated Biologist or Biological Monitor shall remove and relocate the animal to a safe location. Any wildlife encountered during construction shall be allowed to leave the construction area unharmed.
6. Prevent Wildlife Entrapment. All pipes, tubes, ducting, or other cavities shall be capped to prevent wildlife entrapment. Portable toilets shall require vent pipes to be screened to prevent cavity using birds from becoming trapped in the pipe.
7. Reservoir Management Plan. The project owner shall submit a Reservoir Management Plan to the CPM for review and approval, in consultation with CDFW, prior to construction of the reservoir. The Plan shall include information on how wildlife entrapment shall be minimized at the reservoir. This shall include fencing height, type of fencing material (e.g., privacy slats, mesh size) number and location of wildlife escape ramps, inspection and

reporting procedures, annual reporting of the number and type of species entrapped, injured, or killed. Fencing shall be designed to serve as a visual barrier and effectively deter wildlife from entering the enclosed reservoir area.

The Plan shall include details of the design of the floating interlocking reservoir cover, including features that minimize wildlife impacts, and identify additional wildlife deterrent measures as needed to prevent access and contact with reservoir water. Measures shall address both the installation and operation phases of the reservoir to avoid and minimize impacts to wildlife.

In addition, the Plan shall include a process for evaluating the efficacy of the cover, ramps, and other wildlife protection features with monthly reporting during the first year of reservoir operation and annual reporting thereafter for the life of the project, unless an alternative reporting schedule is approved by the CPM.

If any state or federally listed species are found to be injured or killed as a result of reservoir operations, the project owner shall notify the CPM and CDFW and shall implement appropriate remedial actions as directed by the CPM, in consultation with CDFW. The Plan shall outline potential remedial measures, including modifications to exclusion features, installation of wildlife deterrents, operational changes, or habitat protection actions, subject to CPM review and approval.

8. Unexpected Wildlife. The Designated Biologist or Biological Monitor shall ensure that any unexpected special-status wildlife species such as California condor, desert tortoise, Mohave ground squirrel, or other species are fully avoided during construction. Should an unexpected wildlife species be detected a non-disturbance buffer shall be implemented based on the species ecology or species-specific condition of certification, and work shall be suspended in that area until the animal leaves on its own volition. Any observations of unexpected wildlife should comply with notification requirements provided in **BIO-2**, Item 6.

9. Bat Roost Protection and Mitigation

   a) Active Bat Maternity or Hibernacula. If active maternity roosts or hibernacula are found during surveys by an approved bat biologist, submitted for approval under **BIO-3**, the structure, tree or feature occupied by the roost shall be avoided (i.e., not removed) until the young have matured or the hibernacula period is over. When an active maternity roost or hibernacula is present within 500 feet of a construction site an approved bat biologist shall conduct an initial assessment of the roost's response to construction activities including controlled detonations and recommend buffer expansion if there are signs of disturbance from the roost. The buffer may be adjusted based on site conditions, topography,

type of work activity, or other ecological evidence, with the approval of the CPM.

b) Avoid Removing or Disturbing Bat Roosts. Active bat roosts shall not be disturbed and shall be provided a minimum buffer of 300 feet where pre-existing disturbance is moderate or 500 feet where preexisting disturbance is minimal. Moderate disturbance may include areas subject to regular human activity or traffic noise up to 60 dBA and limited artificial lighting. Minimal disturbance refers to areas with little or no recent human activity, low ambient noise levels (typically below 45 dBA), no artificial lighting, and a generally undisturbed natural setting. All buffer distances and need for monitoring active maternity roosts or hibernacula shall be approved by the CPM.

   If suitable roost sites are to be removed, or otherwise impacted by the project, the approved bat biologist shall conduct targeted roost surveys of all identified sites. A minimum of two separate survey visits shall be conducted at each potential roost site, unless fewer surveys are approved by the CPM. Surveys shall be timed to capture variation in bat use and environmental conditions. If initial results are inconclusive or as recommended by the bat biologist, additional survey visits may be required by the CPM.

c) Roost Site Removal. A qualified bat biologist shall survey potential roost sites prior to their disturbance or removal, per Item 8b. Any structures (natural or artificial) that show evidence of significant bat use within the past year should be retained whenever feasible. If such a structure must be removed or disturbed, the project owner shall create alternative roost sites in coordination with the CPM and CDFW. If removal or disturbance of trees or other identified roost sites cannot be avoided, removal of active roost sites shall be conducted outside the maternity season to avoid mortality of maternity colonies.

10. Prepare a Wildlife Protection and Relocation Plan. The project owner, in coordination with the Designated Biologist, shall prepare a Wildlife Protection and Relocation Plan (WPRP) to provide guidance and protocols when avoiding or handling common and sensitive species that are located within the project area. The WPRP shall include measures for handling rattlesnakes or other snakes found in or near work areas and access roads and provide these guidelines to all Biological Monitors, safety staff, and other personnel. Killing or harming rattlesnakes or other wildlife is not authorized, unless there is an immediate and unavoidable threat to human safety and relocation is not feasible. The WPRP shall include methods to salvage or relocate common and sensitive wildlife during ground disturbance activities including clearing, grubbing, and grading operations when feasible to off-site habitat or out of harm's way. The species shall be salvaged or relocated when conditions will

not jeopardize the health and safety of the Designated Biologist or Biological Monitor;

11. Minimize Lighting Impacts. To minimize adverse effects of artificial light on wildlife, exterior lighting fixtures associated with project construction shall be downward facing, fully shielded, and designed and installed to minimize backscatter, reflection, minimize skyward illumination, minimize spillover onto adjacent wildlife habitat. Lights used shall be lower on the light spectrum (lower Kelvins with fewer short-wavelength blue light emissions);

12. Use Non-toxic Soil Binders. Soil bonding and weighting agents used on unpaved surfaces shall be non-toxic to wildlife and plants and shall be approved by the CPM prior to use;

13. Minimize Impacts from Pest Control. Anticoagulants shall not be used for rodent control. Pre-emergent and other herbicides with documented residual toxicity shall not be used. Herbicides shall be applied in conformance with federal, State, and local laws and according to the guidelines for wildlife-safe use of herbicides in **BIO-9** (Integrated Weed Management Plan);

14. Minimize Standing Water. Water applied to dirt roads and construction areas (trenches or spoil piles) for dust abatement shall use the minimal amount needed to meet safety and air quality standards to prevent the formation of puddles, which could attract predators of special-status species to construction sites. During construction, site personnel shall patrol these areas to ensure water does not puddle and attract crows and other wildlife to the site, and shall take appropriate action to reduce water application rates where necessary;

15. Handling of Road-killed Animals. Report all inadvertent deaths of special-status species to the appropriate project representative, including roadkill. Species name, identifiable physical characteristics of the animal (sex, age class, length, weight), and other pertinent information shall be noted and reported in the Monthly Compliance Reports. During construction, injured or dead animals detected by personnel in the project area shall be reported immediately to the Designated Biologist and/or Biological Monitor, who shall remove the carcass or injured animal promptly. During operations, the Environmental Compliance Monitor for the project owner shall be notified and they shall contact the Designated Biologist and/or Biological Monitor for further instructions. The Designated Biologist shall notify the project owner, the CPM, and CDFW directly of any special-status species injury or mortality. Notifications shall occur immediately and no later than the following morning, or Monday morning in the case of a weekend, or the next business day in the case of a state or federal holiday per **BIO-2**. Additionally, the Designated Biologist shall contact the CPM, CDFW and/or USFWS within 1 working day of receipt of the carcass for guidance on disposal or storage of the carcass. The project owner shall follow instructions that are provided by the appropriate agency contact. The veterinary fees for the treatment of injured wildlife shall

be covered by the project owner for project-related injuries or wildlife found injured on the project site.

16. Minimize Spills of Hazardous Materials. All vehicles and equipment shall be maintained in proper working conditions to minimize the potential for fugitive emissions of motor oil, antifreeze, hydraulic fluid, grease, or other hazardous materials or wastes. The Designated Biologist and/or Biological Monitor shall be informed immediately of any hazardous spills. Any on-site servicing of vehicles or construction equipment shall take place only at a designated area approved by the Designated Biologist. Service/maintenance vehicles shall carry a bucket and pads to absorb leaks or spills;
17. Remove Trash Weekly. During construction all trash and food-related waste including micro-trash shall be placed in secure, self-closing containers to prevent access by wildlife and removed weekly or more frequently from the site. Workers shall not feed wildlife or bring pets to the project site;
18. No Firearms. Except for law enforcement or security personnel, no workers or visitors to the site shall bring firearms or weapons to the project site;
19. Avoid Use of Toxic Substances. Soil bonding and weighting agents used on unpaved surfaces shall be non-toxic to wildlife and plants;
20. Minimize Disturbance Areas. Limit the size of any vegetation and/or ground disturbance to the minimum area needed for safe completion of project activities, and limit ingress and egress to defined routes;
21. Weed and Monofilament Free Wattles. Use only weed-free straw, hay bales, and seed for erosion control and sediment barrier installations. Monofilament plastic shall not be used for erosion control. In addition, non-native species shall not be used in landscaping plans and erosion control;
22. Conform to APLIC Guidelines. The generation tie-line and all associated components shall be designed, installed, and maintained in accordance with the Avian Power Line Interaction Committee's (APLIC's) *Suggested Practices for Avian Protection on Power Lines* (APLIC 2006) and *Reducing Avian Collisions with Power Lines* (APLIC 2012), or most recent APLIC guidance, to reduce the likelihood of large bird electrocutions and collisions;
23. Aviation Lighting. If required, to the extent feasible, any aviation warning lighting shall employ only strobed, strobe-like or blinking incandescent or LED lights, preferably with all lights illuminating simultaneously. Minimum intensity, maximum "off-phased" dual strobes are preferred, and no steady burning lights (e.g., L-810s) shall be used;
24. Herbicide Use. During construction and operation, the project owner shall conduct pesticide management in accordance with standard BMPs. The BMPs shall include non-point source pollution control measures. The project owner shall use a licensed herbicide applicator and obtain recommendations for herbicide use from a licensed Pest Control Advisor. Herbicide applications

must follow EPA label instructions. Minimize use of rodenticides and herbicides in the project area and prohibit the use of chemicals and pesticides known to cause harm to non-target plants and wildlife. The project owner shall only use pesticides for which a "no effect" determination has been issued by the EPA's Endangered Species Protection Program for any species likely to occur within the project area, per **BIO-13** If rodent control must be conducted, zinc phosphide or an equivalent product shall be used; and

25. Minimize Stormwater Impacts. Standard best management practices (BMPs) from the project Storm Water Pollution Prevention Plan shall be implemented during all phases of the project (construction, operation, and decommissioning) where storm water run-off from the site could enter adjacent drainages. Sediment and other flow-restricting materials shall be moved to a location where they shall not be washed back into the jurisdictional waters. All disturbed soils within the project site shall be stabilized to reduce erosion potential, both during and following construction.

Verification: All general impact avoidance and minimization measures shall be included in the BRMIMP and implemented. Implementation of the measures shall be reported by Designated Biologist in the Monthly Compliance Reports during construction and reported in Annual Compliance Reports during operation, including but not limited to the requirements cited above and in **BIO-2**.

The project owner shall submit the draft Reservoir Management Plan to the CPM for review and comment, in coordination with CDFW, at least 45 days prior to the start of any construction-related activities associated with the reservoir. The project owner shall provide the final Reservoir Management Plan to the CPM at least 10 days prior to any construction-related activities associated with the reservoir.

The project owner shall submit the draft WPRP to the CPM for review and comment at least 45 days prior to the start of project site mobilization. The project owner shall provide the final WPRP to the CPM at least 10 days prior to project site mobilization.

Within 30 days after completion of project construction, the project owner shall provide to the CPM, for review and approval, a written construction termination report identifying how measures have been completed.

BIO-8 Vegetation Management Plan. The project owner shall develop a Vegetation Management Plan (VMP). The VMP shall contain the requirements to stabilize temporarily disturbed areas, including proposed stabilization measures, seed mixes, schedules, success criteria, reporting requirements, and any

remediation activities. No site mobilization or construction activities may occur prior to approval of the final VMP by the CPM.

The VMP shall be developed by a qualified botanist or restoration ecologist approved by the CPM. The Plan shall identify all areas of permanent and temporary impacts and describe how temporarily disturbed areas in desert areas shall be stabilized to prevent the establishment and spread of invasive species. Invasive weeds are defined as Cal-IPC High or Moderate species except where allowances for annual grasses as described below.

The Plan shall specify success criteria and materials and methods for site preparation, reseeding, maintaining, and monitoring revegetated areas in the following categories. Successful establishment of native desert scrub communities is not required as temporary impacts are being considered permanent to offset impacts to listed species and revegetation efforts shall include an initial seeding event followed by weed management.

A. The goal of revegetation on these sites shall be stabilize disturbed areas and prevent the establishment of Cal-IPC High or Moderate species that could colonize adjacent habitats. Permanent and temporary impacts shall be off-set through compensatory mitigation (**BIO-14**);

B. At a minimum, all temporary disturbed areas shall be recontoured, scarified, and stabilized with a seed mix consisting of local natives, including grasses and wildflowers preferred by Crotch's bumble bee, and shrubs.

   At a minimum the VMP shall include but not be limited to the following requirements.

   1. **Site Maps.** The Plan shall include the types and acreages of habitats to be restored. These areas shall be identified on maps with sufficient detail for a desktop review and provided as GIS files. The Plan shall provide drawings and or schematics outlining the location of seeding and or plantings.
   2. **Revegetation Methods.** Describe the methods of active revegetation to be used depending on site location and habitat Active revegetation is defined as any area that receives seed or container plants, irrigation (if proposed), weeding, and monitoring.
      a. The methods shall include any proposed site preparation such as topsoil salvage, re-contouring, decompaction, pre-installation weeding, or other proposed methods.
   3. **Topsoil Salvage Requirements**. Topsoil and the seed bank it contains, shall be conserved on areas where soil is excavated to the degree possible based on the five year construction timeframe, or alternate timeframe as approved by the CPM. Topsoil salvage shall occur provided the area does

not support any Cal-IPC Rank Moderate or High with the exception of Brome and Mediterranean grasses. Salvage shall be accomplished by:

a. Woody material such as Joshua trees shall be removed from the soil surface and piled in an area that will be out of the way during construction. The upper 6 to 8 inches of soil, where present, shall be scraped from the disturbance footprint and piled into a windrow in an area that shall not be disturbed during construction.

b. Topsoil stockpiles shall be clearly marked for avoidance.

c. Windrows shall be immediately protected from wind and rain erosion by covering them or hydro-mulching. Erosion protection shall be renewed as needed.

d. Salvaged topsoil shall be respread on areas that shall be revegetated following construction. Salvaged topsoil versus subsoil shall be used for this purpose unless the location is identified as weed infested using the methods outlined in **BIO-9**.

4. **Seed Mix and Application.** Describe the proposed seed mix, quality control requirements, and application methods such as hydroseeding, broadcast seeding, imprinting, use of container plants, cuttings, or other treatments.

   a. The proposed seed mix shall be acquired from local sources unless approved by the CPM, in consultation with CDFW.

   b. Describe the timing of the seed application and measures to ensure that hydroseeding equipment has been cleaned prior to use on the project site.

   c. The methods shall describe any proposed use of slurry binders, soil stabilizers, or use of mycorrhizal fungi.

   d. Describe the proposed timing of the seeding and other revegetation efforts such as container plantings, cuttings, or other methods.

   e. It is recommended that coarse woody debris from damaged Joshua trees be strategically placed across the revegetation areas to foster the development of micro habitats for plants and wildlife.

5. **Success Criteria.** The VMP shall include success criteria and percent cover for each of the proposed temporarily disturbed areas. Prior to initial ground disturbance of any areas that would be treated, the restoration ecologist shall develop a baseline goal for treatment including the percentage cover and type of weeds and the grass and forb cover. The goal of the VMP is to prevent the establishment of high-priority invasive weeds that are considered controllable (i.e. species that can be effectively suppressed or eliminated through standard management practices) such

as Russian thistle (*Salsola tragus*) and Sahara mustard (*Brassica tournefortii*).

After 5 years upland areas shall be dominated by native annuals, forbs, and low growing perennials with a total cover of 60 percent. Cover of high-priority invasive species rated by Cal-IPC High or Moderate species shall not exceed 5 percent total cover with the exception of brome grasses (*Bromus* spp.) or Mediterranean grass (*Schismus barbatus*), which shall be managed to the extent feasible to control spread.

6. **Implementation Schedule.** The VMP shall include a defined implementation schedule and plan including any revegetation activities including conducting biological or cultural resources clearance surveys, avian monitoring, or other license requirements; ensuring soil conditions are prepared for treatment, and the implementation of any required erosion control devices.
7. **Site Preparation.** All work areas shall be clearly delineated prior to revegetation work; and this shall include any soil preparation measures, including locations of recontouring, de-compacting, imprinting, or other treatments; details for topsoil storage, as applicable; plant material collection and acquisition guidelines, plants from the project site, as well as obtaining replacement plants from outside the project area (sources for plant materials shall be limited to locally occurring native species from the local area if needed); a plan drawing or schematic depicting the temporary disturbance areas described above; time of year that the planting or seeding shall occur and the methodology of the planting; a description of the irrigation, if used; success criteria; a monitoring program to measure the success criteria, commensurate with the Plan's goals and contingency measures for failed revegetation efforts not meeting success criteria.
8. **Plant Acquisition.** Plant acquisition shall be limited to locally collected seed, and cuttings if used, unless approved by the CPM, in consultation with the CDFW.
9. **Final Site Grading and Seeding.** The VMP shall include proposed plans for final site grading and seeding, developed in consideration of site-specific conditions and subject to approval by the CPM. At final grade, the last few inches shall not be compacted to more than 75 percent to facilitate penetration by plant roots, unless otherwise approved by the CPM based on soil type and site conditions. Salvaged topsoil shall be spread over the finish grade, which shall retain surface roughness, such as small ridges, where appropriate to enhance seedling wind protection and moisture collection from rain and fog.

   Hydroseed or drill seeding with soil stabilization seed mixture shall be applied between October 1 and mid-November, unless alternate timing is

approved by the CPM. The hydroseed or drill seed mix shall contain a mulch and binder to retard wind erosion by providing a crust over the soil surface. Native plant seeds shall be added to the hydroseed mixture or hand broadcasted onto the site just prior to hydroseeding. Care shall be taken to avoid premature germination of native species caused by prolonged immersion in the hydroseeding equipment.

On slopes, the project owner shall augment the erosion control seed mixture with seed of species native to the region, based on seed availability and habitat conditions. Seed mixtures appropriate for desert habitats shall be developed using native species sourced from the region and shall be approved by the CPM. The VMP shall include details of seed sources, application methods, and any proposed deviations from these guidelines with supporting rationale.

10. **Maintenance and Monitoring**. The revegetation areas shall be monitored and maintained for a minimum of 5 years by a qualified botanist or restoration ecologist. At the end of the five-year monitoring period the qualified botanist or restoration ecologist in consultation with the Designated Biologist shall prepare a final monitoring report detailing the success of the revegetation efforts and shall provide recommendations, if needed. This final monitoring report shall be submitted to the CPM for review and approval. After the initial 5-year monitoring period, the CPM shall determine if additional monitoring or remedial actions are required.

    Invasive weed management shall be started within 3 months of planting or seeding, or earlier if weeds have begun to flower, unless alternate timeframe is approved by the CPM. Weeding shall proceed as frequently as necessary to prevent weeds from spreading off the project site into the adjacent area and to prevent seed set. An effort shall be made to cut weeds before they develop seeds to minimize the spread of invasive weeds. Any new Cal IPC High or Moderate species weed species not currently present in the project area prior to construction shall be eradicated (see **BIO-9** and **BIO-10**).

11. **Reporting.** Quarterly and annual revegetation status reports shall include a map of all areas planted or managed, percent weed cover, status of revegetation efforts including percent native cover and survivorship, and any remedial actions taken.

Verification: The project owner shall submit the draft VMP to the CPM for approval at least 45 days prior to start of any site mobilization. The project owner shall provide the final VMP to the CPM and CDFW at least 7 days prior to start of any site mobilization. Any changes to the approved VMP must be approved by the CPM. Quarterly, annual, and final revegetation status reports shall be submitted

to the CPM for review and approval no more than 30 days after each reporting period.

BIO-9 Integrated Weed Management Plan. The project owner shall develop an Integrated Weed Management Plan (IWMP). The IWMP shall be prepared in consultation with the Designated Biologist and shall include accurate and up-to-date maps depicting the location of weed occurrences across the project site and generation-tie line alignment. The IWMP shall be submitted to the CPM for review and approval. The IWMP shall contain all required measures to identify, control, and manage existing and potential weed infestations on the project site. No site mobilization, ground disturbance, or construction activities may occur prior to approval of the final IWMP by the CPM. The IWMP shall be implemented prior to any site mobilization, and during the construction, operation, and decommissioning phases of the project.

1. **Weed Definition.** The IWMP shall describe the methods of preventing or controlling the introduction or spread of weeds or new weed infestations. For the purposes of the IWMP, "weeds" shall include all plants designated as noxious weeds or pest plants by the California Department of Food and Agriculture (CDFA), including those listed in Title 3, California Code of Regulations Section 4500 or assigned a CDFA pest rating of A, B, or Q, or the agencies most recent ranking system. Weeds shall also include any other non-native plant species ranked in the *California Invasive Plant Inventory* by the California Invasive Plant Council (Cal-IPC) or its most recent ranking system.
2. **Weed Risk Assessment.** The IWMP shall provide an assessment of the project's potential to spread invasive non-native weeds rated Cal IPC High or Moderate species into new areas, or to introduce new non-native invasive weeds into the project site. This IWMP must list known and potential non-native and invasive weeds occurring on the project site and in the project region and identify threat rankings, including Cal-IPC and CDFA, and potential consequences of project-related occurrence or spread for each species.

   This assessment shall include, but is not limited to, weeds that (1) are currently ranked as having a high or moderate for ecological impact in the California Invasive Plant Inventory maintained by the Cal-IPC (Cal-IPC 2025), (2) aid and promote the spread of wildfires, and (3) have the potential to displace native vegetation communities.
3. **Success Criteria.** The IWMP shall identify goals for control of each species (e.g., eradication, suppression, or containment) likely to be found within the project area. The goals shall include the following success criteria:
   - With the exception of brome and Mediterranean grasses which are ubiquitous in the project area, all plant species with rates of dispersal and establishment listed as "High" or "Moderate" on the California Invasive Plant Inventory shall

have documented absence, or have been removed from the site for at least three years, for the CPM to deem the site control successful.

- The site shall not contain more than 5% exotic plant species rated by Cal-IPC as High or Moderate for the CPM to deem the site control successful.

The IWMP shall include the following measures to guide weed inventory, prevention, control, and monitoring activities:

1. The project owner shall inventory the entire project site, covering all areas subject to ground-disturbing activity, including, but not limited to, construction work sites, staging areas, and any potential new or improved access roads. Weed occurrences shall be mapped and described according to species, density, and area covered. The map shall be updated at least once per year during the construction phase.
2. Weed infestations identified in the pre-construction weed inventory shall be evaluated to identify potential for project-related spread. The IWMP shall identify any infestations to be controlled or eradicated prior to start of project construction, or other site-specific weed management requirements (e.g., avoidance of soil transport and site-specific vehicle washing where threat or spread potential is high).
3. The CPM shall be notified via email within 30 days if any weed species detected on the project site has not been previously recorded in Kern or Los Angeles County, based on available records from the CDFA, the Cal-IPC, the Calflora Database, or other relevant regional floristic data sources.
4. Control and follow-up monitoring of pre-construction weed treatment sites shall follow methods identified in appropriate sections of the IWMP. The monitoring section shall also describe methods for post-eradication monitoring to evaluate success of control efforts and any need for follow-up control.
5. The IWMP shall specify methods to minimize potential transport of weed seeds onto the project site, or from one section of the project site to another. The project site may be divided into “weed zones,” based on known presence or likelihood of invasive species in specific areas. The IWMP shall specify inspection procedures for construction materials and equipment entering the project area. Vehicles and equipment shall be inspected and cleaned at entry points to specified portions of the project site, and prior to leaving work sites where weed occurrences must be contained locally.
6. The IWMP shall include prevention measures based on Prevention Best Management Practices for Transportation and Utility Corridors (https://www.cal-ipc.org/resources/library/publications/tuc/) and Cal-IPC’s Preventing the Spread of Invasive Plants: Best Management Practices for Land Managers (https://www.cal-

ipc.org/resources/library/publications/landmanagers/) or most recent guidance.

7. Construction equipment shall be cleaned of dirt and mud that could contain weed seeds, roots, or rhizomes. Equipment shall be inspected to ensure it is free of any dirt or mud that could contain weed seeds, and the tracks, outriggers, tires, and undercarriages shall be thoroughly washed, as needed. Special attention shall be given to axles, frame, cross members, motor mounts, underneath steps, running boards, and front bumper/brush guard assemblies. Other construction vehicles (e.g., pick-up trucks) that frequently enter and exit the site shall be inspected and washed on an as-needed basis. Tools (e.g. chainsaws, hand clippers, pruners, etc.) shall also be cleaned of dirt and mud before entering project work areas.
8. All vehicles shall be washed off-site when possible. If off-site washing is infeasible, on-site cleaning stations shall be set up at designated locations to clean equipment before it enters the work area. Wash stations shall be located away from native habitat or special-status species occurrences. Wastewater from cleaning stations shall not be allowed to run off the cleaning station site. A daily log shall be maintained for all vehicle and equipment washing activities stating the location, date and time, types of equipment, methods used, and personnel present.
9. Erosion control materials (e.g., straw wattles, hay bales) shall be certified free of weed seed before they are brought onto the site. The IWMP shall prohibit on-site storage or disposal of mulch or green waste that may contain weed material. Mulch or green waste shall be removed from the site in a covered vehicle to prevent seed dispersal and transported to a licensed landfill or composting facility.
10. The IWMP shall specify guidelines for any soil, sand, gravel, mulch, or fill material that will be imported into the project area, transported from site to site within the project area, or transported from the project area to an off-site location, to prevent the introduction or spread of weeds to or from the project area.
11. The IWMP shall specify methods to survey for weeds during construction and operation; and shall identify the botanists responsible for weed monitoring and identification. The botanists shall be approved pursuant to **BIO-1** and/or **BIO-3**. The IWMP shall include a monitoring schedule to ensure timely detection and immediate control of weed infestations to prevent further spread. Surveying and monitoring for weed infestations shall occur at least two times per year, to coincide with the early detection period for early season and late season weeds (i.e., species germinating in winter and flowering in late winter or spring, and species germinating later in the season and flowering in summer or fall).

12. The IWMP shall include methods for marking invasive weeds on the project site and for recording and communicating these locations to weed control personnel. The map of weed locations (referenced above under Item 1) shall be updated at least annually and provided to the CPM in both Arc-GIS - compatible digital format (e.g. shapefiles) and PDF map format.
13. The IWMP shall specify manual and chemical weed control methods to be employed. The IWMP shall include only weed control measures with a demonstrated record of effectiveness for target weeds, based on the best available information, including relevant agency guidance, peer-reviewed studies, and documented control successes for the target species. The plan shall describe methods for promptly scheduling and implementing control activity when any weed infestation is present, to ensure timely and effective weed control. Weed infestations shall be controlled or eradicated within 10 days upon detection, and prior to seed production, to prevent further spread. If detected after seed production, measures shall be taken to prevent further spread, including containment, seed removal, and increased monitoring.
14. All proposed weed control methods must minimize the extent of any disturbance to native vegetation, limit ingress and egress to defined routes, and avoid damage from herbicide use or other control methods to any environmentally sensitive areas identified within or adjacent to the project site. Herbicide use must comply with the following restrictions unless approved by the CPM in consultation with CDFW.
    a. Herbicide applicators must follow the best management practices described by the Guidance to Protect Habitat from Pesticide Contamination published by the Xerces Society for Invertebrate Conservation or most recent guidance;
    b. Herbicides marked with the U.S. Environmental Protection Agency's bee hazard icon shall be avoided;
    c. Herbicides shall not be sprayed onto any native flowering plant, with special care to avoid special status plants and foraging species used by bumble bees.
    d. Only herbicides with a short residual toxicity to bees shall be used. Pesticide toxicity shall be verified using UC Agriculture and Natural Resource's Bee Precaution Database, or equivalent current resource.
    e. Targeted application methods shall be used instead of broadcast spraying whenever feasible.
    f. All herbicide application must be conducted by a Licensed and Certified Pesticide Applicator, licensed by the California Department of Pesticide Regulation (CDPR), and shall be applied as directed by the manufacturer and all applicable federal, state, and local regulations.

15. Weed infestations shall be treated at least annually until eradication, suppression, or containment goals are met. For an infestation to be considered eradicated, no new seedlings or resprouts shall be observed for three (3) consecutive, normal rainfall years. Upon approval by the CPM, weed control efforts may be discontinued for that site.
16. Manual control shall include well-timed removal of weeds or their seed heads with hand tools. Removed seed heads and plants shall be disposed of in accordance with guidelines from the Kern County Agricultural Commissioner, if such guidelines are available. If no guidelines are available, all materials shall be sealed in bags and transported to a licensed green-waste or composting facility to prevent seed dispersal.
17. The IWMP shall include specific plans for any herbicide use based on known locations. The plan shall indicate where herbicides will be used, which herbicides will be used and specify techniques to be used to avoid drift or residual toxicity to native vegetation or special-status plants and wildlife. An updated herbicide work plan shall be developed based on the results of ongoing weed surveys and submitted annually with the annual monitoring report and updated weed location maps.
18. Herbicides shall not be applied during or within 72 hours of predicted rain. Only water-safe herbicides shall be used in drainage areas or within channels (engineered or not) where they could run off into downstream areas. Herbicides shall not be applied when wind velocities exceed six (6) mph. All herbicide applications shall follow U.S. Environmental Protection Agency label instructions and shall be in accordance with federal, state, and local laws and regulations. Any herbicide proposed for usage must be approved in advance by the CPM and use shall not conflict with **BIO-13**.
19. The IWMP shall specify a reporting schedule, with no less than one report submitted annually, and shall define the contents of each report and reports shall be submitted by the project owner to document weed control activities, including treatment methods, locations, dates, monitoring results, and effectiveness of control measures.

Verification: The project owner shall submit the draft IWMP to the CPM for review and approval at least 60 days prior to start of any pre-construction site mobilization activities. The project owner shall provide the final IWMP to the CPM and CDFW at least 7 days prior to the start of any site mobilization. Any changes to the approved IWMP must be approved by the CPM. The annual report shall be submitted within 30 days of completion of the late season surveys.

BIO-10 Invasive Species Management Plan. The project owner shall develop and implement an Invasive Species Management Plan (ISMP). The ISMP shall be prepared in consultation with the Designated Biologist and shall include an education program (see **BIO-5**) to describe the risk that invasive species pose to

native wildlife and the control methods required during pre-construction site mobilization, and during the construction, operation, and decommissioning phases of the project. The ISMP shall be submitted to the CPM for review and approval. The ISMP shall include the following:

1. **Invasive Species Education Program.** The program shall consist of a presentation by the Designated Biologist(s)or Biological Monitor(s)that includes a discussion of the invasive species currently present within the project site as well as those that may pose a threat to or have the potential to invade the project site. The discussion shall include a physical description of each species and information regarding their habitat preferences, local and statewide distribution, modes of dispersal, and ecological impacts. The program shall also include a discussion of best management practices (BMPs) to be implemented at the project site to avoid the introduction and spread of invasive species into and out of the project site. The program shall provide interpretation for non-English speaking workers. The presentation may be recorded for later electronic viewing by new workers who begin work after the initial presentations. The program shall be repeated annually for the life of the project. Copies of program materials shall be maintained at the project site for workers to reference as needed. The program shall be included as part of the WEAP training and implemented, as required under **BIO-5**.
2. **Invasive Species.** The ISMP shall describe the best management practices (BMPs) that prevent the introduction, transfer, and spread of invasive species, including plants, animals, and microbes (e.g., algae, fungi, parasites, bacteria, etc.), from one project site and/or waterbody to another. If decontamination is not done on site, transport contaminated equipment in sealed plastic bags and keep separate from clean gear. For locations known to be infested with invasive species, use dedicated equipment that is only used in infested waters and store this equipment separately. Prevention BMPs and guidelines for invasive plants are available California Invasive Plant Council's website at: https://www.cal-ipc.org/solutions/prevention/ and for invasive mussels and aquatic species are available at the Stop Aquatic Hitchhikers website: https://stopaquatichitchhikers.org/ or most recent guidance. These measures shall be adapted to conform when working in desert areas without connectivity to intermittent or perennial water sources.
3. **Inspection of Project Equipment.** Inspect all vehicles, tools, boots, and other project-related equipment and remove all visible soil or mud, plant materials, and animal remnants. All water must be drained from equipment prior to entering and exiting the project site and/or between each use in different waterbodies.
4. **Decontamination of Project Equipment.** All tools, waders and boots, and other equipment that will enter the project site and/or between each use in different waterbodies, shall be decontaminated to avoid the introduction and transfer of organisms between waterbodies. Decontamination methods and

protocols shall be outlined in the ISMP and may include techniques to clean gear and equipment such as thorough drying, hot water treatment, freezing, or other scientifically supported practices. All equipment must be thoroughly cleaned prior to decontamination, with particular attention paid to areas where organisms may be trapped (e.g., seams, laces, net corners, etc.). Repeat decontamination shall be required if the equipment/clothing is removed from the site, used within a different waterbody, and returned to the project site or different waterbody. Methods shall follow current best management practices as outlined in the CDFW Aquatic Invasive Species Decontamination Protocol or most current guidance. Decontamination measures can be adapted based on site-specific conditions when working in desert areas without connectivity to intermittent or perennial water sources. Decontamination measures shall ensure that terrestrial arthropods such as Argentine ants do not invade adjacent desert lands.

5. **Decontamination of Vehicles and Equipment.** Vehicles and other project-related equipment too large to immerse in a hot water bath shall be decontaminated by using effective methods designed to eliminate potential biological contaminants. This may include using pressurized hot water, flushing of internal systems, and thorough draining and drying. Methods shall follow current best management practices as outlined in the CDFW Aquatic Invasive Species Decontamination Protocol or most current guidance. Decontamination procedures can be adapted to conform when working in desert areas without connectivity to intermittent or perennial water sources. Decontamination measures shall ensure that terrestrial arthropods such as Argentine ants do not invade adjacent desert lands.

6. **Decontamination Sites.** The project owner shall identify a decontamination site approved by the CPM. The project owner shall ensure the decontamination of vehicles and other project-related gear and equipment is located in a designated location where runoff can be contained and not allowed to pass into CDFW-jurisdictional areas and other sensitive habitat. Preferably this will consist of an off-site location such as a construction yard or other approved vehicle washing location. Rinse water shall be disposed of at least 100 feet from any surface water.

7. **Notification of Invasive Species.** If an invasive species not previously known to occur within the project site is discovered during project activities the project owner or Designated Biologist shall notify the CPM and CDFW within 24-hours, or by Monday if during the weekend, or by the next business day if during a state or federal holiday. The report shall include photos and a completed Suspect Invasive Species Report (available online at: https://wildlife.ca.gov/Conservation/Invasives/Report). In addition, the project owner or Designated Biologist shall provide an email to the Invasive Species Program at: invasives@wildlife.ca.gov or current CDFW email for reporting. Notification may also be provided by calling (866) 440-9530 or current CDFW phone number for reporting. Upon receiving guidance from the

CPM, in coordination with CDFW, the project owner will take further action, as appropriate to the species.

Verification: The project owner shall submit the draft ISMP to the CPM for review and approval at least 45 days prior to the start of any site mobilization activities. The project owner shall provide the final ISMP to the CPM at least 7 days prior to start of any site mobilization. No site mobilization, ground disturbance, or construction activities may occur prior to approval of the final ISMP by the CPM.

BIO-11 Special-Status Plant Avoidance Measures. The Designated Biologist and/or Biological Monitor(s) shall conduct floristic pre-construction surveys for special-status plants. Surveys shall be conducted with the appropriate protocols approved by the CPM during the appropriate season in all suitable habitat within the project disturbance areas and access roads and within 100 feet of disturbance areas, where accessible. Surveys shall be conducted by qualified botanists or biologists approved by the CPM, pursuant to **BIO-1** and/or **BIO-3**.

The field surveys and reporting shall conform to current CDFW botanical field survey protocol (CDFW 2018) or more recent updates. With respect to areas potentially directly disturbed during the construction of the generation tie-line, protocol surveys conforming to the current CDFW botanical field survey protocol (CDFW 2018) are required for areas that have not previously been surveyed by the project owner to date. During each year of construction, and prior to site mobilization and ground disturbance, the project owner shall identify proposed survey areas to the CPM for review and approval prior to initiating annual botanical surveys. The survey plan shall identify proposed survey areas and the rationale for any areas not proposed for surveys. The survey plan shall include maps, at an approved scale, clearly defining each proposed survey area.

Any special-status plant species (including state and federally listed threatened or endangered species, candidates for listing, and all CRPR 1A, 1B, 2, 3, and 4 ranked species) detected shall be documented in the pre-construction survey reports. The results shall be submitted to CPM, CDFW, and USFWS (should federally listed plants be discovered) for review. The reports shall describe any conditions that may have prevented target species from being located or identified, even if they are present as dormant seeds or below-ground root stock (e.g., poor rainfall, disturbance, or wildfire). In some cases, follow-up surveys may be necessary to adequately evaluate impacts. Pre-construction field survey reports shall include maps, at an approved scale, showing locations of survey areas, reference populations, and special-status plants.

The results of these surveys will inform the implementation of appropriate avoidance and minimization measures, as outlined below:

1. **Avoidance.** Where feasible, any special status plant shall be protected by establishment of a minimum 50-foot non-disturbance buffer. The buffer area

shall be clearly staked, flagged, and signed for avoidance prior to the beginning of site mobilization and maintained throughout the construction phase. The buffer zone shall be of sufficient size to prevent direct or indirect disturbance to the plants from site mobilization and construction activities, erosion, inundation, or dust.

The final buffer distance shall be determined by a qualified biologist or botanist, approved under **BIO-1** and/or **BIO-3,** based upon the proposed use of the immediately adjacent areas and the plant's ecological requirements (e.g., sunlight, moisture, shade tolerance, water availability, edaphic physical and chemical characteristics).

For tree or shrub species, the buffer shall be no less than twice the drip line (i.e., two times the distance from the trunk to the canopy edge) to protect and preserve the root systems. For herbaceous species, the buffer shall be a minimum of 50 feet from the outer edge of the occupied habitat or the individual.

If a smaller buffer is necessary due to other site-specific constraints, the project owner, in coordination with the Designated Biologist or qualified botanist shall develop and implement site-specific protection measures, such as monitoring, to avoid the impacts to the species, if possible. The measure shall be subject to approval from the CPM, in consultation with CDFW. Such measures may include placing decking or pads above dormant species to prevent their loss and limit soil compaction.

2. **Compensatory Mitigation.** If avoidance is not feasible, the project owner shall mitigate impacts to any state or federally listed plants that are subject to disturbance from project activities. Should a State listed plant be subject to disturbance the project owner would be required to implement standard categories of mitigation applicable for take coverage through CESA which includes seed salvage, propagation, and the preservation of lands occupied by the species. The measures shall be subject to approval from the CPM, in consultation with CDFW. In addition, the project owner shall provide compensatory mitigation for CRPR 1 or 2 ranked species if project activities result in the loss of more than 10 percent of a defined occurrence due to direct or indirect impacts to soils, vegetation, or water transport that could affect the species' viability. Western Joshua tree is addressed separately under **BIO-12.**

   An occurrence, or local population, shall be defined as the number of individuals occurring on the project site or all plants within a 0.25-mile buffer.

   - For perennial species, percent avoidance shall be based on population size or number of individuals avoided.

- For annuals, avoidance shall be based on occupied habitat, which includes habitat containing the species' micro-habitat preferences (e.g., such as "soil types and moist depressions").

Occupied habitat shall be calculated on both the project site and compensation lands as including each special status plant occurrence and a surrounding 100-foot buffer area to account for seed bank.

The project owner shall provide compensation lands at the following minimum ratios:

- 3:1 for any state or federally listed plants and CRPR 1 or 2 ranked species
- 2:1 ratio for CRPR 1 or 2 ranked species

3. **Compensatory Mitigation by Acquisition:** The requirements for the acquisition, initial protection and habitat improvement, and long-term maintenance and management of special-status plant compensation lands shall include the following:

   Selection Criteria for Acquisition Lands. The compensation lands selected for acquisition may include any of the following three categories:

   a. **Occupied Habitat, No Habitat Threats.** The compensation lands selected for acquisition shall be occupied by the target plant population and shall be characterized by site integrity and habitat quality that are required to support the target species and shall be of equal or better habitat quality than that of the affected occurrence. The occurrence of the target special-status plant on the proposed acquisition lands should be viable, stable, or increasing (in size and reproduction).

   b. **Occupied Habitat, Habitat Threats.** Occupied compensation lands characterized by habitat threats may also be acquired if the population could be reasonably expected to recover with habitat restoration efforts (e.g., OHV or grazing exclusion, or removal of invasive non-native plants) and is accompanied by a Habitat Enhancement/Restoration Plan.

   c. **Unoccupied but Adjacent.** The project owner may also acquire habitat for which occupancy by the target species has not been documented, if the proposed acquisition lands are adjacent to occupied habitat. The project owner shall provide evidence that acquisitions of such unoccupied lands would improve the defensibility and long-term sustainability of the occupied habitat by providing a protective buffer around the occurrence and by enhancing connectivity with undisturbed habitat. This acquisition may include habitat restoration efforts where appropriate, particularly when these restoration efforts will benefit adjacent habitat that is occupied by the target species.

4. **Review and Approval of Compensation Lands Prior to Acquisition.** The project owner shall submit a formal acquisition proposal to the CPM

describing the parcel(s) intended for purchase. This acquisition proposal shall discuss the suitability of the proposed parcel(s) as compensation lands for special-status plants in relation to the criteria listed above and must be approved by the CPM, in coordination with CDFW and/or USFWS.

5. **Compensation Lands Management Plan.** The project owner shall prepare a management plan for the compensation lands in consultation with the entity that will be managing the lands. The objective of the management plan shall be to support and enhance the long-term viability of the target special-status plant occurrences. The Compensation Lands Management Plan shall be submitted for review and approval to the CPM, in coordination with the CDFW and/or USFWS.

6. **Integrating Special-Status Plant Mitigation with Other Mitigation lands.** If all or any portion of the acquired compensation lands for Crotch's bumble bee, burrowing owl, waters of the state, or other required compensation lands meets the criteria above for special-status plant compensation lands, the portion of the other species or habitat compensation lands that meets any of the criteria above may be used to fulfill that portion of the obligation for special-status plant mitigation.

7. **Compensation Lands Acquisition Requirements.** The project owner shall comply with the following requirements relating to acquisition of the compensation lands after the CPM, has approved the proposed compensation lands:

    a. **Preliminary Report.** The project owner, or an approved third party, shall provide a recent preliminary title report, initial hazardous materials survey report, biological analysis, and other necessary or requested documents for the proposed compensation land to the CPM and CDFW. All documents conveying or conserving compensation lands and all conditions of title are subject to review and approval by the CPM. For conveyances to the State, approval may also be required from the California Department of General Services and the Wildlife Conservation Board.

    d. **Title/Conveyance.** The project owner shall acquire and transfer fee title to the compensation lands, a conservation easement over the lands, or both fee title and conservation easement, as required by the CPM. Any transfer of a conservation easement or fee title shall be to CDFW if accepted by CDFW, a non-profit organization qualified to hold title to and manage compensation lands (pursuant to California Government Code section 65965), or to BLM or other public agency approved by the CPM. If an approved non-profit organization holds fee title to the compensation lands, a conservation easement shall be recorded in favor of CDFW or another entity approved by the CPM. If an entity other than CDFW holds a conservation easement over the compensation lands, the CPM may require that CDFW or another entity approved by the CPM, in consultation with CDFW, be named a third-party beneficiary of the conservation

easement. The project owner shall obtain approval of the CPM of the terms of any transfer of fee title or conservation easement to the compensation lands.

c. **Initial Protection and Habitat Improvement.** The project owner shall fund activities that the CPM requires for the initial protection and habitat improvement of the compensation lands. These activities will vary depending on the condition and location of the land acquired, but may include trash removal, construction and repair of fences, invasive plant removal, and similar measures to protect habitat and improve habitat quality on the compensation lands.

The habitat improvement funds may be held and expended by a qualified non-profit organization, CDFW or another public agency, provided that the entity is qualified to manage compensation lands (pursuant to California Government Code section 65965) and is authorized to participate in implementing the required activities on the compensation lands, upon approval of the CPM, in consultation with CDFW.

If CDFW accepts fee title to the compensation lands, the project owner shall provide the habitat improvement fund directly to CDFW or its designee.

Property Analysis Record. Upon identification of the compensation lands, the project owner shall conduct a Property Analysis Record (PAR) or PAR-like analysis to establish the appropriate amount of the long-term maintenance and management fund to pay the in-perpetuity management of the compensation lands. The PAR or PAR-like analysis must be approved by the CPM before it can be used to establish funding levels or management activities for the compensation lands.

d. **Long-term Maintenance and Management Funding.** The project owner shall deposit a capital long-term maintenance and management fee in a dedicated interest bearing account held by governmental entity, special district, or nonprofit organization or other CPM approved entity, in the amount determined through the Property Analysis Record (PAR) or PAR-like analysis conducted for the compensation lands.

The CPM, in consultation with CDFW, may designate another non-profit organization to hold the non-refundable, long-term maintenance and management fee if the organization is qualified to manage the compensation lands in perpetuity.

If CDFW takes fee title to the compensation lands, CDFW shall determine whether it will hold the long-term management fee in the special deposit fund or designate another entity to manage the long-term maintenance and management fee under CDFW oversight.

In addition to the costs listed above under Items a-d, the project owner shall be responsible for all other costs related to acquisition of compensation lands and conservation easements, including but not limited to: title and document review costs incurred from other state agency reviews, overhead related to providing compensation lands to CDFW or an approved third party, escrow fees or costs, environmental contaminants clearance, and other site cleanup measures**.**

Mitigation Security. The project owner shall provide financial assurances to the CPM to guarantee that an adequate level of funding is available to implement any of the mitigation measures required by this condition that are not completed prior to the start of site mobilization and ground-disturbing activities.

Financial assurances shall be provided to the CPM, and copy to the CDFW, in the form of an irrevocable letter of credit, a pledged savings account or another form of security ("Security") approved by the CPM. The actual costs to comply with this condition will vary depending on the actual costs of acquiring compensation habitat, the costs of initially improving the habitat, and the actual costs of long-term management as determined by a PAR report.

Prior to submitting the evidence of Security, the project owner shall obtain the CPM's approval of the form of the Security. The CPM may draw on the Security or approve of the security beneficiary to draw on the security, if the CPM determines the project owner has failed to comply with the requirements specified in this condition. Funds from the Security may solely be used for implementation of the requirements of this condition.

Use of the Security by the CPM or other approved entity does not relieve the project owner of its obligations under this condition if the Security is insufficient to fully cover required measures. Any unused portion of Security shall be returned to the project owner, in whole or in part, upon successful completion of the associated requirements in this condition.

8. **Monitoring.** Annual monitoring and documentation of salvaged plants shall include, but not be limited to, details of plants salvaged, stored, and transplanted (salvage and transplanting locations, species, number, size, condition, etc.); adaptive management efforts implemented (date, location, type of treatment, results, etc.); and evaluation of success of transplantation. Transplanted species may not be placed in areas subject to future land disturbance and must be protected by a conservation easement or restricted covenant that prohibits disturbance and ensures conservation of the site in perpetuity. Conservation lands would be acquired consistent with the specifications identified above under Section b. Title /Conveyance. Annual monitoring shall occur for a minimum of three years post-relocation to ensure

the plants become established and are not at risk from weeds or other impacts, unless approved by the CPM. The results of annual monitoring shall be reported in an Annual Monitoring Report specific to salvaged of propagated plants for a minimum of three years. Additional monitoring may be necessary if determined upon review of the annual reports by the CPM that the success criteria are not met. Success criteria shall include maintaining habitat occupied by the impacted species at the identified ratios and number of plants for any occupied habitat affected by the project.

9. **Propagation and Relocation Strategy.** If salvage and relocation is not believed to be feasible for special-status plants, then the project owner shall consult with California Botanic Garden, or another qualified entity, to develop an appropriate propagation and relocation strategy, based on the life history of the species affected. The Special-Status Plant Propagation and Relocation Plan shall include at minimum: (a) collection and salvage measures for plant materials (e.g., cuttings), seed, or seed banks, to maximize success likelihood; (b) details regarding storage of plant, plant materials, or seed banks; (c) location of the proposed propagation facility, and proposed methods; (d) time of year that the salvage and other practices will occur; (e) success criteria; and (f) a detailed monitoring program, commensurate with the plan's goals. The draft Special-Status Plant Propagation and Relocation Plan shall be submitted to the CPM for review and approval and to the CDFW for review and comment. The final plan approved by the CPM shall be submitted prior to any salvage or relocation.

Verification: The project owner shall submit the proposed annual survey plan 45 days prior to commencing the surveys to the CPM for review and approval. The project owner shall submit the results of each annual survey to the CPM for review and approval no more than 45 days after the completion of the surveys.

Should mitigation be required the project owner shall submit the Habitat Enhancement/Restoration Plan, Formal Acquisition Proposal, Compensation Lands Management Plan, Recent Preliminary Title Report, and Property Analysis Record (PAR) and Security to the CPM for review and approval and the CDFW/USFWS if applicable for review and comment no later than 45 days prior to construction. If plant propagation is proposed as mitigation the project owner shall submit the Special-Status Plant Propagation and Relocation Plan to the CPM for review and approval and the CDFW/USFWS if applicable for review and comment no later than 45 days prior to construction

The project owner shall submit the Annual Monitoring Reports to the CPM for review and approval no more than 30 days after each reporting period.

BIO-12 Western Joshua Tree Avoidance, Minimization, and Mitigation Measures. To avoid, minimize, and mitigate impacts to western Joshua tree (WJT), the project owner shall ensure the following are implemented:

1. **Western Joshua Tree Relocation Plan and Conservation Fund Fees.** The project owner shall submit a final Western Joshua Tree Relocation Plan to the CPM for review and approval, and to CDFW for review and comment, prior to any site mobilization or ground-disturbing activities within 200 feet of any WJT. The plan shall include, at a minimum, the following:

   a. Name and contact information for the project owner;

   b. APNs for locations where trees are proposed for removal (with maps at an approved scale);

   c. Name and qualifications of the desert native plant specialist overseeing relocation efforts;

   d. Details of the locations where trees will be transplanted, including landowner name(s), address(es), APN(s), maps, approximate distance from original tree location, approximate difference in elevation from original tree location; site description including habitat and previous impacts;

   e. A calculation of the number of trees to be relocated based on the CDFW Relocation Guidelines and Protocols (https://wildlife.ca.gov/Conservation/Environmental-Review/WJT/Permitting/WJTCA-ITP#apply) or most recent guidelines. The total number of relocated trees shall be a percentage of the number of trees lethally taken for the project and must at least meet or exceed the CDFW calculation for each size class depending on the method used (i.e., tree spade removal, bare root, or a combination of both).

   f. A Tree Relocation Spreadsheet that includes a unique identifier (tree ID), size class, original location and recipient site locations (lat/long), relocation area name, anticipated removal and transplanting dates, the relocation method used, storage information (if applicable), overall tree health assessment, photos, and any other pertinent information for each tree proposed for relocation;

   g. A signed statement from the landowner from each relocation site granting the project owner permission to relocate trees to their land, provide access to implement the maintenance and monitoring measures, and

allow staff to access the property to conduct compliance inspections (if trees will be relocated outside of the project area).

Upon review and approval by the CPM of the Final Western Joshua Tree Relocation Plan, the CPM will provide an invoice for the required mitigation fee. Based on preliminary data submitted by the applicant, this is estimated to be $319,580.00 for Option 1 – Without Berm and $457,394.75 for the Option 2 - With Berm (see **Table 5.2-6**); however, the total fee shall be dependent on the final number of trees and class sizes that are authorized for take. The project owner shall submit the mitigation fee payment to the CDFW Region 4 office by check or money order with a copy of the invoice attached. No impacts to WJT shall be authorized until confirmation by CDFW that the mitigation fee has been received from the project owner. The check shall be submitted to the following address, or most current Region 4 office location:

California Department of Fish and Wildlife Region 4
1234 E. Shaw Avenue
Fresno, CA 93710
reg4assistant@wildlife.ca.gov
(559) 243 – 4005 ext. 151

2. **Western Joshua Tree Relocation Post-Relocation Reporting and Annual Reporting.** The project owner shall have a Designated Biologist approved by the CPM oversee all Western Joshua Tree Relocation activities. At the completion of relocation, the project owner shall submit a post-relocation report, consistent with current CDFW Western Joshua Tree Relocation Guidelines and Protocols (April 2025), no more than 30 days after relocation is completed and shall conduct annual monitoring of each relocated tree for a period of 3 years, or as required by current CDFW guidelines. An annual status report shall be submitted to the CPM for review and approval, and CDFW for review and comment. Each report shall include a health assessment of each relocated tree (with unique identifiers), a description of current habitat conditions (including any new disturbances), and representative photos and maps. The content of the reports shall be detailed in the Western Joshua Tree Relocation Plan.

3. **Notification of New Stem or Trunk:** During construction, once the project site has been fully cleared of the WJT identified in the census, if a new western Joshua tree stem or trunk arises from the ground, regardless of whether it germinates from seed, a trunk re-sprout occurs, or otherwise, project owner shall prepare a Notification of New Stem or Trunk and submit it to the CPM before conducting or resuming project activities that will impact any WJT individual that was not included in the census and included in the invoice, including any new WJT stem or trunk that arises from the ground

(e.g., new sprouts or resprouts) [that are size class A or B]. The Notification of New Stem or Trunk shall include the following about any new WJT:

- A unique identifier for each WJT (i.e., WJT ID);
- GPS location for each WJT (latitude and longitude);
- At least one color photo of each WJT identified;
- Size class for each WJT (size class A is any WJT less than one meter in height, size class B is any WJT one meter or greater but less than five meters in height, size class C is any WJT greater than five meters in height);
- Anticipated impact for each WJT (i.e., removal, relocation, trimming, or encroachment, or no impact);
- If the WJT will be encroached upon (individual will not be removed and project activities will take place within 15 meters of the base of the WJT) indicate the distance from the base where project activities will take place;
- A map showing the location of new WJT in relation to WJT for which take is authorized by the license.
- The project owner shall submit the Notification of New Stem or Trunk prior to conducting activities that may result in take of or impacts to the new stem or trunk (i.e., removal, trimming, relocation, or encroachment). After the CPM has confirmed the number and size class of individual WJT to be impacted, an invoice for the mitigation fees pursuant to Fish and Game Code section 1927.3, subdivisions (d)-(e) shall be issued to the project owner by the CPM as required under Item 1.
- The Notification of New Stem or Trunk and invoice shall be submitted to the CPM and serve as the basis for CPM authorization of additional take coverage for the new WJT individual(s) provided that the Notification of New Stem or Trunk the project owner submits is complete and mitigation fees are received prior to any impacts to any new WJT individuals identified in the Notification of New Stem or Trunk.

4. **WJT Stockpiles:** If dead and or removed WJT are stockpiled on site, they shall not be placed within 50-feet (approximately 15 meters) of a WJT that are being preserved on site, relocated on site, or encroached upon.
5. **Recurring Assessment:** The project owner shall conduct a Recurring Assessment of the project site to determine whether any new WJT individuals have emerged. The Recurring Assessments shall begin six months after the completion of ground-disturbing activities and be repeated annually for the duration of construction activities following the initial assessment, then every five years for the life of the project, unless approved by the CPM. If a new WJT is found, the project owner shall prepare and submit a Notification of

New Stem or Trunk and submit it to the CPM before conducting project activities that will impact it. The project owner shall submit the results of the Recurring Assessment as part of Annual Status Report and during operation the results shall be submitted as part of the Annual Compliance Report.

6. **No-Work Buffers:** The project owner shall ensure no work is conducted within the no-work buffers for WJT that will be preserved on site. Prior to beginning relocation, the project owner shall minimize work within the buffer of WJT that will be relocated to the maximum extent possible. After relocation, the project owner shall ensure no work is conducted within the no-work buffer for relocated WJT. The no-work buffers are as follows:

   - 50 feet (approximately 15 meters) surrounding any WJT individual that is five meters or greater in height
   - 25 feet (approximately 7.5 meters) surrounding any WJT individual is one meter or greater but less than 5 meters in height
   - 10 feet (approximately 3 meters) surrounding any WJT individual less than one meter in height

   The project owner shall mark no-work buffers using fencing, stakes and ropes, or stakes and flagging of a different color than the color used to identify WJT individuals authorized to be taken. If WJT individuals occur in groups, the project owner may mark a single 50-foot (approximately 15-meter) buffer around the entire group, measured from the base of the trunk of the outer-most WJTs. Any adjustments to the buffer size shall be approved by the CPM, in coordination with CDFW. The project owner shall maintain the no-work buffer markings for the duration of project construction. After all construction activities are completed, the project owner must remove all materials used to mark no-work buffers.

7. **Trenching:** During storm events, the project owner shall not perform trenching activities within 50 feet (approximately 15 meters) of WJT preserved on site or relocated on site, as soils around the root zone of WJT may be more susceptible to erosion during such events. The project owner shall only perform trenching activities during periods of dry weather (with less than a 40 percent chance of rain), unless approved by the PM. Within at least 12 hours prior to the onset of predicted rain (40 percent chance of rain or more based on the National Weather Service) or immediately upon the onset of unpredicted rain, the project owner shall ensure that all trenching activities are ceased, all associated erosion control measures shall be in place, and all motorized equipment and fueling materials shall be removed from areas where runoff from these items can be reasonably foreseen to come into contact with WJT preserved on site, or relocated on site, or encroached upon. Trenching halted due to rain may resume when rain ceases. The project owner shall monitor the National Weather Service 72-hour forecast for the

project site. Weather forecasts shall be documented and shall be provided upon request by the CPM.

Verification: The project owner shall submit the draft Western Joshua Tree Relocation Plan to the CPM review and approval, in consultation with CDFW, no less than 45 days prior to commencing any project activities that will impact western Joshua trees, including site mobilization and/or construction. The project owner shall submit the final Western Joshua Tree Relocation Plan and pay the WJTCA mitigation fees prior to any project activities that will impact western Joshua trees.

The annual status report for the relocated western Joshua tree shall be submitted to the CPM for review and approval, in consultation with CDFW, by January 31 of the following year.

If a new WJT stem or trunk is detected, the project owner shall submit a Notification of New Stem or Trunk to the CPM and to CDFW for review and comment prior to any project activities that may impact the new WJT. No impacts may occur until the CPM approves the notification and CDFW has received applicable mitigation fees.

BIO-13 Crotch's Bumble Bee Impact Avoidance, Minimization, and Mitigation Measures for Take. To avoid, minimize, and mitigate take of the Crotch's bumble bee, the project owner shall ensure the following are implemented during all phases of the project:

The Designated Biologist and/or Biological Monitor(s) shall conduct pre-construction surveys and monitoring for Crotch's bumble bee. Surveys shall be conducted by a qualified entomologist(s) or biologist(s) familiar with the life history and ecology of Crotch's bumble bee. All proposed surveyors shall be approved by the CPM, in coordination with the CDFW, pursuant to **BIO-1** and/or **BIO-3**.

Surveys shall cover all project work areas, including staging and parking areas, plus a 200-foot buffer, where accessible to account for ground borne vibration associated with controlled detonations, unless a smaller buffer is approved by the CPM. Surveys shall follow the non-invasive protocols established by CDFW in "Survey Considerations for California Endangered Species Act (CESA) Candidate Bumble Bee Species" or more recent CDFW-approved methods, as available (CDFW 2023a).

1. **Crotch's Bumble Bee Mortality Reduction and Relocation Plan.** The project owner shall submit a Crotch's Bumble Bee Mortality Reduction and Relocation Plan to the CPM for review and approval, and to the CDFW for review and comment, prior to beginning any site mobilization or ground disturbing activities. The Crotch's Bumble Bee Mortality Reduction and Relocation Plan shall include a map of the project area indicating where

Crotch's bumble bee are likely to occur; a detailed description of the survey methodology (survey details shall be in accordance with the Colony Active Period Season - Pre-Construction Survey described below under Item 3); bumble bee identification and handling methods; measures that will be implemented to minimize impacts to foraging bees during ground disturbing and vegetation removal activities; measures to minimize impacts to overwintering bees during overwintering habitat removal; and measures to minimize impacts to bumble bee nests that are discovered during project activities. The plan shall identify nest relocation techniques and locations where Crotch's bumble bee nests will be relocated to; an assessment of the habitat and floristic resources found within the relocation sites; and a detailed description of the relocation process including method of removal, transport, and relocation.

The Mortality Reduction and Relocation Plan shall provide the name and contact information for a native bumble bee researcher who will assist and/or consult on techniques to relocate Crotch's bumble bee nests and the procedure for notification, collection, and salvage of Crotch's bumble bee carcasses. Only the CPM-approved Designated Biologist(s), or personnel following direction from and under the supervision of the CPM-approved Designated Biologist(s), are authorized to handle and transport Crotch's bumble bee individuals and Crotch's bumble bee nests for salvage. Handling of Crotch's bumble bee individuals and nests by any personnel not specifically authorized by the CPM is prohibited.

Upon written approval of the Crotch's Bumble Bee Mortality Reduction and Relocation Plan by the CPM, it shall be implemented and remain in effect for the duration of the project license. The plan may be updated by the project owner, in consultation with and subject to the approval of the CPM, to reflect best available science, address unanticipated issues associated with implementation, or update mitigation and conservation strategies. In such cases, the CPM will contact the project owner to discuss needs to update the plan. Any proposed changes to the Crotch's Bumble Bee Mortality Reduction and Relocation Plan shall be submitted, in writing, to the CPM for approval prior to the implementation of any proposed modifications.

2. **Overwintering Season Surveys (Pre-Construction and During Operation).** If initial ground disturbing construction activities in any given work area occurs during the overwintering season (November 1 through January 31), the CPM approved Designated Biologists(s) and/or Biological Monitor(s) shall conduct overwintering season surveys within areas of suitable habitat (i.e., where vegetation and floral resources occur) in each area planned for project activities no more than 10 days in advance of vegetation removal or ground disturbance in that area of the project site.

If ground disturbing activities during operation occur within areas of suitable habitat (i.e., where vegetation and floral resources occur) during the overwintering season, the CPM-approved Designated Biologist(s) shall conduct overwintering season surveys throughout the project site in areas planned for ground disturbance no more than 10 days in advance of ground or vegetation removal activities, unless approved by the CPM.

Overwintering season surveys shall look for potential Crotch's bumble bee overwintering queens and hibernacula such as leaf litter, logs, and rodent burrows. If overwintering queens or other Crotch's bumble bee are found utilizing hibernacula during surveys, the project owner shall implement the Overwintering Site Buffer (see Item 5, below).

3. **Colony Active Period Season (Pre-Construction and Pre-Maintenance).** If initial ground disturbing construction activities, including site mobilization, in any given work area occur during the Colony Active Period (February 1 to September 30), the CPM-approved Designated Biologist(s) and/or Biological Monitor(s) shall search for Crotch's bumble bee throughout the area planned for project activities in accordance with the Crotch's Bumble Bee Mortality Reduction and Relocation Plan.

   Survey efforts for each area shall include at least two visual surveys consisting of meandering transects occurring no more than 10 days prior to the start of ground and vegetation disturbing activities in that area. The CPM approved Designated Biologist(s) and/or Biological Monitor(s) shall conduct the surveys at least four days apart, with the second survey occurring within two days prior to starting ground and/or vegetation removal activities in that area. The survey duration shall be appropriate to the size of the area planned for project activities plus 50 feet based on the metric of a minimum of one person-hour of searching per three acres of suitable habitat.

   The CPM approved Designated Biologist(s) and/or Biological Monitor(s) shall conduct surveys between 7:00 AM and 6:00 PM (Pacific Time) on sunny days between 55-and 95-degrees Fahrenheit with sustained wind speeds measuring less than 10 miles per hour. Survey efforts are further detailed in the Crotch's Bumble Bee Mortality Reduction and Relocation Plan, and any variances to the Survey Protocol, including variances to survey temperatures or timing, shall be submitted to the CPM for review and approval prior to implementation.

   If ground disturbing activities occur during operation within areas of suitable habitat during the colony active period, the CPM-approved Designated Biologist(s) and/or Biological Monitor(s) shall search for Crotch's bumble bee throughout the areas planned for ground disturbance in accordance with the Crotch's Bumble Bee Mortality Reduction and Relocation Plan.

If ground disturbing activities are halted for longer than three days within a work area supporting suitable habitat during the Colony Active Period defined as the Queen Flight Season (February 1 through March 31), the CPM-approved Designated Biologist(s) and/or Biological Monitor(s) shall perform a minimum of one additional survey in the work area in accordance with the Crotch's Bumble Bee Mortality Reduction and Relocation Plan prior to reinitiating project activities in the work area.

If a Crotch's bumble bee nest is detected during project surveys or any project activities, the project owner shall implement the Crotch's Bumble Bee Mortality Reduction and Relocation Plan unless the nest can be avoided per the Crotch's Bumble Bee Nest Site Buffer measures (Item 6).

4. **Pre-Construction Survey and Observation Submittal (Construction, Operation, and Maintenance)**. The project owner shall provide the Colony Active Period Season - Pre-Construction Survey (Item 3) results or Overwintering Survey Results (to the CPM no more than ten days prior to initiating or resuming (Item 2) if initial disturbance not complete) project activities in each work area, unless alternate timing is approved by the CPM. The CPM-approved Designated Biologist(s) and/or Biological Monitor(s) shall notify the CPM if an overwintering individual and/or nest is observed within 100-feet of the project area during site mobilization, construction, or operation.

   Pre-construction surveys and observational submittals shall include a Keyhole Markup Language (KML) map, or KML-Zipped (KMZ) map, and Geographic Information System (GIS) shapefiles of all Crotch's bumble bee detections and/or nests found during survey efforts or during any incidental observations, and photographs of the individual or nest. The map shall include an outline of the project site, and any distinct work area(s) surveyed within the project area, title, north arrow, scale bar, and legend.

5. **Overwintering Site Buffer (Construction, Operation, and Maintenance).** If any overwintering Crotch's bumble bee are found during focused overwintering surveys, during ground and/or vegetation disturbing activities, including site mobilization or construction activities, or during operation of the project, the project owner, in consultation with the CPM-approved Designated Biologist(s) and/or Biological Monitor(s) shall immediately stop and prohibit all ground disturbing activities within 50 feet of the queen and/or hibernaculum. The project owner shall delineate the 50-foot buffer and notify all workers not to enter the environmentally sensitive area. This buffer may be adjusted with the approval of the CPM based on project activities and potential to disturb the nest.

   If an overwintering queen is exposed, the CPM approved Designated Biologist(s) shall implement the Crotch's Bumble Bee Mortality Reduction and

Relocation Plan. The CPM-approved Designated Biologist(s) and/or Biological Monitor(s) shall record the queen's location with a GPS (including datum and horizontal accuracy in feet) and include photographs and a map of the queen's location as detailed in Item 4 (Pre-Construction Survey and Observation Submittal). Upon notice from the CPM, the project owner shall increase the size and modify the environmentally sensitive area buffer accordingly.

6. **Crotch's Bumble Bee Nest Site Buffer (Construction, Operation, and Maintenance).** If a Crotch's bumble bee nest is identified during Colony Active Period Season focused surveys, during ground and/or vegetation disturbing site mobilization or construction activities, or during operation of the project, the project owner shall ensure establishment of a 50-foot no disturbance buffer around each nest. Buffers shall remain in place until the nest has senesced, project activities are complete, or the nest has been relocated in accordance with the Crotch's Bumble Bee Mortality Reduction and Relocation Plan. This buffer may be adjusted with the approval of the CPM based on project activities and potential to disturb the nest.

   To determine if a nest has senesced, the CPM-approved Designated Biologist(s) and/or Biological Monitor(s) shall monitor the nest for senescence in late summer and fall (September-October). Nest senescence can typically be denoted after the presence of reproductives (gynes and males) are observed. Nests shall be monitored for a minimum of one hour per day for three consecutive days during optimal weather conditions (i.e., from 7:00 AM to 6:00 PM, low wind, and low cloud cover conditions, etc.). If there has been no nest activity after the above conditions are met, or the nest has been relocated, the no disturbance buffer may be removed upon approval of the CPM. Survey efforts shall be further detailed in Crotch's Bumble Bee Mortality Reduction and Relocation Plan (Item 1).

7. **Daily Work Area Monitoring (Construction and Operation).** The CPM approved Designated Biologist(s) and/or Biological Monitor(s) shall be on-site during all initial ground disturbing site mobilization and/or construction activities in any given work area to visually monitor for Crotch's bumble bee and to detect flight activity. Visual sweeps of each work area shall occur prior to beginning daily project activities, and a minimum of three times throughout the workday, unless alternate timing is approved by the CPM.

   The CPM approved DBs(s) shall be on-site during all ground disturbing operation activities occurring within areas of suitable habitat. The Designated Biologist(s) and/or Biological Monitor(s) shall visually monitor for Crotch's bumble bee and to detect flight activity. Visual sweeps of each work area shall occur prior to beginning ground disturbing activities, and a minimum of three times throughout the workday for the duration of ground disturbing activities, unless alternate timing is approved by the CPM.

8. **Crotch's Bumble Bee Observations and Notification.** All workers shall inform the CPM-approved Designated Biologist(s) and/or Biological Monitor(s) if a Crotch's bumble bee nest is observed within or near a work area during implementation of any project activity, including ground or vegetation disturbing construction or operation activities. If a nest is observed all activities occurring within 50 feet of the nest shall cease and the project owner shall implement a 50-foot no disturbance buffer. If an overwintering Crotch's bumble bee nest cannot be avoided, then Item 1 (Crotch's Bumble Bee Mortality Reduction and Relocation Plan) shall be implemented.
9. **Weed Management Plan.** See condition **BIO-9** (Integrated Weed Management Plan).
10. **Pesticide and Herbicide Use.** The project owner shall not use substances such as herbicides, insecticides, or rodenticides except for the following conditions:

    - Herbicides may be used if needed for noxious weed control or habitat restoration and enhancement.
    - Pesticides (including insecticides) may only be applied post construction in indoor areas where contact with wildlife and foraging Crotch's bumble bee could not occur.

    Prior to any such use of herbicides or pesticides, the project owner shall consult with the CPM and may only use herbicides or pesticides upon the CPM's express written approval for each type of use. The project owner shall ensure that any herbicide use only occurs when Crotch's bumble bees are dormant, or when flowers within the application area are no longer in bloom, unless authorized by the CPM to control weeds.
11. **Document Crotch's Bumble Bee Observations.** Survey data shall be submitted to the CNDDB and shall include specifying the type of observation (e.g. individual bee or nest), type of vegetation cover, slope, aspect, GPS location, distance to foraging location (if known), and any other relevant conditions noted. Negative survey results shall also be reported to the CNDDB.

Verification: The project owner shall submit the draft Crotch's Bumble Bee Mortality Reduction and Relocation Plan no less than 45 days prior to commencing the surveys to the CPM for review and approval and to the CDFW for review and comment. The project owner shall provide the final plan to the CPM and CDFW at least 7 days prior to the start of any site mobilization.

The project owner shall submit the results of each survey to the CPM for review and approval and to the CDFW for review and comment no more than 45 days after the completion of the surveys.

The project owner shall submit information describing the findings of the bumble bee surveys and implementation of any avoidance measures in the Monthly Compliance Report (per **BIO-6**) and the Annual Compliance Report, during operation, to the CPM.

BIO-14 Habitat Management Land Acquisition for Crotch's Bumble Bee and Western Burrowing Owl

To mitigate for impacts to Crotch's bumble bee and western burrowing owl the project owner shall fulfill the following requirements:

The project owner shall purchase 843 acres of Crotch's bumble bee and western burrowing owl mitigation or conservation bank credits, at a location within the Antelope Valley or Western Mojave Desert approved in advance by the CPM, in coordination with CDFW, or shall provide for both the permanent protection and management of 843 acres of Habitat Management (HM) lands pursuant to Item 3 (Habitat Management Lands Acquisition and Protection) and the calculation and deposit of the management funds pursuant to Item 5 (Endowment Fund). The amount of mitigation required shall be calculated based on the project's final direct permanent and temporary loss of suitable Crotch's bumble bee and western burrowing owl habitat, as approved by the CPM, in consultation with CDFW.

The purchase of mitigation or conservation bank credits or permanent protection and funding for perpetual management of HM lands must be complete before starting project activities, or within 18 months of the date of the site mobilization, if Security is provided pursuant to the Security (Item 11) below for all uncompleted obligations.

1. **Cost Estimates**. For the purposes of determining the Security amount, it is estimated the cost for the CPM or its contractors to complete acquisition, protection, and perpetual management of the HM lands is as follows:
    a. Land acquisition costs for HM lands identified in the Item 3 (Habitat Management Lands Acquisition and Protection) below, estimated at $2,698.00/acre for 843 acres: $2,274,414.00. Land acquisition costs are estimated using local fair market current value per acre for lands with habitat values meeting mitigation requirements.
    b. All other costs are necessary to review and acquire the land in fee title and record a conservation easement as described below in Item 3b. (Conservation Easement) below: $558,750.00.
    c. Start-up costs for HM lands, including initial site protection and enhancement costs as described in the Item 3f (Start-up Activities) below, estimated at $344,549.00.
    d. Interim management period funding as described in the Item 4 (Interim Management) (Initial and Capital)) below, estimated at $466,799.00.

e. Long-term management funding as described in the Item 5 (Endowment Fund) below, estimated at $2,918,823.00. Long-term management funding is estimated initially for the purpose of providing Security to ensure implementation of HM lands management.

f. Related transaction fees including but not limited to account set-up fees, administrative fees, title and documentation review and related title transactions, expenses incurred from other state agency reviews, and overhead related to transfer of HM lands to CDFW as described in the Item 10 (Reimburse CDFW), estimated at $13,600.00.

g. All costs associated with the CPM engaging an outside contractor to complete the mitigation tasks, including but not limited to acquisition, protection, and perpetual funding and management of the HM lands and restoration of temporarily disturbed habitat. These costs include but are not limited to the cost of issuing a request for proposals, transaction costs, contract administration costs, and costs associated with monitoring the contractor's work $45,479.00.

2. **Mitigation Bank Credits**. If the project owner elects to purchase credits to complete Crotch's bumble bee and western burrowing owl compensatory mitigation obligations, then project owner shall purchase 843 acres of Covered Species credits from a mitigation or conservation bank approved in advance by the CPM prior to initiating project activities, or no later than 18 months from the start of site mobilization, if Security is provided pursuant to Item 11 (Security) below. Prior to the purchase of credits, the project owner shall obtain CPM approval to ensure the mitigation or conservation bank is appropriate to compensate for the impacts of the project. The project owner shall submit to the CPM a copy of the Bill of Sale(s) and Payment Receipt prior to initiating site mobilization or within 18 months from start of site mobilization, if Security is provided.

3. **Habitat Management Lands Acquisition and Protection.** If the project owner elects to provide for the acquisition, permanent protection, and perpetual management of HM lands to complete compensatory mitigation obligations, then the project owner shall:

   a. **Fee Title.** Transfer fee title of the HM lands to CDFW pursuant to terms approved in writing by CDFW. Alternatively, the CPM, in consultation with CDFW, may authorize a governmental entity, special district, non-profit organization, for-profit entity, person, or another entity to hold title to and manage the property provided that the district, organization, entity, or person meets the requirements of Government Code sections 65965-65968, as amended.

   b. **Conservation Easement.** If CDFW does not hold fee title to the HM lands, CDFW shall act as grantee for a conservation easement over the HM lands or shall, in its sole discretion, approve a non-profit entity, public

agency, or Native American tribe to act as grantee for a conservation easement over the HM lands provided that the entity, agency, or tribe meets the requirements of Civil Code section 815.3. If CDFW elects not to be named as the grantee for the conservation easement, CDFW shall be expressly named in the conservation easement as a third-party beneficiary. The project owner shall obtain written approval from the CPM, in coordination with CDFW, of any conservation easement before its execution or recordation. No conservation easement shall be approved by the CPM unless it complies with Civil Code sections 815-816, as amended, and Government Code sections 65965-65968, as amended and includes provisions expressly addressing Government Code sections 65966(j) and 65967(e). Because the "doctrine of merger" could invalidate the conservation interest, under no circumstances can the fee title owner of the HM lands serve as grantee for the conservation easement.

c. **HM Lands Approval.** The project owner shall obtain CPM written approval of the HM lands, in coordination with CDFW, before acquisition and/or transfer of the land by submitting, at least 90 days before acquisition and/or transfer of the HM lands, documentation identifying the land to be purchased or property interest conveyed to an approved entity as mitigation for the project's impacts on Crotch's bumble bee and western burrowing owl.

d. **HM Lands Documentation.** The project owner shall provide a recent preliminary title report, Phase I Environmental Site Assessment, and other necessary documents (please contact CPM for document list). All documents conveying HM lands and all conditions of title are subject to approval from the CPM; and if applicable, the Wildlife Conservation Board, and the Department of General Services.

e. **Land Manager.** Designate both an interim and long-term land manager, approved by the CPM, in consultation with CDFW. The interim and long-term land managers may, but need not, be the same. The interim and/or long-term land managers may be the landowner or another party. The land manager shall prepare a draft management plan for CPM review and approval, in consultation with CDFW, and written approval as part of the HM lands acquisition process. The project owner shall notify the CPM of any subsequent changes in the land manager within 30 days of the change. If CDFW will hold fee title to the mitigation land, CDFW will also act as both the interim and long-term land manager unless otherwise specified. The grantee for the conservation easement cannot serve as the interim or long-term manager without the express written authorization of the CPM, in consultation with CDFW.

f. **Start-up Activities.** Provide for the implementation of start-up activities, including the initial site protection and enhancement of HM lands, once the HM lands have been approved by the CPM. Start-up activities include,

at a minimum: (1) conducting a baseline biological assessment and land survey report within four months of recording or transfer; (2) developing and transferring Geographic Information Systems (GIS) data if applicable; (3) establishing initial fencing; (4) conducting litter removal; (5) conducting initial habitat restoration or enhancement, if applicable; and (6) installing signage.

4. **Interim Management (Initial and Capital)**. Provide for the interim management of the HM lands. The project owner shall ensure that the interim land manager implements the interim management of the HM lands as described in the final management plan and conservation easement approved by the CPM, in consultation with CDFW. The interim management period shall be a minimum of three years from the date of HM land acquisition and protection and full funding of the Endowment and includes expected management following start-up activities. Interim management period activities described in the final management plan shall include fence repair, continuing trash removal, site monitoring, and vegetation and invasive species management.

   The project owner shall either (1) provide Security to the CPM for the minimum of three years of interim management that the land owner, the project owner, or land manager agrees to manage and pay for at their own expense, (2) establish an escrow account with written instructions approved in advance in writing by the CPM to pay the land manager annually in advance, or (3) establish a short-term enhancement account with a CPM-approved entity for payment to the land manager.

5. **Endowment Fund.** If the project owner elects to provide for the acquisition, permanent protection, and perpetual management of HM lands to complete compensatory mitigation obligations, then the project owner shall ensure that the HM lands are perpetually managed, maintained, and monitored by the long-term land manager as described in this condition of certification, the conservation easement, and the final management plan approved by the CPM. After obtaining CPM approval, in consultation with CDFW, of the HM lands, the project owner shall provide long-term management funding for the perpetual management of the HM lands by establishing a long-term management fund (Endowment). The Endowment is a sum of money, held in a CPM-approved (in consultation with CDFW) fund that is permanently restricted to paying the costs of long-term management and stewardship of the mitigation property for which the funds were set aside, which costs include the perpetual management, maintenance, monitoring, and other activities on the HM lands consistent with the condition of certification, the conservation easement, and the management plan required by Item 3e (Land Manager). Endowment as used in the Certification shall refer to the endowment deposit and all interest, dividends, other earnings, additions and appreciation thereon. The Endowment shall be governed by this license,

Government Code sections 65965-65968, as amended, and Probate Code sections 18501-18510, as amended. After the interim management period, the project owner shall ensure that the designated long-term land manager implements the management and monitoring of the HM lands according to the final management plan. The long-term land manager shall be obligated to manage and monitor the HM lands in perpetuity to preserve their conservation values in accordance with this license, the conservation easement, and the final management plan. Such activities shall be funded through the Endowment.

6. **Identify an Endowment Manager.** The Endowment shall be held by the Endowment Manager, which shall be either the CEC and/or CDFW or another entity qualified pursuant to Government Code sections 65965-65968, as amended.

   a. The project owner shall submit to the CPM for review and approval, a written proposal that includes: (i) the name of the proposed Endowment Manager; (ii) whether the proposed Endowment Manager is a governmental entity, special district, nonprofit organization, community foundation, or congressionally chartered foundation; (iii) whether the proposed Endowment Manager holds the property or an interest in the property for conservation purposes as required by Government Code section 65968(b)(1) or, in the alternative, the basis for finding that the Project qualifies for an exception pursuant to Government Code section 65968(b)(2); and (iv) a copy of the proposed Endowment Manager's certification pursuant to Government Code section 65968(e).

7. **Calculate the Endowment Funds Deposit.** After obtaining CPM written approval, in consultation with CDFW, of the HM lands, long-term management plan, and Endowment Manager, the project owner shall prepare an endowment assessment (equivalent to a Property Analysis Record (PAR)) to calculate the amount of funding necessary to ensure the long-term management of the HM lands (Endowment Deposit Amount). Note that the endowment for the easement holder should not be included in this calculation. The project owner shall submit to the CPM, in consultation with CDFW, for review and approval the results of the endowment assessment before transferring funds to the Endowment Manager.

   a. Capitalization Rate and Fees. The project owner shall obtain the capitalization rate from the selected Endowment Manager for use in calculating the endowment assessment and adjust for any additional administrative, periodic, or annual fees.

   b. Endowment Buffers/Assumptions. The project owner shall include in the endowment assessment assumptions the following buffers for endowment establishment and use that will substantially ensure long-term viability and security of the Endowment:

c. 10 Percent Contingency. A 10 percent contingency shall be added to each endowment calculation to hedge against underestimation of the fund, unanticipated expenditures, inflation, or catastrophic events.

d. Three Years Delayed Spending. The endowment shall be established assuming spending will not occur for the first three years after full funding.

e. Non-annualized Expenses. For all large capital expenses to occur periodically but not annually such as fence replacement or well replacement, payments shall be withheld from the annual disbursement until the year of anticipated need or upon request to Endowment Manager and the CPM, in consultation with CDFW.

8. **Transfer Long-term Endowment Funds.** The project owner shall transfer the long-term endowment funds to the Endowment Manager upon the CPM's approval of the Endowment Deposit Amount identified above.

9. **Management of the Endowment.** The approved Endowment Manager may pool the Endowment with other endowments for the operation, management, and protection of HM lands for local populations of Crotch's bumble bee and western burrowing owl but shall maintain separate accounting for each Endowment. The Endowment Manager shall, at all times, hold and manage the Endowment in compliance with this Certification, Government Code sections 65965-65968, as amended, and Probate Code sections 18501-18510, as amended.

   Notwithstanding Probate Code sections 18501-18510, the Endowment Manager shall not make any disbursement from the Endowment that will result in expenditure of any portion of the principal of the endowment without the prior written approval of the CPM in its sole discretion. The project owner shall ensure that this requirement is included in any agreement of any kind governing the holding, investment, management, and/or disbursement of the Endowment funds.

   Notwithstanding Probate Code sections 18501-18510, if the CPM, in consultation with CDFW, determines in its sole discretion that an expenditure needs to be made from the Endowment to preserve the conservation values of the HM lands, the Endowment Manager shall process that expenditure in accordance with directions from the CPM. The Endowment Manager shall not be liable for any shortfall in the Endowment resulting from the CPM's decision to make such an expenditure.

10. **Reimburse CDFW.** The project owner shall reimburse CDFW for all reasonable costs incurred by CDFW related to transfer of the HM lands to CDFW, if applicable, including, but not limited to transaction fees, account set-up fees, administrative fees, title and documentation review and related

title transactions, costs incurred from other state agency reviews, and overhead related to transfer of HM lands to CDFW.

11. **Security:** The project owner may proceed with project activities only after the project owner has ensured the funding (Security) to complete any activity required by the Item 3 (Habitat Management Land Acquisition and Protection) that has not been completed before project activities begin. Permittee shall provide Security as follows:

    a. **Security Amount.** The Security shall be in the amount of $6,622,414.00 or in the amount identified in the Item 1 (Cost Estimates) specific to the obligation that has not been completed. This amount is determined by the CPM and is based on cost estimates which are sufficient for the CEC or its contractors to complete land acquisition, property enhancement, startup costs, initial management, long-term management, and monitoring.

    b. **Security Form.** The Security shall be in the form of an irrevocable letter of credit or another form of Security approved in advance in writing by the CPM, in consultation with CDFW.

    c. **Security Timeline.** The Security shall be provided to the CPM before starting site mobilization.

    d. **Security Holder.** The Security shall be held by the CPM or in a manner approved in advance in writing by the CPM.

    e. **Security Transmittal.** The project owner shall transmit security to the CPM by way of an approved instrument such as an escrow agreement, irrevocable letter of credit, or other.

    f. **Security Drawing.** The Security shall allow the CPM to draw on the principal sum if the CPM, in its sole discretion, determines that the project owner has failed to comply with this Condition of Certification.

    g. **Security Release.** The Security (or any portion of the Security then remaining) shall be released to the project owner after the CPM has conducted an on-site inspection and received confirmation that all secured requirements have been satisfied, as evidenced by either:

        i. Copy of Bill of Sale(s) and Payment Receipt(s) or Credit Transfer Agreement for the purchase of Crotch's bumble bee and/or western burrowing owl credits. OR

        ii. Written documentation of the acquisition of the HM lands.

        iii. Copies of all executed and recorded conservation easements.

        iv. Written confirmation from the approved Endowment Manager of its receipt of the full Endowment.

12. **Additional Funding.** The CPM, in consultation with CDFW, may require the project owner to provide additional HM lands and additional funding to ensure

the impacts of the taking are minimized and fully mitigated, as required by law, if the project owner does not complete these requirements within the specified timeframe.

Verification: The project owner shall provide verification that the required acquisition, protection and transfer of all HM lands and record any required conservation easements no later than 18 months from the date of start of site mobilization, even if a security is provided. The project owner shall provide the Draft Management Plan to the CPM for review and approval and to CDFW for review and comment no later than 60 days prior to construction. The project owner shall submit the Final Management Plan to the CPM and CDFW no later than 7 days prior to construction.

BIO-15 Special-Status Reptile Avoidance and Minimization Measures. The Designated Biologist(s) and/or Biological Monitor(s) shall conduct pre-construction surveys for special-status reptiles, including coast horned lizard and multiple species of legless lizards. Surveys shall be conducted by qualified biologists, approved by the CPM pursuant to **BIO-1** and **BIO-3**.

1. **Surveys.** Prior to ground-disturbing or vegetation removal activities, including during site mobilization and construction, within 100 feet of habitat that has the potential to support legless or horned lizards, the Designated Biologist(s) and/or Biological Monitor(s) shall conduct surveys to detect this species. An annual survey plan shall be submitted to the CPM for review and approval.

   One week prior to any ground disturbance and within 24 hours of beginning work in suitable habitat, the Designated Biologist and/or Biological Monitor(s) shall conduct surveys for these species, unless an alternate timeframe approved by CPM. Survey methods may include the placement of cover boards prior to the surveys and gently raking in soft friable soils, leaf litter, and debris piles, or other methods approved by the CPM.

   The surveys shall be timed to coincide with the time of day and year when these species can be detected. Prior to conducting the surveys, the biologist shall locate the microhabitats for these species and determine a location to place cover boards or rake soils. A map of proposed survey areas shall be provided to the CPM for review and approval prior to initiating the surveys.

2. **If Detected.** If special-status reptiles are detected the Designated Biologist and/or Biological Monitor(s) shall remain in the work area throughout the duration of activities to ensure that impacts are avoided. If it is not possible to allow the animal to leave the work area on its own, the Designated Biologist(s) and/or Biological Monitor(s) shall relocate it to the nearest suitable habitat out of harm's way.

3. **Notification.** The project owner or Designated Biologist(s) shall notify the CPM and CDFW within 24-hours if either of these species are detected and include this information in Monthly Compliance Reports.
4. **Release Locations Criteria.** Prior to capturing or relocating either species, the most appropriate release location(s) shall be determined in adjacent habitat as close as possible to the capture point.
5. **Mortality or Serious Injury.** If the cumulative mortality or serious injury (i.e., compromising survival in the wild) across the entire project site during relocation activities exceeds more than three animals by species, the Designated Biologist(s) shall notify the CPM and CDFW within 24 hours and evaluate if a different method should be utilized or if additional measures are required.
6. **Reporting.** A report documenting survey results, including surveyor name(s), date(s) of survey, location (with maps), weather conditions, and any observations or detections of sensitive reptiles shall be prepared and submitted to the CPM and CDFW. In addition, a monitoring report that includes the location, description, and duration of the activities, any observations or detections of sensitive reptiles found during the surveys or project activities, and any relocation efforts shall be provided during monthly and annual compliance reporting.

Verification: The project owner shall submit the proposed annual survey plan 45 days prior to commencing the surveys to the CPM for review and approval and to the CDFW for review and comment. The project owner shall provide the final plan to the CPM at least 10 days prior to the start of any site mobilization. The project owner shall submit the pre-construction survey reports to the CPM and CDFW within seven days of completing the surveys.

BIO-16 Desert Tortoise Avoidance Measures. To avoid impacts to desert tortoise, the Designated Biologist(s) and/or Biological Monitor(s) shall conduct pre-construction surveys prior to site mobilization and/or construction. Surveys shall be conducted by qualified biologists approved by the CPM, in coordination with CDFW and/or USFWS, pursuant to **BIO-1** and **BIO-3**.

The Designated Biologist(s) shall also prepare and implement a Raven Management and Reporting Plan (Raven Plan), per Item 4, to minimize project-related predator subsidies and prevent any increases in raven numbers or activity within desert tortoise habitat during construction and operation phases.

1. **Surveys.** Prior to ground-disturbing or vegetation removal activities within 200 feet of the project site in suitable desert tortoise habitat the Designated Biologist(s) and/or Biological Monitor(s) shall conduct protocol surveys to detect this species on the WRESC project site and laydown areas if construction is not initiated prior to the 2026 spring survey season. Clearance surveys shall be conducted for all linear facilities prior to any ground

disturbance. In addition, surveys shall be conducted one week prior to any ground disturbance and within 24 hours of beginning work in suitable habitat. Methods for clearance surveys and exclusion fence specifications shall be consistent with those described in the most recent *Desert Tortoise Field Manual* or more current guidance provided by CDFW and/or USFWS. Any potential burrows, sign, or tortoises shall be noted, recorded using a precision GPS device, and identified on project maps submitted to the CPM.

2. **Desert Tortoise Fencing.** The project owner shall install desert tortoise exclusion fencing around the project site, laydown, staging and parking areas. Exclusion fence specifications shall be approved by the CPM and be consistent with those described in the most recent Desert Tortoise Field Manual or more current guidance provided by CDFW and USFWS. Fencing shall not be required to conduct work at or along the generation-tie line corridor.

   After the completion of fencing installation, the Designated Biologist(s) and/or Biological Monitor(s) shall conduct 5 meter clearance sweeps of the project site prior to site mobilization. Follow-up surveys shall also be conducted within fourteen (14) days preceding additional construction after a gap in significant construction activities of 60 calendar days or more. Surveys shall include 100 percent of the area disturbed and a surrounding buffer of 200 feet. A map of proposed survey areas shall be provided to the CPM for review and approval, and the CDFW and USFWS, for review and comment prior to initiating the surveys. New clearance surveys shall be conducted if the desert tortoise fence is breached (e.g., large gaps, torn fencing, or cavities that could allow desert tortoises to enter the site) for more than 24 hours.

3. **If Desert Tortoise Detected.** If adult or juvenile desert tortoises or potentially active burrows are detected during the pre-clearance surveys the Designated Biologist and/or Biological Monitor(s) shall contact the CPM, CDFW, and USFWS immediately for guidance. No work shall occur within 200-feet of any potential burrow or desert tortoise pending coordination with the CPM, CDFW, and USFWS. Handling of desert tortoise shall not be allowed pending the completion of appropriate take authorization from the CEC, in coordination with CDFW, and USFWS, per Item 4.

4. **Supplemental Mitigation for Desert Tortoise.** Desert tortoise are not expected to occur within the project site. If a desert tortoise is detected during construction or operation, and an incidental take is necessary, take authorization shall only be pursued if it is determined by the CPM after consultation with CDFW and USFWS, that such take would not jeopardize the species persistence in the region. Upon confirmation, standard desert tortoise incidental take authorization conditions to minimize and fully mitigate impacts shall be required. These standard measures, approved by the CPM after consultation with CDFW and USFWS, and based on the specific facts of the situation, may include:

(1) Acquisition of permanent habitat compensation lands calculated on the importance of the habitat in the project area and standard USFWS and CDFW protocols;

(2) Tortoise burrow identification, monitoring, and possible burrow excavation by an authorized biologist;

(3) Establishment of exclusion or avoidance zones around active burrows or sightings;

(4) Worker environmental awareness training;

(5) Preparation and submittal of Monthly Compliance Reports; and

(6) Other measures as determined by the CPM, in consultation with CDFW and USFWS.

5. **Raven Management and Reporting Plan.** The Designated Biologist shall prepare and implement a Raven Management and Reporting Plan (Raven Plan) consistent with CDFW and USFWS raven management guidelines. The purpose of the Raven Plan shall be to minimize project-related predator subsidies (e.g. common ravens and coyotes) and prevent any increases in raven numbers or activity within desert tortoise habitat during construction and operation phases. The Plan shall address all project components and their potential effects on raven numbers and activity. The Raven Plan shall be reviewed and approved by CPM, in coordination with the CDFW and USFWS, prior to the start of site mobilization activities. The Raven Plan shall:

- Identify all potential project activities as well as structures, components, and other features that could provide predator subsidies or attractants. This includes but is not limited to: improperly managed food waste; road-killed animals; water storage facilities; pooled water from leaks, dust control, or wastewater; debris from brush and other vegetation clearing; as well perch or nest sites on project facilities and other infrastructure. As required by **BIO-7**, Item 18, all trash and food waste will be disposed of in secure, self-closing bins to prevent access by wildlife.
- Describe specific management practices to avoid or minimize conditions that might increase raven numbers and predatory activities. This includes the following:
  - o Collect and dispose of animals killed on the site or project access roads to reduce food subsidies;
  - o Water used for the project shall be applied to avoid puddling;
  - o Inactive common raven nests will be removed in accordance with USFWS guidelines. If re-nesting occurs, further measures will be coordinated with the CPM, in coordination with CDFW and USFWS; and
  - o Active nests will be reported to CPM, CDFW, and USFWS for consideration of egg-oiling or other authorized management measures.

- The Designated Biologist and/or Biological Monitor shall oversee implementation of the Raven Plan.
- The project owner shall contribute to the USFWS Regional Raven Management Program by making a one-time payment of $105 per acre of long-term or permanent project disturbance.

6. **Reporting.** A report documenting survey results, including surveyor name(s), date(s) of survey, location (with maps), weather conditions, and any observations or detections of desert tortoise or their sign will be prepared and submitted to the CPM, CDFW, and USFWS. In addition, a monitoring report that includes the location, description, and duration of the activities, any observations or detections of desert tortoise found during the surveys or project activities, and any relocation efforts will be provided during monthly and annual compliance reporting.

Verification: The project owner shall submit the proposed annual survey plan 45 days prior to commencing the surveys to the CPM for review and approval and to the CDFW and USFWS for review and comment. The project owner shall submit the pre-construction survey reports to the CPM, CDFW, and USFWS no more than 45 days after each survey effort has been completed. The project owner shall submit the receipt of payment to the USFWS Regional Raven Management Program 14 days prior to site mobilization. A report documenting survey results shall be prepared and submitted to the CPM, CDFW, and USFWS within 14 days of completing the surveys.

BIO-17 Nesting Bird Avoidance and Minimization Measures. The project owner shall prepare and implement a Nesting Bird Management Plan (NBMP) in coordination with the Designated Biologist and submit to the CPM for review and approval. The project owner shall submit the resumes of avian monitors under **BIO-1** and/or **BIO-3** prior to site mobilization and/or construction, if these activities are planned to occur during the breeding season. The NBMP shall describe methods to minimize potential project effects to nesting birds. Where scheduling allows the project owner shall clear or remove any vegetation, conduct site preparation in open or barren areas, or other project-related activities that may adversely affect breeding birds outside the nesting season.

Pre-construction nest surveys shall be conducted during the breeding season for local and migratory birds and will be timed to account for seasonal variation that occurs in the Mojave Desert (January 1 to August 31 for raptors and March 1 to August 31 for other species).

1. **Survey Requirements.** Surveys shall cover all potential nesting habitat and substrates within the project site and areas surrounding the project site within 500 feet of the project boundary, unless otherwise prohibited due to legal access or safety issues, upon approval from the CPM.

2. **Survey Schedules.** At least two pre-construction surveys shall be conducted, separated by a minimum 10-day interval. Pre-construction surveys shall be conducted no more than 14 days prior to initiation of construction activity. One survey needs to be conducted within the 3-day period preceding initiation of site mobilization, brush clearing, ground disturbance, or construction activity. Surveys shall be repeated throughout site mobilization and construction phases to ensure that birds are not nesting on equipment or have moved into an area after the initial vegetation clearance has been completed.
3. **Nest and Avian Monitoring and Surveys During Construction.** Additional follow-up surveys shall be required if periods of construction inactivity exceed three weeks during January 1 through August 31 in any given area, an interval during which birds may establish a nesting territory and initiate egg laying and incubation.
4. **Nest Detection.** If active nests are detected during surveys, a no-disturbance buffer zone (protected area surrounding the nest) shall be established around each nest. Fencing and/or flagging will be used to delineate the no-activity zone. To minimize the potential to affect the reproductive success of the nesting pair, the extent of the no-activity zone shall be based several factors, including the distance of the activity to the nest, the type and extent of the proposed activity, the duration and timing of the activity, the sensitivity and habituation of the species, and the dissimilarity of the proposed activity to background activities. The no-activities zone shall be large enough to avoid nest abandonment. Specific buffers shall also be proposed for any shrike caches should they be detected during construction.

   The NBMP shall define species-specific or guild-specific default buffers to be applied if an active nest is encountered. These buffer distances shall be reviewed and approved by the CPM, in consultation with CDFW. The default buffers may be modified in the NBMP, with CPM approval. For special-status species, if an active nest is identified, the size of each buffer zone shall be determined by the Designated Biologist in consultation with the CPM (or as described in conditions of certification specific for those species). Nest locations shall be mapped using GPS technology.

   The plan shall include a table outlining default buffer distances for specific avian groups during construction, detailing the avian groups, species potentially nesting within the project limits and survey area, and corresponding horizontal buffer distances based on disturbance level (DL) in feet, unless alternative table format is approved by the CPM. Typical default buffer distances are 500 feet for most raptors and 250 feet for most passerines, as well as other species or guild-specific buffers.

   Nest buffers shall be delineated using the following process:

- Upon discovery of an active nest the default buffer identified in the NBMP shall be applied
- The Designated Biologist(s) and/or Biological Monitor(s) with avian experience may adjust the buffer based on nest location characteristics (e.g. natural barriers), type and extent of project disturbance, and observed bird behavior. The nest buffer will be sufficiently large to avoid disturbance to the nesting birds and based on the default buffers included in the approved NBMP.
- Nest buffer reductions for special status species shall be requested in writing via email to the CPM for review and approval.

5. **Active Nest Protection.** If active nests are detected during the survey, the Designated Biologist(s) or Biological Monitor(s) shall monitor all nests with buffers at least once per week, to determine whether birds are being disturbed. If signs of disturbance or distress are observed, the Designated Biologist(s) or Biological Monitor(s) shall immediately implement adaptive measures to reduce disturbance, in coordination with the CPM. These measures could include, but are not limited to, increasing buffer size, halting disruptive construction activities in the vicinity of the nest until fledging is confirmed, or placement of visual screens or sound dampening structures between the nest and construction activity. The Designated Biologist(s) or Biological Monitor(s) shall monitor the nest until it is determined that nestlings have fledged and dispersed or the nest is no longer active. Activities that might, in the opinion of the Designated Biologist(s) or Biological Monitor, disturb nesting activities (e.g., exposure to exhaust), shall be prohibited within the buffer zone until such a determination is made. Any nest buffer reduction would require full time monitoring if reduced from the levels identified in the approved NBMP.
6. **NBMP Content.** The NBMP shall include:
   a. definitions of default nest avoidance buffers for each species or group of species, depending on characteristics and conservation status for each species and the nature of planned project activities in the vicinity;
   b. a notification procedure for buffer distance reductions should they become necessary;
   c. a pre-construction survey protocol (surveys no longer than 3 days prior to starting work activity at any site);
   d. a monitoring protocol, to be implemented until adjacent construction activities are completed or the nest is no longer active, including qualifications of monitors, monitoring schedule, and field methods, to ensure that any project-related effects to nesting birds shall be minimized;
   e. a protocol for documenting and reporting any inadvertent contact with or effects to birds or nests;

f. Specify the responsibilities of construction workers and site personnel with regard to nests and nest issues and specify a direct communication protocol to the Biological Monitor and/or Designated Biologist;

g. Specify a procedure to be implemented following accidental disturbance of nests, including wildlife rehabilitation options; and

h. Specify a procedure for removal of inactive nests, including verification that the nest is inactive and a notification/approval process.

The NBMP will be applicable throughout the nesting season (from January 1 through August 31).

7. **Nest deterrents.** The NBMP shall describe any proposed measures or deterrents to prevent or reduce bird nesting activity on project equipment or facilities, such as buoys, visual or auditory hazing devices, bird repellents, securing of materials, and netting of materials, vehicles, and equipment.

   It shall also include timing for installation of nest deterrents and field confirmation to prevent effects to any active nest; guidance for the contractor to install, maintain, and remove nest deterrents according to product specifications; and periodic monitoring of nest deterrents to ensure proper installation and functioning and prevent injury or entrapment of birds or other animals.

   If an active nest is located on project facilities, materials or equipment, the project owner shall avoid disturbance or use of the facilities, materials or equipment (e.g., by red-tag) until the nest is no longer active.

8. **Nest Start Removal.** Prior to removing any suitable nesting habitat, preconstruction nesting bird surveys should inform as to where existing raptor nests, and other special status bird nests, occur throughout the project area. The locations of existing special status bird nests within the habitat removal footprint shall be recorded and mapped by a qualified biologist. Such nests shall be removed outside of the nesting bird season.

   Due to the potential for nest building during active construction, a biological monitor shall be employed for the duration of project construction to regularly inspect for nest building attempts that may occur on/within construction equipment and/or within an area of active construction disturbance.

   In the event nest building is detected, the biologist shall deter birds from nesting using non-invasive methods to modify the circumstances. In the event a nest is built, and eggs are laid, the nest shall be considered active nest and shall be avoided. This may include placing a buffer around a piece of equipment or closing off a work area until the nest has fledged. This measure shall not be employed for state or federal special status species.

9. **Accidental Nest Disturbance.** The NBMP shall specify a procedure to be implemented following accidental disturbance of nests, including wildlife rehabilitation options. It also shall describe any proposed measures, and applicable circumstances, to prevent take of precocial young of ground-nesting birds such as killdeer or quail. The project owner shall identify an appropriate wildlife care facility before starting site mobilization. The location of the care facility shall be provided to the CPM prior to site mobilization. The project owner shall bear any costs associated with the care or treatment of project related injured birds. The project owner shall provide a letter report detailing the outcome of the care to the CPM.
10. **Reporting.** Throughout the construction phase of the project, nest locations, project activities in the vicinity of nests (including helicopter traces), and any adjustments to buffer areas shall be updated and available to the CPM, weekly or other CPM-approved timeframe. All buffer reduction notifications and prompt notifications of nest-related non-compliance and corrective actions will be made via email to the CPM.

    The draft NBMP shall include a proposed format for regular reporting (e.g., spreadsheet available online, tracking each nest). In addition, the NBMP shall specify the format and content of nest data to be provided in regular monitoring and compliance reports. At the end of each year's nest season, the project owner shall submit an annual NBMP report to the CPM and CDFW. Specific contents and format of the annual report will be reviewed and approved by the CPM in consultation with CDFW.

Verification: At the end of each year's nest season, the project owner shall submit an annual NBMP report to the CPM and CDFW no more than 30 days after the end of the nesting season. The project owner shall submit pre-construction survey reports to the CPM and CDFW no more than 30 days after each survey effort has been completed. The project owner shall provide a letter report detailing the outcome of the care of any injured birds or nest failures to the CPM and the CDFW within 14 days of the incident.

BIO-18 Collision Avoidance and Minimization Measures. The project owner shall submit proposed aerial marker installation plan that includes the types of markers to be used, their proposed installation locations, and a corresponding map. The project owner shall identify which section of the generation tie-line is located within 5 miles of active Swainson's hawk nests as determined by the Designated Biologist(s) and/or Biological Monitor (s). The project owner shall install bird flight diverters or other suitable aerial markers on the generation tie-line in all areas within 5-miles of Swainson's hawk nests, as confirmed by a qualified biologist, approved per **BIO-1** and/or **BIO-3**. All aerial markers and locations shall be approved by the CPM, in consultation with CDFW. The project owner shall ensure that all aerial markers remain in good condition and functional for the life of the project. Damaged or missing markers shall be

repaired or replaced promptly upon discovery. Routine inspections shall be conducted at intervals approved by the CPM, in consultation with CDFW.

Verification: The project owner shall identify which section of the generation tie-line is located within 5 miles of active Swainson's hawk nests no less than 45 days prior to construction of the gen-tie line. The project owner shall submit a proposed aerial marker installation plan to the CPM and CDFW no less than 30 days prior to the installation of bird flight diverters or aerial markers. The project owner shall submit a report to the CPM and CDFW no more than 30 days after the placement of bird flight diverters or aerial markers has been completed. Monitoring and maintenance of the markers shall be reported in the Annual Compliance Report during operation.

BIO-19 Burrowing Owl Impact Avoidance, Minimization, and Mitigation Measures for Take. The project owner shall implement the following measures to avoid, minimize and offset impacts to breeding and foraging burrowing owls during site mobilization, construction, operation, and decommissioning:

1. **Burrowing Owl Mortality Reduction Plan.** The project owner shall submit a Burrowing Owl Mortality Reduction Plan prepared the Designated Biologist(s) (s) for review and approval to the CPM, and CDFW for review and comment, prior to beginning any project activities including site mobilization, surveying, fencing, or ground disturbance. Burrow exclusion, burrow excavation, artificial burrow construction, and other relocation activities shall not proceed until this plan has been approved in writing by the CPM in coordination with the CDFW.

   The Burrowing Owl Mortality Reduction Plan shall include, but not be limited to detailed description of survey methodology; detailed burrow exclusion and excavation methods; project activities that may be performed within burrowing owl avoidance buffers; identification of a wildlife rehabilitation center or veterinary facility capable of and willing to treat injured burrowing owl or care for at-risk burrowing owl, burrowing owl eggs, and/or burrowing owl chicks; and procedure for collection and storage of BUOW carcasses. Only CPM approved Designated Biologist(s) (s), or personnel following directions from and under the supervision of the Designated Biologist(s), are authorized to handle and transport injured burrowing owl for treatment or impacted burrowing owl eggs for salvage. All other burrowing owl handling is prohibited.

   Once the Burrowing Owl Mortality Reduction Plan is approved in writing by the CPM, it shall be used for the duration of the project unless updated by request of the CPM to reflect best available science, or to update mitigation and conservation strategies. If any updates are required, the CPM will contact the project owner to discuss potential updates. Any proposed changes to the Burrowing Owl Mortality Reduction Plan shall be submitted, in writing, to the

CPM for review and approval and the CDFW for review and comment in writing prior to the implementation of any proposed modifications.

2. **Burrowing Owl Burrow Replacement Plan.** The project owner shall replace each known burrowing owl burrow (as defined below under Burrow Avoidance) that cannot be avoided within the project area with an artificial burrow to compensate for the loss of important shelter used by BUOW for protection, reproduction, and escape from predators. The project owner shall submit a Burrowing Owl Burrow Replacement Plan prepared by an approved Designated Biologist(s) to the CPM. Implementation of the Burrowing Owl Burrow Replacement Plan shall not proceed until this plan has been approved in writing by the CPM in coordination with the CDFW. The Burrowing Owl Burrow Replacement Plan shall include, but not be limited to: a discussion and map of potential artificial burrow replacement locations; description of the replacement burrow design and dimensions (e.g., depth and width of burrow, width of burrow entrance, orientation of burrow entrance, number and placement of entrances to natal burrows); artificial burrow installation methods; long-term artificial burrow protection and maintenance methods; and timing of BUOW burrow installation/construction.

   Once the burrowing owl Burrow Replacement Plan is approved in writing by the CPM, it shall be used for the duration of the project unless it is updated by the CPM to reflect best available science, or to update mitigation and conservation strategies in which case the CPM will contact the project owner to discuss needed updates. If any updates are required, the CPM will contact the project owner to discuss potential updates. Any proposed changes to the Burrowing Owl Mortality Reduction Plan shall be submitted, in writing, to the CPM for review and approval and the CDFW for review and concurrence in writing prior to the implementation of any proposed modifications.

3. **Burrowing Owl Pre-Construction Nesting Surveys and Reporting.** The Designated Biologist and/or Biological Monitor shall conduct preconstruction surveys for burrowing owls to identify potential, known, and/or nesting burrowing owl burrows. A potential burrowing owl burrow is any subterranean hole three inches or larger for which no evidence is present to conclude that the burrow is being used or any past use by a burrowing owl; a known burrowing owl burrow is a burrow that shows evidence the burrow is being used, known to have been used, or past use by a burrowing owl, or an "atypical" burrow (e.g., a pipe, culvert, buckled concrete, etc.) showing signs of occupancy (e.g. burrowing owl presence, whitewash, pellets, prey remains, etc.); and a nesting burrowing owl burrow is used for nesting (e.g. known burrowing owl burrow indications of the presence of eggs, chicks, dependent young, and/or brooding or egg incubation. The survey area shall include the project disturbance area and surrounding 300-meter survey buffer, as accessible.

If surveys detect burrowing owls within 1,600 feet of proposed construction activities, the Designated Biologist shall provide to the CPM documentation indicating that non-disturbance buffer fencing has been installed no less than 10 days prior to the start of any project-related site disturbance activities. The documentation shall include information as specified in Items 4 and 5, or as otherwise requested by the CPM.

4. **Burrow Map.** The Designated Biologist(s)shall provide a Keyhole Markup Language (KMZ) map and GIS shapefiles to the CPM of all burrowing owl burrows found during the surveys conducted during the surveys required under Item 3 requirements (Burrowing Owl Pre-Construction Surveys and Reporting). The map shall show the details and locations of all burrowing owl sightings and potential, known, and nesting burrowing owl burrows as defined in the Burrowing Owl Burrow Avoidance section. The map shall include an outline of the project site, and any distinct work area(s) surveyed within the project area, title, north arrow, scale bar, and legend.

   If a territory or nest is confirmed during the surveys the project owner shall notify the CPM and CDFW within 48 hours. In coordination with the Designated Biologist(s), CPM and CDFW, a 1,600 foot line of sight disturbance-free buffer shall be established and demarcated by fencing or flagging and placed on project maps. This buffer may be adjusted as determined by a qualified avian biologist in coordination with the CPM and CDFW. Nest locations shall be mapped using GPS technology and provided the CPM.

5. **BUOW Burrow Avoidance.** The Designated Biologist, shall establish no-disturbance buffer zones around potential, known and nesting burrowing owl burrows according to the following guidelines:

   a. If a potential burrowing owl w (any subterranean hole three inches or larger for which no evidence is present to conclude that the burrow is being used or any past use by a burrowing owl) is discovered, the Designated Biologist shall establish a minimum 50-foot no-disturbance buffer around the burrow.

   b. If a known burrowing owl burrow (a burrow that is known to have been used or shows evidence of current or past use) or an "atypical" burrow (e.g., a pipe, culvert, buckled concrete, etc.) showing signs of occupancy (e.g. burrowing owl presence, whitewash, pellets, prey remains, etc.) is discovered, the Designated Biologist(s) shall establish a minimum no-disturbance buffer of at least 100 feet around the burrow. A no-disturbance buffer of at least 1,600 feet shall be established around known burrowing owl burrows currently occupied by burrowing owl during the nesting season (typically February 1 to August 31 in this area). Nest buffer reductions are described below.

c. If a nesting burrowing owl burrow (e.g. known burrowing owl burrow with indications of the presence of eggs, chicks, dependent young, and/or brooding or egg incubation) is discovered within or immediately adjacent to the project site, the project owner and/or Designated Biologist shall notify the CPM and CDFW immediately through email. A no-disturbance buffer of at least 1,600 feet shall be established around the nest burrow. A no-disturbance buffer of at least 1,600 feet shall be established around known burrowing owl burrows currently occupied by burrowing owl during the nesting season (February 1 to August 31).

If burrowing owl burrows cannot be avoided as described above, then the project owner shall follow Item 6 (Burrowing Owl Burrow Blockage), Item 7 (Burrowing Owl Burrow Excavation), and Item 1 (Burrowing Owl Mortality Reduction Plan), as appropriate. If the approved Designated Biologist determines burrowing owl are visibly stressed by project activities or by workers in the vicinity after these no-disturbance buffers the Designated Biologist shall immediately increase the non-disturbance buffer to a distance where the visible stress is no longer observed. The increased no-disturbance buffers will be reviewed and approved by the CPM, in coordination with CDFW, based on their behavioral observations of the affected burrowing owl.

The buffers prescribed above shall not be reduced or otherwise modified without prior written approval from the CPM, in coordination with the CDFW. If the approved Designated Biologist(s) determines that specific project activities are not likely to affect the burrowing owl using known or nesting burrowing owl burrows due to the nature of the specific project activities, or due to objects or topography that might reduce potential noise disturbance and obstruct view of the project activities from the nest, then the CPM approved Designated Biologist(s) may email a written request to the CPM to reduce the buffer distance with documented observational data (Buffer Reduction Request). The CPM will review each Buffer Reduction Request on a case-by-case basis and provide a determination in response to each Buffer Reduction Request in writing. The CPM may request additional and ongoing biological monitoring prior to approving a Buffer Reduction Request.

6. **BUOW Burrow Blockage.** If the CPM has approved the blockage of a known burrowing owl burrow, the Designated Biologist shall block rather than destroy any unoccupied known burrowing owl burrow located within the buffer distances limits prescribed in Item 5 (Burrowing Owl Burrow Avoidance), but outside the discrete work area(s) within the project area(s) where ground and vegetation disturbing project activities will be performed. Burrows (including burrows in natural substrate and in under man-made structures) may be blocked only immediately after the CPM-approved Designated Biologist(s) has conducted four consecutive 24-hour periods of monitoring with infrared camera and determined that burrowing owl is not currently present. Burrow blockage shall be done in a manner that prevents

burrowing animals from digging back into the burrow. All blocked burrows shall be monitored by the approved Designated Biologist(s) and/or Biological Monitor(s) at least once every 48 hours while the blockage is in place to ensure that the exclusion material is still intact. If burrowing owl regains access to the burrow, the project owner or Designated Biologist shall contact the CPM immediately and obtain written guidance regarding how to proceed. All blocked burrows shall be unblocked within 48 hours of completion of construction activities within the prescribed buffer distance.

7. **Burrowing Owl Burrow Excavation.** The approved Designated Biologist(s), and/or Biological Monitor under direct supervision of the approved Designated Biologist(s), shall excavate known or potential burrows that exhibit signs of current or past burrowing owl use or characteristics suggestive of a burrowing owl burrow (including burrows in natural substrate and in/under man-made structures) that cannot be avoided per guidance in Item 5 (Burrowing Owl Burrow Avoidance), that are within the project site. Burrows to be destroyed shall be fully excavated, filled with dirt, and compacted to ensure that burrowing owl cannot reenter or use the burrow during the period that project activities occur in the project site.

   a. Excavation of known burrowing owl burrows shall only occur after the approved Designated Biologist(s) has determined that burrowing owl is not currently present after 4 consecutive 24-hour periods of monitoring with infrared cameras. If the excavation process reveals evidence of current use by burrowing owl, then burrow excavation shall cease immediately, and camera monitoring as described above shall be conducted or resumed as applicable. burrowing owl burrows shall be carefully excavated with hand tools, or by mechanical means if a specific methodology is approved in writing by the CPM, until it is clear no individuals of burrowing owl are inside.

   b. Potential burrowing owl burrows without any signs of burrowing owl use or characteristics suggesting it is a burrowing owl burrow may be excavated under the direct supervision of the approved Designated Biologist(s) without prior camera monitoring.

   c. Nesting burrowing owl burrows used for nesting shall not be excavated until biological and camera monitoring confirm that the chicks have fledged and are no longer dependent on the nest and then only after written concurrence from the CPM. An established burrowing owl burrow no-disturbance buffer may be removed once the burrow is collapsed and the burrowing owl (s) is/are no longer using the burrow.

8. **Burrowing Owl Injury.** If a burrowing owl is injured or found dead within the vicinity of the project area, project owner shall notify the CPM of the injury or mortality to the burrowing owl immediately by email. The Designated Biologist(s) shall follow the Burrowing Owl Mortality Reduction Plan to either immediately transport injured individuals to a CPM-approved

wildlife rehabilitation center or veterinary facility or follow approved collection and storage procedures for deceased animals. The project owner shall bear any cost associated with care and recovery of any injured burrowing owl adults, nestling(s) or egg(s) and hacking (controlled release of captive reared young).

9. **Burrowing Owl Observations and Notification.** All workers shall be trained to identify burrowing owl and shall inform the approved Designated Biologist(s) if a burrowing owl is seen within or near the project area during implementation of any project activity. All work in the vicinity of the burrowing owl which could harm the individual, shall cease until the individual moves from the project area of its own accord or the approved Designated Biologist(s) passively encourages the individual to move out of harm's way, in compliance with the timing and methods identified in the CPM-approved Burrowing Owl Mortality Reduction Plan.

10. **Operation Activities Designated Biologist On-site.** The approved Designated Biologist(s) shall be onsite during all ground and vegetation disturbing activities. The approved Designated Biologist(s) shall be on-site during all non-emergency ground and vegetation disturbing project activities performed at night.

11. **Vehicle Parking (Site Mobilization, Construction and Operation).** During site mobilization, construction, operation, and maintenance activities or while implementing burrowing owl take minimization measures, the project owner shall not allow vehicles to park on top of known or potential burrowing owl burrows. Vehicles left overnight shall not be located within 50 feet of known burrowing owl burrows. Workers shall inspect for burrowing owl under vehicles and equipment every time the vehicles and equipment are moved. If a burrowing owl is present, the worker shall wait for the burrowing owl to move unimpeded to a safe location. Alternatively, the approved Designated Biologist(s) shall be contacted to passively encourage the burrowing owl to move away from the vehicle or equipment, in compliance with the timing and methods identified in the Burrowing Owl Mortality Reduction Plan.

12. **Pipes and Materials Inspection (Site Mobilization, Construction, Operation).** The project owner shall ensure that all pipes or similar materials stockpiled or replaced in the project area are capped or otherwise enclosed at the ends to prevent entry by burrowing owl. The project owner shall ensure that any permanent pipes or similar materials or structures are left open where burrowing owl or other species may enter them and become trapped. The approved Designated Biologist shall thoroughly inspect all such materials for burrowing owl, before they are moved, buried, or capped. If a burrowing owl is discovered inside such material, that section of material shall not be moved until the animal has escaped of its own accord. Alternatively, the approved Designated Biologist may passively encourage the burrowing owl. to move away from the pipes, culverts, or similar structures, in compliance

with the timing and methods identified in the Burrowing Owl Mortality Reduction Plan.

13. **Ground and Vegetation Disturbing (Site Mobilization, Construction, and Operation).** Burrowing Owl Pre-Construction Surveys and Reporting (Item 3) shall be implemented within 30 calendar days prior to commencing ground or vegetation disturbing activities during operation in each distinct work area(s) within the project site. If the approved DB identifies any potential, known, or nesting BUOW burrows, the burrow(s) shall be monitored following the Burrowing Owl Burrow Blockage (Item 6) and Burrowing Owl Burrow Excavation (Item 7) as applicable, unless avoided per the Burrowing Owl Burrow Avoidance requirements (Item 5).
14. **Burrowing Owl Observations (Operation).** During operational activities within the project site, all workers shall inform the approved Designated Biologist if a burrowing owl is observed within or near the project area. All work in the vicinity of the burrowing owl, which could injure or kill the animal, shall cease immediately until the burrowing owl moves from the project area of its own accord or the approved DB passively encourages the individual to move out of harm's way, in compliance with the timing and methods identified in the approved Burrowing Owl Mortality Reduction Plan.
15. **Burrowing Owl Injury (Operation).** If a burrowing owl is injured or found dead within the vicinity of the project area, the project owner shall notify the CPM of the injury or mortality to the burrowing owl immediately. The approved Designated Biologist shall follow the approved Burrowing Owl Mortality Reduction Plan to either immediately transport injured individuals to a CDFW-approved wildlife rehabilitation center or veterinary facility or follow approved collection and storage procedures for deceased animals. The project owner shall bear any cost associated with care and recovery of any injured burrowing owl adults, nestling(s) or egg(s) and hacking (controlled release of captive reared young).

Verification: The Designated Biologist shall provide the preconstruction survey results to the CPM within 14 days of the completion of the survey. If surveys detect burrowing owls within 1,600 feet of proposed construction activities, the Designated Biologist shall provide the CPM documentation indicating that a non-disturbance buffer has been installed no less than 10 days prior to the start of any project-related site disturbance activities. The documentation shall include information as specified in Items 4 and 5, or as otherwise requested by the CPM.

If pre-construction surveys detect burrowing owls or active burrowing owl burrows within the project disturbance area, the project owner shall provide to the CPM a Burrowing Owl Mortality Reduction Plan prior to the start of activities (the measures described in the plan shall be incorporated into the BRMIMP and implemented.) The plan shall be for review and comment by the CPM and shall be finalized no less than 30 days prior to commencing site mobilization.

The project owner shall submit the Burrowing Owl Mortality Reduction Plan and Burrow Replacement Plan to the CPM for review and comment at least 30 days prior to initiation of site mobilization. Within 30 days of the conclusion of the construction period, the project owner shall submit a final Burrowing Owl Mitigation Implementation Report detailing location of all burrowing owl observed, take measures implemented, and their effectiveness.

During operations, the project owner shall include in the Annual Compliance Report an accounting of all burrowing owl documented on site, including copies of the Designated Biologist and/or Biological Monitor's field notes, any buffer zones erected, maps, additional avoidance and minimization measures implemented, and their perceived effectiveness.

BIO-20 Swainson's Hawk Avoidance and Minimization Measures. The DB and/or Biological Monitor(s) shall conduct protocol surveys for Swainson's hawks and avoid all occupied nests. Survey schedule and requirements shall be as identified below unless otherwise authorized by the CPM in consultation with CDFW.

1. **Survey Requirements.** The Designated Biologist shall provide the resumes of proposed Swainson's hawks surveyors to the CPM for approval and the CDFW and USFWS for concurrence prior to conducting surveys, pursuant to **BIO-1** and/or **BIO-3**. Prior to conducting the surveys, the project owner or Designated Biologist shall provide a map identifying all potential nesting habitat in or within 0.5-miles of proposed disturbance areas during construction to the CPM and CDFW. One round of protocol surveys will be completed within 5-miles of the generation tie-line corridor, unless otherwise prohibited due to legal access or safety issues, to assist in the location where aerial markers or bid flight diverters shall be installed. Preconstruction surveys Swainson's hawks shall occur annually during the construction phase of the project in all areas supporting suitable roosting or breeding habitat within 0.5 miles of project disturbance areas including but not limited to Whirlwind switching station, WRESC site, access roads, lay down areas, and generation tie-line alignment where active construction is proposed.

   Surveys will be designed and carried out by a qualified biologist with experience in the natural history and nesting behavior of Swainson's hawks. The survey periods will follow a specified schedule: Period I occurs from 1 January to 31 March, Period II occurs from 1 April to 30 April, Period III occurs from 1 May to 30 May, and Period IV occurs from 1 June to 15 July Surveys are not recommended during Period IV because identification is difficult, as the adults tend to remain within the nest for longer periods of time. No fewer than three surveys per period in at least two survey periods shall be completed immediately prior to the start of project construction, unless approved by the CPM, in coordination with CDFW.

2. **Nesting Season Inventory Data.** At a minimum, data collected during the nesting season surveys shall include the following: territory status (unknown, vacant, occupied, breeding successful, breeding unsuccessful); nest location, number observed; nesting chronology; number of young at each visit; photographs; and characterization of the habitat in which the nest is placed.
3. **Nest Detection.** If an active or occupied nest is confirmed during the surveys within 0.5 miles of the project site or gen-tie line the project owner shall notify the CPM and CDFW within 48 hours. In coordination with the CPM and CDFW a 0.5-mile line of sight disturbance-free buffer shall be established and demarcated by the DB with fencing or flagging and placed on project maps. This buffer may be adjusted as determined by a qualified avian biologist, approved pursuant to **BIO-1** and/or **BIO-3** in coordination with the CPM and CDFW. This buffer shall remain in place until the Designated Biologist has verified that the nest is no longer active or occupied. Nest locations shall be mapped using GPS technology and provided to the CPM.
4. **Active Nest Protection.** If surveys detect nesting Swainson's hawks, a 0.5 mile no-disturbance buffer zone shall be implemented around the nests until the end of the breeding season, or a qualified biologist determines that the nest is no longer active. Alternate buffer zones may be proposed if there is compelling ecological justification for the reduction with the approval of the CPM, in coordination with the CDFW. Alternative buffers must be approved in writing by the CPM, in consultation with CDFW. The Designated Biologist or Biological Monitor shall monitor the nest until it is determined that nestlings have fledged and dispersed or the nest is no longer active. Activities that might, in the opinion of the Designated Biologist(s)or Biological Monitor(s), disturb nesting activities (e.g., exposure to exhaust), shall be prohibited within the buffer zone until such a determination is made.
5. **Accidental Nest Disturbance.** The project owner or Designated Biologist shall notify the CPM and CDFW within 48 hours if an active nest fails and if the failure was project related or predation.
6. **Reporting.** The Designated Biologist shall prepare a Swainson's Hawk Survey Report and submit the document to the CPM for review and approval and the CDFW for review and comment. Throughout the construction phase of the project, nest locations, project activities in the vicinity of nests, and any adjustments to buffer areas shall be updated and available to the CPM. Nest data and, if applicable, nest activity monitoring results and any adaptive management actions taken, shall be provided to CPM and CDFW in monitoring reports submitted as part of the Monthly Compliance Report, as data becomes available and if specific nest monitoring or any adaptive management actions are taken, and summarized in annual monitoring reports. All buffer reduction notifications and prompt notifications of nest-related non-compliance and corrective actions will be made via email to the CPM and CDFW. At the end of each year's nest season, the project owner

shall submit an annual monitoring report to the CPM and CDFW. Specific contents and format of the annual report shall be submitted to the CPM for review and approval, in consultation with CDFW.

Verification: The project owner shall submit the resumes of the proposed Swainson's hawks biologists and avian monitors no less than 45 days prior to conducting the surveys and or site mobilization whichever comes first. The project owner shall submit pre-construction survey reports to the CPM and CDFW no more than 30 days after each survey effort has been completed. The project owner shall provide a letter report detailing the outcome of any nest failures to the CPM and the CDFW within 14 days of the incident.

BIO-21 Small Mammal Avoidance and Minimization Measures. The Designated Biologist and/or Biological Monitor(s) shall conduct pre-construction surveys to identify areas that support dense concentrations of small mammal burrows that could be utilized by Tulare grasshopper mouse, Tehachapi pocket mouse, and San Joaquin pocket mouse. Surveys shall be conducted by qualified biologists approved by the CPM, in coordination with CDFW, pursuant to **BIO-1** and/or **BIO-3**.

1. **Surveys.** Prior to any site mobilization, including ground-disturbing or vegetation removal activities, that will occur in suitable habitat during the general breeding season for pocket mice (May 1 through July 15) the Designated Biologist and/or Biological Monitor(s) shall conduct focused surveys to identify dense concentrations of potential burrows for pocket mice.

   Surveys shall encompass work areas and a 50-feet buffer, unless approved by the CPM or otherwise prohibited due to legal access or safety issues. Any areas supporting dense concentrations of potential burrows for pocket mice shall be recorded using a precision GPS unit and included on maps.

   In addition, prior to site mobilization on the WRESC project site and laydown areas a clearance survey conducted in the proposed work areas shall be conducted by the Designated Biologist and/or Biological Monitor(s) to identify any new or modified dense small mammal burrow concentrations that may have not been identified during pre-construction surveys.

2. **Salvage of Pocket Mice.** During initial grading the Designated Biologist(s) and/or Biological Monitor(s) shall make every effort to salvage small mammals such as pocket mice that may be displaced during initial ground disturbance. Mice will be collected, stored in a container that provides refuge, then relocated to adjacent habitat and placed under a shrub.

3. **Mortality or Serious Injury of Small Mammals.** If mortality or serious injury (i.e., compromising survival in the wild) occurs to any special status small mammal (e.g., Tulare pocket mouse, Tehachapi pocket mouse, San Joaquin pocket mouse, ringtail, etc.), the project owner or Designated

Biologist shall immediately contact the CPM to evaluate if additional measures are required, in coordination with CDFW.

4. **Reporting.** A report documenting survey results, including surveyor name(s), date(s) of survey, location (with maps), weather conditions, and any records of any areas supporting densely concentrated small mammal burrows or observations of special-status small mammals will be prepared and submitted to the CPM and CDFW. In addition, a monitoring report that includes the location, description, and duration of the activities, any observations or detections of these species found during the surveys or project activities, any salvage efforts that were implemented, and any mortalities or injuries that were reported will be provided during monthly and annual compliance reporting.

Verification: The project owner shall submit the pre-construction survey reports to the CPM and the CDFW no more than 30 days after each survey effort has been completed. Monitoring reports shall be submitted in the Monthly Compliance Report during construction and Annual Compliance Report, as needed, during operation.

BIO-22 American Badger, Desert Kit Fox, and Ringtail Avoidance and Minimization Measures. The Designated Biologist and/or Biological Monitor(s) shall conduct pre-construction surveys for American badger, desert kit fox, and ringtail. Surveys shall be conducted by qualified biologists approved by the CPM, in coordination with CDFW, pursuant to **BIO-1** and/or **BIO-3**. These measures shall be included in the BRMIMP and implemented.

1. **Surveys.** Pre-construction surveys for American badger, desert kit fox, and ringtail shall be conducted within a 500-foot radius of all project disturbance areas, where legal access is granted, to detect individuals and dens. Surveys shall be conducted no more than 14 days prior to the start of project activities; however the project owner may elect to conduct additional surveys to map and detect potential dens that occur on or near disturbance areas.

   Surveys shall be conducted using 20 meter (65-feet) spaced transects or less depending on topography to ensure 100 percent visual coverage of the survey area, unless approved by the CPM. Surveys shall be conducted during favorable weather conditions, avoiding periods of heavy wind or rain, fog, or other climate conditions that could potentially affect the ability of the surveyors to detect dens. All potential dens shall be examined for evidence of use by American badger, desert kit fox, or ringtail (i.e., scat, tracks, or fur). Any dens or den complexes identified during the surveys shall be classified as inactive, potentially active, or active.

   The Designated Biologist and/or Biological Monitor(s) shall monitor all potentially active den entrances within 500-feet of project disturbance areas with infrared cameras for five consecutive days to determine den occupancy.

Occupancy shall be determined through camera footage and/or by checking the apron of the den entrance(s) for tracks in loose dirt and by using a tracking medium (e.g. diatomaceous earth). If desert kit fox or ringtail are detected during surveys, the project owner shall notify the CPM and CDFW immediately.

2. **If Dens are Detected.** If a desert kit fox or ringtail den is determined to be active, it shall be avoided by a minimum of 500 feet during the pupping season (January 1 through August 31 for desert kit fox; May 1 through August 31 for ringtail) and by a minimum of 200 feet outside of the pupping season (September 1 through December 31 for desert kit fox; September 1 through April 30 for ringtail). If an American badger den is determined to by active, it shall be avoided by a minimum of 250 feet during the pupping season (March 1 through August 31) and by a minimum of 100 feet during the non-pupping season (September 1 through February 28). Avoidance buffers shall be established by the Designated Biologist using staking, flagging, or other conspicuous materials. No project activities will be permitted within the avoidance buffers. The Designated Biologist may modify the avoidance buffer distances based on the location of the den, specific site conditions, and nature of proposed work activities, with prior written approval from the CPM in coordination with CDFW. The avoidance buffer shall remain in place until the Designated Biologist(s) confirms that the young have left the den or the den has been naturally abandoned or failed.

3. **Passive Relocation.** No passive relocation shall be allowed at any time if active ringtail dens are identified and confirmed during surveys or biological monitoring. If confirmed active American badger or desert kit fox dens cannot be avoided, the project owner shall submit an American Badger and Desert Kit Fox Eviction Plan to the CPM for review and approval and the CDFW for review and comment. The American Badger and Desert Kit Fox Eviction Plan shall address proposed eviction activities outside the pupping season, and shall include, at a minimum, the following:

    - Methods and materials used for construction and maintenance of one-way eviction doors;
    - Use of continuous camera monitoring of dens for at least five consecutive days to confirm that no American badger or desert kit fox individuals are present and to ensure none are trapped during eviction;
    - Specific timing of eviction activities;
    - Design, materials, and methods used for construction and maintenance of artificial burrows and/or identification of location and discussion of preexisting, suitable, and unoccupied natural dens;
    - Methods of den collapse; and
    - Details regarding a “protect-in-place” option (i.e., evict but no collapse).

Passive relocation during the pupping season shall not be authorized. Passive relocation outside the pupping season shall be evaluated on a case-by-case basis by the CPM, in consultation with CDFW.

4. **Notification of Detection.** The project owner or Designated Biologist shall notify the CPM as well as CDFW within 24-hours if an American badger or desert kit fox, or any other special status mammal is detected during the surveys or during routine monitoring. The report shall include the number of animals detected, photos, and the location of the detection. Upon receiving notification, the CPM and CDFW may provide guidance for further action as appropriate to the species.
5. **Monitoring.** The Designated Biologist and/or Biological Monitor(s) shall remain onsite throughout the duration of any project activities that are conducted within 300 feet of the edge of the avoidance buffer. The biologist will have the authority to halt work, if it is determined that the animals are exhibiting increased levels of distress (e.g., displaying defensive behavior, pacing, leaving the den).**-4**.
6. **Report Mortalities and Serious Injuries Immediately.** If any special status mammal species are found dead or injured during any project-related activities, the project owner or Designated Biologist shall immediately notify the CPM and CDFW and shall provide written notification to CPM and CDFW within 48 hours. The CPM and CDFW shall review the activities resulting in mortality and determine if additional protective measures are required.
7. **Reporting.** A report documenting survey results, including surveyor name(s), date(s) of survey, location (with maps), weather conditions, and any observations or detections of sensitive mammals or their dens will be prepared and submitted to the CPM and CDFW. In addition, a monitoring report that includes the location, description, and duration of the activities, any observations or detections of these species found during the surveys or project activities will be provided during monthly, quarterly, and annual compliance reporting.

Verification: The project owner shall submit the pre-construction survey reports to the CPM and CDFW no more than 30 days after each survey effort has been completed. If required, the project owner shall submit a draft American Badger and Desert Kit Fox Eviction Plan to the CPM for review and approval and CDFW for review and comment. As final plan shall be submitted no less than 7 days prior to implementation.

BIO-23 Mohave Ground Squirrel Avoidance and Minimization Measures. The Designated Biologist and/or Biological Monitor(s) shall conduct pre-construction surveys for Mohave ground squirrel prior to the start of any site mobilization or other ground-disturbing activities, if those activities begin after or concurrently with the 2026 survey season for Mohave ground squirrel. Surveys shall be conducted by qualified biologists approved by the CPM, in coordination with

CDFW, pursuant to **BIO-1** and/or **BIO-3**. These measures shall be included in the BRMIMP and implemented.

1. **Pre-Construction Surveys.** To confirm non-occupancy status of the project site, the Designated Biologist(s) and/or Biological Monitor(s) shall conduct camera or live trapping prior to site mobilization, including any ground-disturbing or vegetation removal activities that will occur in suitable habitat. Surveys shall follow protocols approved by the CPM in coordination with CDFW. The Designated Biologist and/or Biological Monitor(s) shall conduct trapping for the WRESC site, P1 north and south, P2 and the VH property or a representative site mutually agreed upon by the CPM, in coordination with the CDFW. Surveys shall encompass work areas and a 50-foot buffer, unless approved by the CPM. Any observations shall be recorded using a precision GPS unit and included on maps submitted to the CPM.
2. **No Detection.** If surveys are negative, the site will be considered not occupied and construction may proceed upon approval by the CPM. No additional surveys would be required for the duration of construction unless a period of one year or more passes prior to any ground-disturbing activities. Additional follow-up surveys shall be required if periods of construction inactivity exceeds more than one year in any given area,
3. **If Detected.** If Mohave ground squirrels are detected a 300-foot non-disturbance buffer shall be established around the detection site where no construction activities may occur. This non-disturbance buffer shall remain in place until the CPM and CDFW have been consulted and have provided direction on appropriate next steps.
4. **Notification of Detection.** The project owner or Designated Biologist shall notify the CPM and CDFW within 24 hours of any Mohave ground squirrel detected during the surveys. The report shall include the number of animals detected, photographs (if available), and the location of the detection. Upon receiving notification, the CPM and CDFW will provide guidance for further action as appropriate to the species.
5. **Supplemental Mitigation for Mohave Ground Squirrel**

   If Mohave ground squirrels are detected and an incidental take authorization is necessary and if the issuance of take authorization will not jeopardize the species persistence in the region, standard Mohave Ground Squirrel incidental take permit conditions to minimize and fully mitigate impacts shall be required as approved by the CPM after consultation with CDFW. These standard measures, as refined by the CPM based on the facts of the situation, may include:

   (1) Acquisition of permanent habitat compensation lands, calculated on the importance of the habitat in the project area and standard CDFW protocols;

   (2) Burrow excavation and avoidance measures;

(3) Establishment of avoidance zones;

(4) Worker environmental awareness training;

(5) Monthly Compliance Reports; and

(6) Any other measures as determined by the CPM in consultation with CDFW.

6. **Reporting.** A report documenting survey results, including surveyor name(s), date(s) of survey, location (with maps), weather conditions, and any observations or detections of Mohave ground squirrels shall be prepared and submitted to the CPM and CDFW. In addition, a monitoring report that includes the location, description, and duration of the activities, any observations or detections of the species found during the surveys or project activities shall be provided during monthly and annual compliance reporting.

Verification: The project owner shall submit survey protocols no less than 45 days prior to conducting the surveys and/or site mobilization whichever comes first to the CPM for review and approval and CDFW for review and comment. The project owner shall submit the pre-construction survey reports to the CPM and CDFW no more than 21 days after the survey effort has been completed.

BIO-24 Lake and Streambed Equivalency Conditions. The project owner shall implement the following measures to avoid, minimize and mitigate for potential direct and indirect impacts to jurisdictional waters of the state and to satisfy the requirements of California Fish and Game Code, sections 1600 through 1607:

1. **Copies of Requirements, Stop Work Authority:** The project owner shall provide a copy of the Streambed Impact Minimization and Compensation Measures identified in this condition of certification and any other water related permit conditions to all contractors, subcontractors, and the project owner's project supervisors. This includes copies of the WDR required by **WATER-1**. Copies shall be maintained at each work site and be readily available during periods of active work and must be presented to any the CPM or CDFW upon demand. The CPM reserves the right to issue a stop work order after giving notice to the project owner, if the CPM, in consultation with CDFW, determines that the project owner is not in compliance with any of the requirements of this condition, including but not limited to the existence of any of the following:

   a. The information provided by the project owner regarding streambed alteration is incomplete or inaccurate;

   b. New information becomes available that was not known to the CEC CPM or the CDFW at the time of project certification; or

   c. The project or project activities as approved in the Final Commission Decision have changed.

2. **Provide Maps of Proposed Disturbance Areas.** The project owner shall provide detailed maps of all proposed temporary work areas that have the potential to result in temporary or permanent impacts to any jurisdictional feature. This includes providing maps of work areas around each of the generation tie-line poles, staging areas, pull and tensioning sites, or other work areas. Maps, at an approved scale of all proposed temporary and permanent work areas shall be provided to the CPM and CDFW prior to any site mobilization. At the conclusion of construction, the project owner shall provide a true-up of any jurisdictional features that were subject to temporary or permanent impacts.
3. **General Species Protection Measures.** Species specific protection measures including surveys and monitoring are included in separate conditions of certification. General protective conditions applicable to all species are identified below.
4. **Best Management Practices:** The project owner shall comply with the following conditions to protect drainages near the project disturbance area:
    a. **No In-Water Work.** The project owner shall not operate vehicles or equipment in ponded or flowing water except as described in this condition.
    b. **Stream Diversion.** When work in a flowing stream is unavoidable, stream flow shall be diverted around or through the work area during construction operations. Any proposed Stream Diversion Plan shall be submitted to the CPM for review and approval, and the CDFW for review and comment.
    c. **Diversion Method.** Stream flow shall be diverted using gravity flow through temporary culverts/pipes or pumped around the work site with the use of hoses. Any alternative methods shall be included in the Stream Diversion Plan submitted to the CPM under Item 5b.
    d. **Work in Dry Weather.** The National Weather Service 72-hr forecast for the project area shall be monitored prior to work proposed in or near drainages. Project activities within drainages shall be restricted if the forecast predicts a 60% chance or more of a greater than ¼-inch of precipitation event within a 24-hour period, unless otherwise approved by the CPM, in coordination with CDFW. Ground-disturbing project activities in drainages shall cease during these events and resume only if the site is not saturated or does not contain ponded or flowing water.
    e. **Moving Equipment.** When any activity requires moving of equipment across a flowing drainage, such operations shall be conducted without substantially increasing stream turbidity. Vehicles driven across drainages when water is present shall be completely clean of petroleum residue and water levels shall be below the vehicles' axels.

f. **Materials.** Rock, gravel, and/or other materials shall not be taken from the bed, channel, or bank of any river, lake, or stream.

g. **Temporary Fill.** All temporary fills shall be constructed of pre-approved, non-erodible materials and fill areas shall have a liner between the bottom of the fill and the river, lake, or stream sediments. Following completion of project activities, all temporary fill material shall be removed and the disturbed portions of the bed, channel, and bank shall be returned to previous contours. Minor amounts of fill material that have sunk into the sediment below the natural channel bottom may remain, but only if there is no accretion in bed or channel elevation above the original contour.

h. **Bank Stabilization.** Suitable, non-erodible materials that will withstand wash out shall be used for bank stabilization. Only clean material such as rock riprap free of trash, debris and deleterious material shall be used as bank stabilization, and placement shall extend above the normal high-water mark. Asphalt and broken concrete are not acceptable materials.

i. **Operating Equipment and Vehicle Leaks.** Any equipment or vehicles driven and/or operated within or adjacent to any lake or stream shall be checked and maintained daily to prevent leaks of materials that could be deleterious to aquatic and terrestrial life or riparian habitat.

j. **Clean Equipment Prior to Entering Stream.** All heavy equipment that will be entering the live stream shall be cleaned of materials deleterious to aquatic life including oil, grease, hydraulic fluid, soil and other debris prior to entering the water.

k. **Stationary Equipment Leaks.** Stationary equipment such as motors, pumps, generators, and welders, within or adjacent to any lake or stream shall be positioned over drip pans. Stationary heavy equipment shall have suitable containment to handle a catastrophic spill/leak.

l. **Equipment Maintenance and Fueling.** No equipment maintenance or fueling shall be done within or within 50 ft of any stream channel or lake margin where petroleum products or other pollutants from the equipment may enter these areas.

m. **Equipment Storage.** Staging and storage areas for equipment, materials, fuels, lubricants and solvents, shall be located outside of a stream channel and banks and contained in a leakproof berm or other secondary containment.

n. **Staging and Storage Areas.** Staging and storage areas for equipment, materials, fuels, lubricants, and solvents shall be located more than fifty (50) feet from a stream channel and banks. All equipment and fuel stored on site shall be bermed to contain any spilled material and shall be protected from rain. Berms shall consist of plastic covered dirt or sandbags.

o. **Stockpiled Materials.** Building materials and/or construction equipment shall not be stockpiled or stored where they may be washed into the water or cover aquatic or riparian vegetation. Stockpiles shall be covered when measurable rain is forecasted.

p. **Excavation Equipment.** Prior to working within a stream, all equipment shall be closely examined for oil and fuel discharges. Any contaminants shall be cleaned prior to any work within a streambed and shall be maintained daily.

q. **Remove Structures.** Project-related structures and associated materials not designed to withstand high water flows or placed in seasonally dry portions of a stream or lake that could be washed downstream or could be deleterious to aquatic life, wildlife, or riparian habitat shall be moved to areas above high water before such flows occur.

r. **Location of Spoil Sites.** Spoil sites shall not be within a lake or stream or locations that may be subjected to high storm flows, where spoils may be washed back into a lake or stream, or where it may impact streambed habitat, aquatic or riparian vegetation.

s. **Removal of Debris, Materials and Rubbish.** All project generated debris, building materials and rubbish shall be removed and properly disposed of in a legal manner, from a stream and from areas within twenty-five (25) feet of the high-water mark where such materials could be washed into a stream following completion of project activities.

t. **Wash Water.** Water containing mud, silt, or other pollutants from equipment washing or other activities, shall not be allowed to enter a lake or flowing stream or placed in locations that may be subjected to high storm flows.

5. **Hazardous Materials and Concrete**

a. **Hazardous Substances.** Raw cement/concrete or washings thereof, asphalt, paint or other coating material, oil or other petroleum products, or any other substances which could be hazardous to aquatic life, resulting from project-related activities, shall be prevented from contaminating the soil and/or entering the waters of the state.

b. **Toxic Materials.** Any hazardous or toxic materials that could be deleterious to aquatic life that could be washed into a stream, or its tributaries shall be contained in watertight containers or removed from the project site.

c. **Hazardous Materials.** Debris, soil, silt, bark, slash, sawdust, rubbish, creosote-treated wood, raw cement/concrete or washings thereof, asphalt, paint or other coating material, oil or other petroleum products, or any other substances which could be hazardous to aquatic life, wildlife, or riparian habitat resulting from the project-related activities shall be

prevented from contaminating the soil and/or entering the waters of the state.

d. **Sacked Concrete.** The use of sacked concrete, asphalt pieces or asphalt containing pavement grindings within twenty (20) feet of the top-of-bank of a stream /outside of the ordinary high-water mark is prohibited, or where it may enter the channel.

e. **Concrete – Primary Containment.** Wet concrete shall be contained and prevented from entering any lake or stream unless as authorized by this COC. No concrete shall be poured within the high flow line if the 10-day weather forecast indicates any chance of rain above ¼" in a 24-hour period, unless approved by the CPM, in coordination with CDFW.

f. **Concrete – Biological Monitor.** At all times when pouring or working with wet concrete a Designated Biologist and/or Biological Monitor shall be present to inspect containment structures and ensure that no concrete or other debris enters into a lake or stream outside of those structures.

g. **Concrete – Secondary Containment.** Secondary containment shall be installed between the primary containment structures (i.e. headwall form, roadway forms) and the lake or stream to prevent wet concrete from entering into the lake or stream upon failure or leak of primary structures. No concrete shall be poured within the high flow line if the 10-day weather forecast indicates any chance of rain above ¼" in a 24-hour period, unless approved by the CPM, in coordination with CDFW.

h. **Creosote-Treated Wood.** Creosote-treated wood products for decking shall not be used in waters of the state. Alternatives that may be appropriate include steel, concrete, plastic, or wood products treated with preservatives that do not contain creosote or other materials that are deleterious to aquatic life.

i. **Spill Containment.** All activities performed in or near a stream shall have absorbent materials designated for spill containment and cleanup activities on-site for use in an accidental spill. In the event of a spill the project owner shall immediately notify the CPM, CDFW, RWQCB, and the California Emergency Management Agency at 1-800-852-7550, or most current phone number, and immediately initiate the cleanup activities.

6. **Crossings.** The installation of bridges, culverts, or other structures shall be such that water flow (velocity and low flow channel width) is not impaired. Bottoms of temporary culverts shall be placed at or below stream channel grade.

   a. **Sized to Accommodate Storm Flows.** If proposed, all crossing sites shall be designed to accommodate the estimated 100-year flow including sediment load and debris without diverting and shall be installed in accordance with design plans and diagrams provided to the CPM for review and approval. Culvert sizing factors shall include culvert capacity

loss from placement of the culvert pipe bottom below stream bed grade, transportation of bed load, and the abundance and size of woody debris likely to be introduced to a stream upstream of the culvert crossing, in addition to the 100-year flow.

b. **Alignment.** If used, all crossing structures shall be properly aligned within a stream and shall be otherwise designed and sized to assure resistance to washout and erosion of a streambed, stream banks, and/or fill.

c. **Allow Passage of Wildlife.** Installation of bridges, culverts or other structures shall be such that water flow during storm events is not impaired and upstream or downstream passage of wildlife is assured at all times. Ensure that any debris is cleared if the structure is in place.

d. **Single Pipes Only.** Multiple-pipe crossings shall not be constructed or reconstructed within the bank full channel, unless approved by the CPM in coordination with the CDFW. Completed culvert pipe installations shall result in water flow during rainfall events that is neither impeded nor impounded at the pipe inlet, nor accelerated downstream of the crossing structure.

7. **Vegetation**

a. **Demarcation of Work Areas.** All work areas shall be adequately marked to prohibit unauthorized and unnecessary disturbance to vegetation. All areas shall be mapped and identified on plans for all project personnel.

b. **Vegetation Disposal.** All native vegetation not proposed for salvage (i.e., cuttings) shall be chipped and left on-site in a manner optimizing erosion control purposes in accordance with the recommendations of an erosion control specialist. All non-native vegetation shall be removed and disposed of at an approved disposal location according to state and local laws and ordinances.

c. **Hand tools Near Mature Trees.** Wherever possible, hand tools shall be used (i.e. chainsaws, clippers, brush whackers, etc.) to remove vegetation near mature native trees as to not damage trees or disturb the substrate.

d. **Remove Debris from Stream Zones.** All removed vegetation and debris shall be moved outside the normal high-water mark prior to inundation by water. All removed vegetation and debris shall be disposed of according to state and local laws and ordinances.

e. **Minimum Removal.** Disturbance or removal of vegetation shall not exceed the minimum necessary to complete operations. The disturbed portions of any stream channel or lake margin within the high-water mark of a stream or lake shall be restored to as near their original condition as possible.

f. **Stabilize Exposed Areas.** All exposed/disturbed areas within the project site shall be stabilized to the greatest extent possible.

8. Herbicide Use

g. **Herbicide/Pesticide Use Permitted in Accordance with Law.** All herbicide use conditions for mixing, application and clean-up shall conform to all applicable federal, state, and local regulations. Nothing in this condition represents an herbicide/pesticide use recommendation that allows for an action that conflicts with herbicide/pesticide use regulations.

h. **Licensed Applicators Only.** Any application of herbicide shall be overseen by a licensed applicator in accordance with all applicable, federal, state, local laws, and/or guidelines.

i. **Prevent Overspray of Herbicides/Pesticide.** Conduct all treatment activities in a manner to minimize overspray of herbicide on to adjacent native vegetation and where there is no potential of contamination to a river, stream or waters of the state.

j. **Herbicide/Pesticide Mixing.** Ensure that herbicide-mixing sites are located in areas devoid of vegetation, and where there is no potential of a spill reaching a vegetated area or a river, stream or waters of the state.

k. **Avoid Treatment in Sensitive Areas.** Areas identified as sensitive by the Designated Biologist or with suspected occupied nesting or denning habitats shall not be treated with pesticides or herbicides. Environmental damage caused by the application or use of substances that prove harmful to fish and aquatic wildlife per Fish and Game Code, section 5650 shall not occur.

9. **Invasive Species Control and Special Status Species Protection Measures** have been included in separate conditions of certification, see **BIO-10** (Invasive Species Management Plan) and **BIO-7** (General Impact Avoidance and Minimization Measures).

10. **Mitigation for Permanent and Temporary Impacts to State Waters**

a. **Acquire Off-Site State Waters.** There are no permanent impacts to State waters and no off-site mitigation is proposed. However, if there are unanticipated temporary or permanent impacts to State waters the project owner shall provide verification to the CPM that the lands acquired under **BIO-14** support a minimum of 3:1 ratio for any permanent impacts and 1:1 for temporary impacts to state waters.

Verification: The project owner shall provide the updated Jurisdictional Report that clearly delineates all proposed permanent and temporary impacts, the proposed engineering drawings for each crossing type, and the hydrologic studies used to inform the engineering design to the CPM for review and approval no less than 45 days prior to site mobilization. The project owner shall provide Final Reports

and Plans to the CPM and the CDFW no later than 14 days prior to the installation of any engineered crossing, bridge, or new culvert.

Maps of all proposed temporary and permanent work areas shall be provided to the CPM no less than 30 days prior to any site mobilization. At the conclusion of construction, the project owner shall provide a true-up of any jurisdictional features that were subject to temporary or permanent impacts the CPM no more than 30 days following the cessation of construction along the generation tie-line in the Construction Termination Report.

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5.3 Climate Change and Greenhouse Gas Emissions

Testimony of Winston Potts

This section describes the environmental setting, regulatory background, and impacts associated with the construction and operation of the project with respect to greenhouse gas (GHG) emissions, and indirect, "non-stationary source" emissions from project operation. Unlike emissions of criteria and toxic air pollutants, which have regional and localized impacts, GHG emissions relate to the broader impact of global climate change.

5.3.1 Environmental Setting

Existing Conditions

The global climate depends on the presence of naturally occurring greenhouse gases (GHG) to provide what is commonly known as the "greenhouse effect" that allows heat radiated from the Earth's surface to warm the atmosphere. The greenhouse effect is driven mainly by water vapor, aerosols, carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and other constituents. Globally, the presence of GHG affects temperatures, precipitation, sea levels, ocean currents, wind patterns, and storm activity.

Human activity directly contributes to emissions of six primary anthropogenic GHGs: CO_2, CH_4, N_2O, hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF_6). The standard definition of anthropogenic GHG includes these six substances under the 1997 Kyoto Protocol (UNFCCC 1998). The most important and widely occurring anthropogenic GHG is CO_2, primarily from the use of fossil fuels as a source of energy.

Changing temperatures, precipitation, sea levels, ocean currents, wind patterns and storm activity provide indicators and evidence of the effects of climate change. For the period 1950 onward, relatively comprehensive data sets of observations are available. Research by California's Office of Environmental Health Hazard Assessment (OEHHA) reports certain climate change indicators by categorizing the effects as: changes in California's climate; impacts to physical systems including oceans, lakes, rivers, and snowpack; and impacts to biological systems including humans, vegetation, and wildlife. The primary observed changes in California's climate include increased annual average air temperatures, more-frequent extremely hot days and nights, and increased severity of drought. Impacts to physical systems affected by warming temperatures and changing precipitation patterns show decreasing snowmelt runoff, shrinking glaciers, and rising sea levels. Impacts to terrestrial, marine, and freshwater biological systems, with resulting changes in habitat, agriculture, and food supply are occurring in conjunction with the potential to impact human well-being (OEHHA 2022).

GHG-Emissions Trends

California first formalized a strategy to achieve GHG reductions in 2008, when California produced approximately 484 million metric tons of CO_2 equivalent ($MMTCO_2e$) according to the official California Air Resources Board (CARB) inventory (CARB 2021). The economy-wide emissions have been declining in recent years, and California emitted approximately 369 $MMTCO_2e$ in 2020 (CARB 2022a). Globally, an estimated 33,000 $MMTCO_2e$ were added to the atmosphere through the combustion of fossil fuels in 2021, of which the United States accounted for approximately 14 percent. From approximately 1750 to 2021, concentrations of CO_2 have increased globally by 48.1 percent (U.S. EPA 2023). In this global context, California emits less than one percent of the global anthropogenic GHG.

Kern County Communitywide GHG Emissions Inventory

In 2011, Kern County signed a memorandum of understanding (MOU) with the San Joaquin Valley Air Pollution Control District to prepare a communitywide greenhouse gas emission inventory for the County. It was agreed that 2005 would be the base year and 2020 would be used as the forecast year. The 2005 base year GHG emissions inventory was estimated to be 27 million metric tons of CO_2 equivalent (CO_2e) of which the fossil fuel industry sector represents 40 percent followed by the electricity consumption sector at 22 percent, transportation (17 percent), industrial processes and agricultural fugitives (7 percent each), and residential/commercial/industrial combustion (5 percent). The 2020 forecasted GHG emissions inventory was estimated to be 27 million metric tons of CO_2e of which the electricity consumption sector represents 31 percent followed by the fossil fuel industry sector at 26 percent, transportation (18%), agricultural fugitives (10%), industrial processes (9 percent), and residential/commercial/industrial combustion (6 percent). In both years, the waste management, forestry and land use, and other source sectors made minor contributions to the inventory (Kern County 2012).

Regulatory

Federal

U.S. EPA GHG Mandatory Reporting Program (40 CFR Part 98). This rule requires mandatory reporting of GHG emissions for industrial facilities and power plants that emit more than 25,000 $MTCO_2e$ per year. The reporting program (40 CFR Part 98.300, Subpart DD) applies to electric and transmission distribution equipment that use high GWP gases, including SF_6, for insulation of electrical equipment. Currently, there are no federal regulations limiting GHG emissions from the types of sources that would occur with the proposed project. Circuit breakers and gas insulated switches related to electric power transmission and distribution may be sources of GHG subject to reporting due to the leakage of SF_6.

State

California Global Warming Solutions Act of 2006. The California Global Warming Solutions Act of 2006 (Assembly Bill [AB] 32) required that California's greenhouse gas (GHG) emissions be reduced to 1990 levels by 2020. The reduction is being accomplished through an enforceable statewide cap on global warming emissions beginning in 2012. AB 32 directs the CARB to develop regulations and a mandatory reporting system to track and monitor global warming emissions levels (AB 32, Chapter 488, Statutes of 2006).

CARB Scoping Plan. Part of the Legislature's direction to CARB under AB 32 was to develop a scoping plan that serves as a statewide planning document to coordinate the main strategies California will use to reduce GHG emissions that cause climate change. CARB approved the AB 32 Climate Change Scoping Plan (Scoping Plan) in 2008 and released updates in 2014, 2017, and 2022. The CARB's Scoping Plan includes a range of GHG emissions reduction actions, which include direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, and market-based compliance mechanisms, such as the cap-and-trade program. In December 2007, CARB set the statewide 2020 emissions limit, defined as reducing emissions to 1990 levels, at 427 $MMTCO_2e$. The 2014 Scoping Plan adjusted the 1990 emissions estimate and the statewide 2020 emissions limit goal to 431 $MMTCO_2e$ (CARB 2014). The 2017 Scoping Plan (CARB 2017) demonstrates the approach necessary to achieve California's 2030 target, which is to reduce GHG emissions 40 percent below 1990 levels to 260 $MMTCO_2e$. On November 16, 2022, CARB published the 2022 Scoping Plan for Achieving Carbon Neutrality (CARB 2022b), which lays out a path to achieve targets for carbon neutrality by 2045.

California Governor's Executive Order B-30-15 and Senate Bill 32. Executive Order B-30-15 (April 2015) establishes a California greenhouse gas reduction target of 40 percent below 1990 levels by 2030. One purpose of this interim target of this executive order is to ensure California meets its target of reducing greenhouse gas emissions to 80 percent below 1990 levels by 2050. This executive order also specifically addresses the need for climate adaptation and directs state agencies to update the California Climate Adaptation Strategy to identify how climate change will affect California infrastructure and industry and what actions the state can take to reduce the risks posed by climate change. Senate Bill (SB) 32 of 2016 codifies this GHG emissions target to 40 percent below the 1990 level by 2030.

Renewable Energy Programs. In 2002, California initially established the Renewables Portfolio Standard (RPS) with the goal of increasing the percentage of renewable energy in the state's electricity mix to 20 percent by 2017. State energy agencies recommended accelerating that goal, and former Governor Schwarzenegger's Executive Order S-14-08 (November 2008) required California utilities to reach the 33 percent renewable electricity goal by 2020, consistent with the CARB's 2008 Scoping Plan. In April 2011, Senate Bill X1-2 (Simitian, Chapter 1, Statutes of 2011) of the First Extraordinary Session was signed into law. SB X1-2 expressly applied the 33 percent

RPS by December 31, 2020, to all retail sellers of electricity and established renewable energy standards for interim years prior to 2020.

- Clean Energy and Pollution Reduction Act (Senate Bill 350, De León, Chapter 547, Statutes of 2015): In 2016, SB 350 took effect declaring it the intent of the Legislature to acknowledge Governor Brown's clean energy, clean air and greenhouse gas emissions reduction goals for 2030 and beyond. SB 350 increases California's renewable electricity procurement goal from 33 percent by 2020 to 50 percent by 2030.
- The 100 Percent Clean Energy Act of 2018 (Senate Bill 100, De León, Chapter 312, Statutes of 2018): Beginning in 2019, the RPS deadlines advanced to 50 percent renewable resources by December 31, 2026, and 60 percent by December 31, 2030. In addition, SB 100 establishes policy that renewable energy resources and zero-carbon resources supply 100 percent of all retail sales of electricity by December 31, 2045.
- Clean Energy, Jobs, and Affordability Act of 2022 (Senate Bill 1020, Laird, Chapter 361, Statutes of 2022): Accelerates the timelines set forth in SB 100 to provide that eligible renewable energy resources and zero-carbon resources supply 90 percent of all retail sales of electricity to California end-use customers by December 31, 2035, 95 percent of all retail sales of electricity to California end-use customers by December 31, 2040, 100 percent of all retail sales of electricity to California end-use customers by December 31, 2045, and 100 percent of electricity procured to serve all state agencies by December 31, 2035, as specified.

California Governor's Executive Order B-55-18. On September 10, 2018, the same day he signed SB 100 into law, former Governor Brown issued Executive Order B-55-18 to achieve carbon neutrality, stating the governor's intention "to achieve carbon neutrality as soon as possible, and no later than 2045, and achieve and maintain net negative emissions thereafter. This goal is in addition to the existing statewide targets of reducing greenhouse gas emissions." From the 2020 GHG limit of 431 $MMTCO_2e$, California will need to reduce statewide emissions another 170 million tons to meet its 2030 statutory target of 260 million tons per year (40 percent below 1990 levels). The state would need to cut annual emissions by a further 175 million tons to meet its 2050 goal (set by executive order) of 85 million tons per year (80 percent below 1990 levels).

The California Climate Crisis Act (Assembly Bill 1279). Assembly Bill 1279 (Muratsuchi, Chapter 337, Statutes of 2022) establishes the policy of the state to achieve carbon neutrality as soon as possible, but no later than 2045; to maintain net negative GHG emissions thereafter; and to ensure that by 2045 statewide anthropogenic GHG emissions are reduced at least 85 percent below 1990 levels. The bill requires CARB to ensure that Scoping Plan updates identify and recommend measures to achieve carbon neutrality, and to identify and implement policies and strategies that enable CO_2 removal solutions and carbon capture, utilization, and storage (CCUS) technologies. The CARB 2022 Scoping Plan for Achieving Carbon

Neutrality (CARB 2022b) plans for the 2045 target set forth by AB 1279 and Executive Order B-55-18.

Short-Lived Climate Pollutant Strategy. To best support the reduction of GHG emissions consistent with AB 32, CARB released the Short-Lived Climate Pollutant (SLCP) Strategy, under Health and Safety Code, section 39730, in March 2017. Health and Safety Code, section 39730, defined SLCPs as having lifetimes in the atmosphere ranging from "a few days to a few decades." Then beginning in 2017 under Health and Safety Code, section 39730.5, CARB was directed to set targets to reduce SLCP emissions 40 percent below 2013 levels by 2030 for CH_4 and HFCs and 50 percent below 2013 levels by 2030 for anthropogenic black carbon (CARB 2017). The SLCP Strategy was integrated into the 2017 update to CARB's Scoping Plan. To help meet the HFC reduction goal, California adopted Prohibitions on Use of Certain Hydrofluorocarbons in Stationary Refrigeration, Stationary Air-conditioning and Other End-Uses (California Code of Regulations, Title 17, Division 3, Chapter 1, Subchapter 10 Climate Change, Article 4, Subarticle 5, Sections 95371, et seq.). The prohibited HFCs with different effective dates are listed in the regulation. In addition, on September 30, 2022, the Governor approved SB 1206, which would prohibit a person from offering for sale or distribution, or otherwise entering into commerce in the state, bulk HFCs or bulk blends containing HFCs that exceed the GWP limit of 2,200 beginning January 1, 2025, and lower GWP limits beginning January 1, 2030, and January 1, 2033. The bill does not restrict the authority of CARB to establish regulations lowering the maximum allowable GWP limits below the limits established by the bill.

Reducing SF_6 Emissions from Gas Insulated Switchgear. In early 2011, CARB adopted a regulation (17 CCR §§95350 to 95359) to reduce SF_6 emissions in gas insulated switchgear used in the electricity sector's transmission and distribution system as an early action measure pursuant to AB 32. SF_6 is an extremely powerful and long-lived GHG. The 100-year GWP of SF_6 is 22,800 (from IPCC Fourth Assessment Report), making it the most potent of the six main GHGs, according to the U.S. EPA. Because of its extremely high GWP, small reductions in SF_6 emissions can have a large impact on reducing GHG emissions, which are the main drivers of climate change. The regulation requires gas insulated switchgear owners to report SF_6 emissions annually and requires reducing losses of SF_6 over time, subject to annual emission rate limits. The maximum allowable emission rate started at 10 percent in 2011 and has decreased one percent per year since then. The limit reached one percent in 2020 and remained at that level going forward. However, data show that statewide SF_6 capacity is growing by one to five percent per year, which would increase the expected SF_6 emissions. In response to emerging technologies using lower or zero GWP insulators, CARB amended the regulation (Cal. Code Regs., tit. 17, §§ 95350-95359.1) in 2021 to further reduce GHG emissions from gas-insulated equipment (GIE). Key provisions of the amended regulation include a phase-out schedule in stages between 2025 and 2033 for new SF_6 GIE, coverage of other GHG beyond SF_6 used in GIE, and other changes that enhance accuracy of emissions accounting and reporting.

California Environmental Quality Act (CEQA) Guidelines for GHG Emissions. With the enactment of Senate Bill 97 (Dutton, Chapter 185, Statutes of 2007), the Governor's Office of Planning and Research was required by July 1, 2009, to prepare, develop, and transmit to the Natural Resources Agency guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions. Those amendments to the CEQA guidelines became effective March 18, 2010, and were subsequently updated in December 2018 to further address the analysis of GHG emissions, including the following:

- Lead agencies must analyze the GHG emissions of proposed projects. (See CEQA Guidelines, Cal. Code Reg., tit. 14, § 15064.4, subd. (a))
- The focus of the lead agency's analysis should be on the project's effect on climate change, rather than simply focusing on the quantity of emissions and how that quantity of emissions compares to statewide or global emissions. (See CEQA Guidelines, Cal. Code Reg., tit. 14, § 15064.4, subd. (b))
- The impacts analysis of GHG emissions is global in nature and thus should be considered in a broader context. A project's incremental contribution may be cumulatively considerable even if it appears relatively small compared to statewide, national, or global emissions. (See CEQA Guidelines, Cal. Code Reg., tit. 14, § 15064.4, subd. (b))
- Lead agencies should consider a timeframe for the analysis that is appropriate for the project. (See CEQA Guidelines, Cal. Code Reg., tit. 14, § 15064.4, subd. (b))
- A lead agency's analysis must reasonably reflect evolving scientific knowledge and state regulatory schemes. (See CEQA Guidelines, Cal. Code Reg., tit. 14, § 15064.4, subd. (b).)
- Lead agencies may rely on an adopted statewide, regional, or local plan in evaluating a project's GHG emissions. (See CEQA Guidelines, Cal. Code Reg., tit. 14, § 15064.4, subd. (b)(3))
- Lead agencies may analyze and mitigate the significant impact of GHG emissions as part of a larger plan for the reduction of greenhouse gases. (See CEQA Guidelines, Cal. Code Reg., tit. 14, § 15183.5, subd. (a))
- A project's incremental contribution to a cumulative GHG emissions effect may be determined not to be significant and the effects of the project to not be cumulatively considerable if the project complies with the requirements of the GHG emissions reduction strategy. (See CEQA Guidelines, Cal. Code Reg., tit. 14, §§ 15064, subd. (h)(3); 15130, sub. (d); 15183, subd. (b))
- In determining the significance of a project's impacts, the lead agency may consider a project's consistency with the state's long-term climate goals or strategies, provided that substantial evidence supports the agency's analysis of how those goals or strategies address the project's incremental contribution to climate change and its conclusion that the project's incremental contribution is consistent with those plans,

goals, or strategies. (See CEQA Guidelines, Cal. Code Reg., tit. 14, § 15064.4, subd. (b)(3))

- The lead agency has discretion to select the model or methodology it considers most appropriate to enable decision makers to intelligently account for the project's incremental contribution to climate change. (See CEQA Guidelines, Cal. Code Reg., tit. 14, § 15064.4, subd. (c).)

Local

Eastern Kern Air Pollution Control District. The Eastern Kern Air Pollution Control District defers to the San Joaquin Valley Air Pollution Control District's Climate Change Action Plan (SJVAPCD 2008). The Climate Change Action Plan directed the SJVAPCD Air Pollution Control Officer to develop guidance to assist lead agencies, project proponents, permit applicants, and interested parties in assessing and reducing the impacts of project-specific GHG emissions on global climate change.

In 2009, the SJVAPCD adopted the *Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts for New Projects Under CEQA and the District Policy – Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency*. The guidance and policy rely on the use of performance-based standards, otherwise known as Best Performance Standards (BPS), to assess significance of project-specific GHG emissions on global climate change during the environmental review process, as required by CEQA (SJVAPCD 2009a; 2009b).

Use of BPS was a method for CEQA streamlining, but they were not required measures. Projects implementing BPS could be determined to have a less than cumulatively significant GHG impact. Another option was to demonstrate a 29 percent reduction in GHG emissions from business-as-usual (BAU) conditions to determine that a project would have a less than cumulatively significant impact and be consistent with AB 32 2020 targets. The guidance does not limit a lead agency's authority in establishing its own thresholds for determining the significance of project-related GHG impacts (SJVAPCD 2009b). Since SJVAPCD's recommended BPS method and 29 percent below BAU method were designed with 2020 GHG reduction targets in mind, compliance with these BPS or demonstration of 29 percent below BAU are no longer applicable to determining the significance of GHG impacts for projects developed after 2020.

Regional Transportation Plan (RTP) & Sustainable Communities Strategy (SCS). The Kern Council of Governments (Kern COG) is the federally recognized metropolitan planning organization (MPO) for the Kern Region and the Regional Transportation Planning Agency (RTPA) as designated by the State of California. Pursuant to the Sustainable Communities and Climate Protection Act of 2008 (SB 375), the Kern COG developed the 2022 Regional Transportation Plan & Sustainable Communities Strategy for the Kern Region. The 2022 RTP includes GHG emissions quantification for vehicle-miles traveled in the region to achieve GHG reduction targets for 2035 (KCOG 2022). The RTP/SCS lays out how the region will meet certain

transportation-related GHG reduction targets while considering all economic segments of the population, net migration into the region, population growth, household formation, and employment growth (KCOG 2022).

Kern County General Plan. There are no specific goals or policies related to GHG emissions or climate change in the Kern County General Plan. The General Plan includes goals, policies and implementation measures which encourage the development of renewable energy such as wind and solar. These would not apply to this project because it is an energy storage project and does not generate renewable energy. The County is planning to update the General Plan with one entitled Kern 2040.

Cumulative

The State CEQA Guidelines indicate that the impact analysis for GHG emissions is global in nature, and the focus of the lead agency's analysis should be on the project's effect on climate change, rather than simply focusing on the quantity of emissions and how that quantity of emissions compares to statewide or global emissions. The discussion under "Existing Conditions" subsection describes the broader context of global climate change and provides information on statewide and local emissions.

5.3.2 Environmental Impacts

CLIMATE CHANGE AND GREENHOUSE GAS EMISSIONS Would the project:	**Significant and Unavoidable Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

Environmental checklist established by CEQA Guidelines, Appendix G, greenhouse gas emissions.

5.3.2.1 Methodology and Thresholds of Significance

In addition to the above environmental checklist, staff used the following methodology and thresholds of significance to evaluate the project.

Methodology

The applicant estimated GHG emissions for construction and operation using California Emissions Estimator Model (CalEEMod) and EMFAC2021. The applicant's estimates include GHG from the construction equipment, vendor and hauling truck trips, and worker vehicle trips, based on the proposed project. The operational emissions of the

three emergency diesel generators were estimated based on U.S. EPA Tier 4 emissions standards. And the fire pump was based on Tire 3 emission standards.

Thresholds of Significance

Eastern Kern APCD has adopted GHG guideline significance threshold of 25,000 tons/year (EKAPCD 2012). Operational GHG emissions less than this threshold would be considered insignificant.

5.3.2.2 Direct and Indirect Impacts

a. Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Construction

Less Than Significant. The proposed construction activities include mobilizing construction equipment, crews, and materials, excavating, and installing concrete foundations and equipment. These activities during construction would cause GHG emissions due to fuels used by the construction vehicles and equipment. Diesel and gasoline-powered construction equipment would include trucks for materials and crews, and the following types of equipment: grader, scraper, roller, backhoe, pile driver hammer, bulldozer, front-end loader, excavator, and a crane. Equipment and motor vehicles would directly emit CO_2, CH_4, and N_2O due to fuel use and combustion, and motor vehicle fuel combustion emissions in terms of CO_2e are approximately 95 percent CO_2, and CH_4 and N_2O emissions occur at rates of less than 1 percent of the mass of combustion CO_2 emissions. Emissions associated with commissioning passenger vehicle trips would be much lower than calculated construction emissions.

Approximately 1.3 million cubic yards of crushed rock would be extracted during construction of the cavern. The extracted rock may be stored onsite in the form of an architectural berm around portions of the WRESC or be transported offsite for commercial use or permanent offsite storage. There would be a rock crushing facility and concrete batch plant to support cavern construction and excavated rock management. The rock crushing facility would operate for 22 months while the concrete batch plant would operate for 12 to 15 months. Both would be powered either by locally provided power or U.S. EPA Tier 4 diesel generators. The overall percentage of rock crushed will depend on whether an architectural berm will be constructed onsite or whether excavated rock will be hauled offsite. Due to the additional rock crushing and transport of the excavated rock offsite, there will be significantly more GHG emissions for the project without the berm option.

The resulting aggregate quantity of GHG emitted (onsite and offsite) during the peak 12-month period over the entire 60-month construction period would be approximately 11,463.5 $MTCO_2e$ with the architectural berm and 30,002.6 $MTCO_2e$ without (ESHD 2024o), based on use of the CalEEMod. To capture the long-term effects of the one-

time, short-term construction GHG emissions, this worst-case analysis averages the construction effects over a 50-year life of the project. On this basis, the overall construction GHG emissions amortized over 50 years would be equivalent to an annualized rate of 229.3 $MTCO_2e$/year with the berm and 600.1 $MTCO_2e$/year without the berm.

The EKAPCD has not adopted construction-related thresholds for GHG. Therefore, only operational-related significance thresholds are presented in this section. These project-level emissions would cease at the conclusion of construction. In addition, implementation of Condition of Certification **AQ-SC5**, as described in **Section 5.1, Air Quality**, would further reduce the GHG emissions during construction.

Operation

Less Than Significant. Operation of the advanced compressed air energy storage (A-CAES) system would not directly cause or create GHG emissions while charging and discharging. The facility will typically cycle between Charging Mode (compression/energy storage) lasting approximately 14 hours and Discharging Mode (decompression/power production) lasting 8 hours at nameplate capacity. The energy that the A-CAES system would be storing is drawn from non-peak power produced from nearby solar facilities. It is likely that the A-CAES system would be charged mid-day, during excess solar renewable energy generation, when energy is the cheapest, and would be discharged during periods when energy is scarcer, more expensive, and when there would be little to no renewable energy generation. By storing energy at times of excess renewable generation and discharging when conventional natural gas-fired power plants would otherwise be dispatched, the energy storage system would provide a combustion-free source of stored energy during times when natural gas-fired power plants would cause higher GHG emissions. The A-CAES system has a round-trip efficiency of 55 to 60 percent; this means that 0.55 to 0.60 megawatt hours (MWh) would be discharged for every 1 MWh delivered by the local utility (Southern California Edison) during charging.

Table 5.3-1 compares the GHG emissions intensities of the electric utility supply from Southern California Edison (SCE) that would be stored during charging against typical estimated emission factors for natural gas-fired power plants likely to be dispatched when energy is scarce. Assuming a round-trip efficiency of 60 percent for the A-CAES system, discharging the full storage capacity of 4,000 MWh (net) requires SCE to supply approximately 6,667 MWh during charging.

TABLE 5.3-1 COMPARISON OF GHG EMISSIONS INTENSITIES

Source of Electricity	GHG Emissions Intensity of Supply ($MTCO_2e$/MWh)	Emissions to Fully Charge Energy Storage, including Round-Trip Losses ($MTCO_2e$)	Emissions of Producing 4,000 MWh from Natural Gas Resources ($MTCO_2e$)
SCE Electrical Utility Emission Factor	0.178	1,187	---
Natural Gas-Fired Combined-Cycle Power Plant	0.385	---	1,540
Natural Gas-Fired Advanced Combustion Turbine Power Plant	0.524	---	2,096

Sources: SCE electrical utility emission factor (CAPCOA 2021); natural gas power plant emissions factors (CEC 2019), ESHD 2024o.

The comparison of electricity supplies in **Table 5.3-1** shows that the emissions related to fully charging the A-CAES system (1,187 $MTCO_2e$) from the grid, including round-trip losses, would be less than the typical emissions that would otherwise be emitted by a natural gas-fired power plant producing the equivalent 4,000 MWh of supply (1,540 to 2,096 $MTCO_2e$). Although there is energy loss during the charging and discharging cycles, the A-CAES system would have the overall beneficial effect of displacing GHG emissions from energy generation. It is estimated that the displaced GHG emissions may range from 136,881 to 352,470 $MTCO_2e$ annually. The displaced GHG emissions would be higher if the project uses non-peak power produced from solar facilities for charging.

Upon completion of construction, operation of the project would not result in a notable incremental increase in GHG emissions from operation and maintenance activities. During operation, the quantity of GHG emitted directly by the emergency engines supporting the A-CAES system under a worst-case scenario would be 1,225 tons per year (ESHD 2024o, Appendix 5.1A). The applicant estimated the GHG emissions from refrigerant leakage to be 8.07 $MTCO_2e$/yr (WSP 2024cc). In addition, staff estimated that the GHG emissions from operation and maintenance vehicles would be 187.8 $MTCO_2e$/yr based on VMT information from **Section 5.14, Transportation** and emission factors provided in the application (ESHD 2024o). These operational emissions would comply with, and be less than, EKAPCD's adopted project-specific threshold of significance, which is annual emissions of less than 25,000 tons per year (EKAPCD 2012). Because the project would cause direct emissions at levels less than the applicable threshold and provide overall beneficial effects of displacing GHG from natural gas-fired power plants used for energy generation, this impact would be less than significant.

b. Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Construction

Less Than Significant. The project's short-term construction GHG emissions would not interfere with the state's ability to achieve long-term GHG emissions reduction goals. Construction vehicles and the supplies of transportation fuels used during construction of the project are required to comply with the applicable GHG reduction programs for mobile sources and suppliers of transportation fuels. Construction activities of the project would conform to relevant programs and recommended actions detailed in CARB's Scoping Plan.

Operation

Less Than Significant. During operations, the WRESC will not routinely operate combustion units or emit greenhouse gases to the atmosphere. The project would be an energy storage facility consisting of four 130 MW power blocks. Each power block would contain an electric motor-driven air compressor drivetrain, heat exchangers, and an air turbine generator and their ancillary equipment. The proposed A-CAES system does not involve the use of a combustion turbine. GHG emissions will only occur from the stationary internal combustion engines for maintenance and readiness testing or in the emergency event of a fire or power outage. Other than the operation of the generators for testing and maintenance, there are no additional significant sources of GHG emissions from the maintenance or operation of the WRESC.

CEQA Guidelines address GHG emissions or their effects through feasible mitigation measures. The guidelines impact analysis should be broader in context focusing the project's effect on climate change rather than GHG emissions. California's regulatory setting for GHG emissions (see Section 5.3.1) ensures that most of the existing and foreseeable GHG sources in the electric power sector are subject to one or more programs aimed at reducing GHG.

Achieving the renewable energy targets mandated by the RPS is critical to California achieving its GHG targets and statewide carbon neutrality as established by the California Climate Crisis Act of 2022 (AB 1279). The CARB 2022 Climate Change Scoping Plan identifies decarbonizing the electricity sector as a crucial pillar of achieving carbon neutrality set forth by AB 1279 and Executive Order B-55-18 (CARB 2022b). The California Global Warming Solutions Act of 2006 (AB 32) and Senate Bill 32 (SB 32) of 2016 codified the GHG emissions target to 40 percent below the 1990 level by 2030. Subsequently, California's Clean Energy and Pollution Reduction Act of 2015 [Senate Bill 350 (SB 350)], SB 350 set ambitious 2030 targets for energy efficiency and renewable electricity, among other actions aimed at reducing GHG emissions across the energy and transportation sectors. SB 350 also connects long-term planning for electricity needs with the state's climate targets, with CARB establishing 2030 GHG emissions

targets for the electricity sector in general (CARB 2022b). The current RPS was signed into law in September 2018 with Senate Bill 100 (SB 100), which established the goals of 50 percent renewable energy resources by 2026 and 60 percent renewable energy resources by 2030. SB 100 also sets a target for California to achieve a GHG-free energy supply by December 31, 2045.

The Short-Lived Climate Pollutant Strategy (SLCP) was integrated into the 2017 Scoping Plan Update and led to the adoption of Prohibitions on Use of Certain Hydrofluorocarbons in Stationary Refrigeration, Stationary Air-conditioning and Other End-Uses (California Code of Regulations, Title 17, Division 3, Chapter 1, Subchapter 10 Climate Change, Article 4, Subarticle 5, Sections 95371, et seq.). SB 1206 prohibits a person from offering for sale or distribution bulk HFCs or bulk blends containing HFCs that exceed specified GWP limits. The applicant would comply with the HFC prohibition regulation by using non-prohibited refrigerants (WSP 2024cc).

In addition, CARB adopted a regulation (California Code of Regulations, Title 17, §§ 95350 to 95359) to reduce SF_6 emissions in gas insulated switchgear used in the electricity sector's transmission and distribution system as an early action measure pursuant to AB 32 and includes a phase-out schedule in stages between 2025 and 2033 for new SF_6 GIE. To comply with the SF_6 Regulation, the Applicant will endeavor to incorporate non-SF_6 insulated circuit breakers in the final design that comply with the phase-out requirements in California Code of Regulations, title 17, section 95352. Alternative circuit breakers are currently being evaluated. If a non-SF_6 alternative is only available from a single supplier then the regulation provides for an exemption from this requirement. Either conforming to non-SF_6 insulated circuit breaker specifications or a statement that the project will qualify for an exemption will be provided prior to commencement of construction (WSP 2024aa).

Kern County has not yet prepared and adopted a greenhouse gas reduction plan for the unincorporated areas of the county. However, the project is not anticipated to emit a significant amount of GHG emissions, as described above, which would be well below the project-level threshold of significance of 25,000 short tons of CO_2e per year (EKAPCD 2012).

The proposed project would generate limited quantities of direct GHG emissions from the construction, operation and maintenance activities. The mix of power serving the end-use customers would not change because of the proposed project. The proposed project would improve the infrastructure used in delivery of SCE's energy supply and would not affect SCE's ability to supply renewable energy. By installing long-duration A-CAES, the project would improve SCE's reliability and flexibility in delivery of electricity in compliance with California's RPS requirements. As described above, the advanced compressed air energy storage system would likely be charged mid-day, when there would be excess solar energy generation, and would be discharged to the grid at night, when the energy supply is reliant on fossil fuel generation, thereby displacing the need for GHG-emitting energy sources. Increasing the use of renewable generation in conjunction with energy storage is important to the overall objective of decarbonizing

the electricity sector (CARB 2022b). Moreover, the proposed project would not conflict with local, EKAPCD, State, or federal regulations pertaining to GHG emissions. Therefore, this impact would be less than significant.

5.3.2.3 Cumulative Impacts

The impact analysis for GHG emissions is global in nature, and the project's GHG emissions are considered in the broad context of global climate change. The focus of this analysis is to disclose the project's effect on climate change, while presenting the quantity of GHG emissions. The State CEQA Guidelines (California Code of Regulations, title 14, Section 15064.4) provide that a project's incremental contribution to a cumulative GHG emissions effect may be determined not to be significant if the effects of the project are not cumulatively considerable and the project complies with the requirements of the state's long-term climate goals or strategies.

The project would lead to a net reduction in GHG emissions across the State's electricity system, and the GHG emissions related to the project would not conflict with any plans, policies, or regulations adopted for the purpose of reducing the emissions of GHGs. Therefore, the project's GHG emissions would not be cumulatively considerable.

5.3.3 Project Conformance with Applicable LORS

Table 5.3-2 includes staff's determination of conformance with applicable local, state and federal LORS, to ensure the project would comply with LORS. As shown in this table, staff concludes that, the proposed project would be consistent with all applicable LORS.

TABLE 5.3-2 CONFORMANCE WITH APPLICABLE LORS

Applicable LORS	Conformance and Basis for Determination
Federal	
Mandatory Reporting (40 CFR Part 98)	**Not applicable.** Project would not emit more than 25,000 $MTCO_2e$ per year.
State	
Scoping Plan (2014, 2017, and 2022)	**Yes.** The proposed compressed air energy storage facility would store electricity and displace fossil-fueled generation as necessary.
CARB Mandatory Reporting	**Not applicable.** Project would not generate electricity using fossil fuels.
CARB Cap-and-Trade Program	**Not applicable.** Project would not emit GHG in quantities that could trigger cap-and-trade program applicability.
CARB SF_6 Reduction Requirements	**Yes.** The project would comply with GHG emissions reduction requirements through conformance with reporting and phase-out requirements of this regulation.
Local	
Climate Action Plan	**Yes.** The Eastern Kern APCD uses the Climate Change Action Plan from the San Joaquin Valley APCD.

TABLE 5.3-2 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis for Determination**
Kern Council of Governments, Regional Transportation Plan/Sustainable Community Strategy (RTP/SCS)	**Yes.** The 2022 RTP/SCS forecasts growth in population and employment in the region estimates that employment while achieving GHG reductions per capita (KCOG 2022). Construction workers and O&M full-time employees would represent additional temporary and up to 40 full-time equivalent permanent jobs within the RTP/SCS growth projections.

5.3.4 Comments and Responses on the Preliminary Staff Assessment

No comments were received on the Climate Change and Greenhouse Gas Emissions section.

5.3.5 Conclusions and Recommendations

As discussed above, the project would have a less than significant impact related to greenhouse gas emissions and would conform with applicable LORS.

5.3.6 Proposed Conditions of Certification

There are no proposed conditions of certification for climate change and GHG emissions.

5.3.7 References

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5.4 Cultural and Tribal Cultural Resources

Testimony of Patrick Riordan, William E. Larson, and Cameron Travis

This staff assessment of cultural and tribal cultural resources identifies the potential impacts of the proposed Willow Rock Energy Storage Center Project (WRESC) on cultural and tribal cultural resources. Cultural resources are defined under state law as buildings, sites, structures, objects, areas, places, records, manuscripts, and historic districts (Cal. Code Regs., tit. 14, §§ 4852a, 5064.5(a)(3); Pub. Resources Code, §§ 5020.1(h, j), 5024.1e (2, 4)). The California Energy Commission (CEC) staff considered four broad classes of cultural resources in this staff assessment: Native American archaeological, ethnographic, historic-period, and tribal cultural resources.

Native American archaeological resources are those materials relating to the earliest human occupation and use of an area. These resources may include sites and deposits, structures, artifacts, rock art, trails, and other traces of Native American human behavior. In California, exclusive Native American occupation began more than 12,000 years ago and extended through the eighteenth century until 1769, when the first Europeans colonized California.

Ethnographic resources are those materials important to the heritage of a particular ethnic or cultural group, such as Native Americans or African, European, or Asian immigrants. They may include tribal cultural resources (as defined under Pub. Resources Code, § 21074(a)), traditional resource collecting areas, ceremonial sites, topographic features, value-imbued landscapes, cemeteries, shrines, or ethnic neighborhoods and structures. Ethnographic resources are variations of natural resources and standard cultural resource types. They are subsistence and ceremonial locales and sites, structures, objects, and rural and urban landscapes assigned cultural significance by traditional users. The decision to call resources “ethnographic” depends on whether associated peoples perceive them as traditionally meaningful to their identity as a group and the survival of their lifeways.

Historic-period resources are those materials, archaeological and architectural, usually associated with Euro-American exploration and settlement of an area and the beginning of a written historical record. They may include archaeological deposits, sites, structures, travel corridors, artifacts, or other evidence of human activity. Under federal and state requirements, historical cultural resources must be 50 years or older to be considered of potential historic importance (a resource less than 50 years of age may be historically important if the resource is of exceptional importance).

Tribal cultural resources are a category of historical resources introduced into the California Environmental Quality Act (CEQA) by Assembly Bill 52 (Gatto, Chapter 532, Statutes of 2014). Tribal cultural resources are resources that are any of the following: sites, features, places, cultural landscapes, sacred places, or objects that are included in or determined eligible to the California Register of Historical Resources or are included

on a local register of historical resources as defined in Public Resources Code, section 5020.1(k). Tribal cultural resources can be archaeological, ethnographic, or historic.

The Office of Historic Preservation (OHP 1995, p. 2) endorses recording and evaluating resources 45 years or older to accommodate a five-year lag in the planning process.

For the proposed WRESC, staff provides an overview of the environmental setting and history of the project vicinity, an inventory of the cultural and tribal cultural resources identified in the project vicinity, and an analysis of the potential impacts from the proposed WRESC using criteria from CEQA.

If cultural or tribal cultural resources are identified, staff determines whether there may be a project-related impact on them. If the cultural or tribal cultural resources cannot be avoided, staff evaluates whether any of the impacted resources qualifies as a historical resource, unique archaeological resource, or tribal cultural resource as defined by CEQA (Cal. Code Regs., tit. 14, § 15064.5(a); Pub. Resources Code, §§ 21074, 21074(a), and 21083.2(g)). If impacted resources qualify as historical resources or unique archaeological resources, staff recommends mitigation measures that ensure that impacts to the identified cultural resources are reduced to a less-than-significant level.

5.4.1 Environmental Setting

Information provided regarding the setting of the proposed WRESC places it in its geographical and geological contexts. Additionally, the archaeological, ethnographic, and historical backgrounds provide the contexts for the evaluation of the historical significance of cultural and tribal cultural resources identified within the project area of analysis.

Natural Setting

Identifying the kinds and distribution of resources necessary to sustain human life in an environment, and the changes in that environment over time is central to understanding whether and how humans used an area in times past. The proposed WRESC project is within the Fremont and Antelope valleys in the Western Mojave Desert, Kern County, California. The Mojave Desert is a desert in the rain shadow of the Sierra Nevada mountains and the Transverse Ranges in the southwestern United States. The Mojave Desert is bounded on the south and southwest by the Transverse and Peninsular Mountain ranges and the west by the Sierra Nevada. The Transverse Ranges were formed by separate seismic uplift events during the Miocene Epoch (23.03 to 5.33 million years ago) along the San Andreas Fault Zone, where the Pacific and North American plates collided (Spotila 1998, pp. 360–378; Spotila et al. 2002, pp. 205–230). Prior to these uplift events much of present-day Southern California was submerged by the ocean. The uplift of the Transverse Ranges changed weather patterns, leaving the newly exposed valley to the south as a damp and temperate wetland, while desertification occurred in areas to the north, including the present-day Mojave Desert.

Paleoenvironment

During the time that humans have lived in California, the region in which the WRESC would be located has undergone several climatic shifts (**Table 5.4-1**). These shifts resulted in variable availability of vital resources, and that variability has influenced the scope and scale of human use of the project vicinity. Consequently, it is important to consider the project vicinity's ancient climate (paleoclimate), and the effects of the paleoclimate on the physical development of the area and its ecology.

Within the project area during the Wisconsin Glacial Stage (60,000–10,500 years before present [B.P.[1]]) the regional climate patterns were influenced by massive ice sheets, which tended to block Arctic air masses resulting in cooler summer and warmer winter temperatures than the present-day Mojave Desert (Bupp et al. 1998; Earle et al. 1997). As the wider glacial stage ended, the Mojave Desert experienced increasingly warmer temperatures and a drier climate. This shift in the climate resulted in the desiccation or drying up of the large permanent and semi-permanent lakes within the region.

Throughout the middle Holocene Epoch (~7500–4000 B.P.) the climate continued to become increasingly warmer and drier (Altithermal). This increased warming led to reduced moisture and surface water creating a drastic reduction in available plant and animal resources within the region. With less available resources in the Mojave Desert, the Altithermal had significant effects on human subsistence and settlement patterns.

During the late Holocene starting around 4000 B.P., the Mojave Desert climate began to get cooler and wetter, essentially the modern climate we experience today. This resulted in a bounce back of available resources which in turn brought more people back to the region. This period, however, did experience some major fluctuations such as the Medieval Climatic Anomaly (MCA) and the Little Ice Age (LIA). The MCA was a period of increased temperatures extending from approximately 1050 B.P. to 750 B.P. This was followed by a period of cooler temperatures associated with the LIA from roughly 700 B.P. to 150 B.P.

TABLE 5.4-1 MOJAVE DESERT PALEOENVIRONMENT

Period	Climate	Trends
60,000–10,500 B.P.	Cooler and wetter (Wisconsin Glacial Stage).	Summers cooler, winters not much cooler than present but with more freezes. Rainfall greater than present.
10,500–7500 B.P.	Warmer and drier climate	Desiccation of permanent and semi-permanent lakes.
7500–4000 B.P.	Increasingly warmer and drier (Altithermal).	Reduced moisture, surface water, and resource abundance.
4000 B.P. –Present	Cooler and wetter.	Bounce back of resources, essentially the modern climate in the Mojave with occasional major fluctuations; MCA and LIA.

B.P. = years before present (1950); MCA = Medieval Climatic Anomaly; LIA = Little Ice Age

1 By convention, the year 1950.

Geology

The Gem Hill Formation, which lies within the project area, is composed of pyroclastic sedimentary and volcanic rock (Dibblee 1967), with Quaternary-age sediments overlying metamorphic bedrock on the valley floor. The project vicinity contains several large subsurface aquifers that resulted in numerous springs throughout the region, most notably Willow and Bean springs, with many now extinct springs having existed throughout the hills and valley. The area at one time was dotted with small, enclosed basins of water (pluvial lakes) and larger bodies, such as Rosamond and Rogers lakes. Through the late Pleistocene Epoch (~129,000–11,700 B.P.), both lakes were part of a larger catchment basin, named Lake Thompson, after geologist David G. Thompson, who first theorized its existence (Orme 2004). Lake Thompson spanned an area of 950 square kilometers, ranging from the foothills of the Tehachapi Mountains on the west to the eastern shore of Rogers Dry Lake on the east, from the modern border of Lancaster and Palmdale on the south to approximately modern State Route 58 on the north. Lake Thompson saw its wet period between 30,000 and 17,000 B.P., drying by the transition into the Holocene (~11,700 B.P.). The catchment of Lake Thompson covered 2,175 square miles and at its greatest depth of 230 feet, reached a high-water mark of 2,329 feet above mean sea level (AMSL), along the foothills of the Rosamond and Bissell hills.

Modern Plants and Animals

The project area is within the Lower Sonoran Life Zone and varies in elevation from 2,543 to 2,577 feet AMSL at the project site to 2,433–2,766 feet AMSL along the preferred transmission route. Western Joshua Trees (*Yucca brevifolia*) and creosote (*Larrea* spp.) scrub community plants make up the predominant flora of the area, with various low-lying grasses and forbs between larger trees and shrubs. The creosote bush (*L. tridentata*), which dominates much of the region, is a hardy, long-lived shrub that thrives in coarse, well drained, and non-saline sediments found on the basin floors, on alluvial fans, and on upland slopes (Vasek and Barbour 1988, pp. 835–867). Several variables can affect species diversity within the creosote scrub community including topographic variability, community age, ground surface stability, soil characteristics, precipitation, and temperature (Beatley 1974, pp. 245–261; Vasek et al. 1975, pp. 1–64).

This environment is inhabited by a moderately diverse array of animals, many of which were likely important resources for prehistoric populations (Basgall and Overly 2004, pp. 9–10; Kroeber 1925). Mammals throughout this area of the desert primarily consist of mule deer (*Odocoileus hemionus*), coyote (*Canis latrans*), several species of ground squirrels, pocket mice, and rabbits. Dominant bird species include the red-tailed hawk (*Buteo jamaicensis*), Cooper's hawk (*Astur cooperii*), Swainson's hawk (*Buteo swainsoni*), as well as several other birds and migratory waterfowl. Reptiles in the vicinity comprise the desert tortoise (*Gopherus agassizii*) and Mojave green rattlesnake (*Crotalus scutulatus*), in addition to various gopher snakes and lizard species.

Native American Archaeological Setting

The study of Native American archaeology in the Mojave Desert region has been ongoing for nearly a century and over the years these studies have posited several different chronologies for the region (Hall 2000; Sutton et al. 2007, pp. 229–245; Wallace 1955, pp. 214–230, 1978, pp. 25–36; Warren 1984, pp. 339–430; Warren and Crabtree 1986, pp. 183–193). Differences in these chronologies appear to be the result of minute changes in material culture that appear to be unique when patterned in local context, not large-scale patterns that would have implications for substantial changes in human behavior. Sutton et al. (2007) provides the most recent and widely accepted chronology at present. Presented here, they describe Native American archaeology in this region in terms of eight cultural complexes, some of which overlap across four temporal periods:

- Pre-Clovis (hypothetical) (pre-12,000 B.P., Pleistocene)
- Paleo-Indian (Clovis) (12,000–10,000 B.P., Pleistocene)
- Lake Mojave (10,000–8000 B.P., Early Holocene)
- Pinto (8000–5000 B.P., Middle Holocene)
- Deadman Lake (7500–5000 B.P., Middle Holocene)
- Gypsum (4000–1800 B.P., Late Holocene)
- Rose Spring (1800–900 B.P., Late Holocene)
- Late Prehistoric (900 B.P.–historic contact, Late Holocene)

Pre-Clovis Complex (pre-12,000 B.P.)

A Pre-Clovis Complex in the Mojave Desert generally remains hypothetical with proponents of such dates primary work remaining unpublished and unproven. There is growing evidence throughout the Americas for pre-Clovis occupations (Dillehay 1997; Madsen 2004). Therefore, it is not inconceivable and should not be discounted that a pre-Clovis occupation existed in the Mojave Desert.

Paleo-Indian (Clovis) Complex (about 12,000–10,000 B.P.)

The Paleo-Indian or Clovis Complex sites in this region are marked by the appearance of fluted (Clovis) or stemmed projectile points and are generally found along shorelines of ancient pluvial lakes (Davis 1970, pp. 83–141; Sutton et al. 2007, pp. 229–245). Artifacts associated with these sites include scrapers, burins, awls, and choppers. The dearth of data from the small number of sites dating to this period inhibits too much speculation but suggests that these people lived in small, highly mobile groups occupying temporary camps around permanent water sources (Sutton et al. 2007, p. 234).

Lake Mojave Complex (10,000–8000 B.P.)

The transition from the Late Pleistocene to the Early Holocene with climatic oscillations and pluvial lake basins rapidly drying saw dramatic changes in the floral and faunal mosaic of the Mojave Desert. It also produced the earliest well-defined archaeological complex in this region. Artifacts that characterize Lake Mojave sites include Great Basin Stemmed series projectile points (Lake Mojave and Silver Lake), abundant bifaces, steep-edged unifaces, crescents, cobble-core tools, and ground stone implements. Flaked stone source profiles along with marine shell beads suggest a wide interaction sphere and extensive annual foraging ranges. Although present, the dearth of ground stone implements, and lack of use wear suggest greater reliance on animal resources rather than plant processing at these sites. However, it is unclear whether the heavily battered cobbles found in some assemblages were used to process plants or animals. During this period, archaeological sites within the region are consistent with camps and workshops that were in some cases repeatedly used, forming large accumulations of artifacts. These sites likely represent relatively small social units that relied on a forager-like subsistence strategy (Sutton et al. 2007, pp. 234–237).

Pinto Complex (8000–5000 B.P.)

Dating from the end of the Early Holocene through the entire Middle Holocene, the Pinto Complex is the primary cultural complex associated with the Middle Holocene. Flaked stone technology remained consistent with the Lake Mojave Complex, exhibiting reliance on bifacial (flaked on two surfaces) and unifacial (flaked on one surface) core/tool forms derived from materials other than obsidian and cryptocrystalline silicate. These assemblages are marked by a variety of weakly shouldered, indented based, stemmed projectile points (Pinto). Flaked stone material diversity decreases, indicating reduced foraging ranges; however, the presence of olive (*Callianax biplicata)* shell beads clearly indicates that desert groups interacted with coastal groups. During this period, there is a shift to a broad-spectrum economy (including various plant and animal resources) evidenced by the relative abundance of ground stone implements associated with these archaeological sites. This shift is also seen on the coast as well as the interior at roughly the same time. The increase in plant use began prior to the Altithermal and intensified as environmental conditions deteriorated (Basgall and Overly 2004, p. 17). Resources became more predictable and likely influenced where sites were located as to be near key resources. They were inhabited by multiple families practicing more collector-like settlement strategies living in residential bases for prolonged periods while making logistical forays to surrounding resource patches (Sutton et al. 2007).

Deadman Lake Complex (7500–5000 B.P.)

Primarily identified at Twentynine Palms in the Southeastern Mojave Desert, the Deadman Lake Complex appears to be a separate cultural complex from the Pinto Complex (Basgall and Giambastiani 2000). Assemblages are characterized by small- to medium-sized contracting-stemmed or lozenge-shaped projectile points, abundant battered cobbles and core tools, as well as bifaces, simple flaked tools, and ground

stone. The plethora of battered tools suggests that some kind of plant processing was a major focus at these sites. On Twentynine Palms, the distribution of these sites is in the uplands among different biotic communities than the Pinto Complex sites, which are primarily in remnant pluvial lake basins. With the small sample size of these sites, they may just reflect specialized Pinto Complex resource areas that required a separate set of specialized tools (Sutton et al. 2007, p. 239). More research is needed to determine whether Deadman Lake should be a totally separate complex.

Gypsum Complex (4000–1800 B.P.)

After what appears to be nearly a 1,000-year hiatus of cultural activity in the Mojave Desert due to unfavorable environmental conditions toward the end of the Middle Holocene, the beginning of the Late Holocene saw much more favorable conditions and a bounce back of desirable resources. Adaptations to these more favorable conditions brought about changes in subsistence and settlement strategies, resulting in the Gypsum Complex, marked by Humboldt, Elko, and Gypsum series projectile points (spear or atlatl tips). Gypsum sites often contain numerous bifaces, various flake tools, drills, and ground stone implements like mortars and pestles. The increased or intensified use of plant resources that began in the Pinto period continued, with mesquite being an important resource (Basgall and Overly 2004, p. 18). Ritual activities became more visible in the archaeological record with an increase in rock art, crystals, and paint (Moratto 2004, pp. 414–420). Along with this increase in social complexity, trade with other groups increased. Gypsum Complex sites tend to be smaller than Pinto sites, but more numerous and spread out into more diverse locations throughout the landscape (Sutton et al. 2007, p. 241).

Rose Spring Complex (1800–900 B.P.)

Rose Spring sites are most notably characterized by the switch from atlatl (darts) to bow and arrow technology. These small projectile points include Eastgate and Rose Spring series and are often associated with knives, drills, pipes, milling equipment, and shell beads. There is also a dramatic increase in the use of obsidian from the Coso Volcanic Field, indicating trade with people from there or logistical forays to collect the tool stone. Sites have well developed midden deposits, which are formed when people process and store food, build structures, or dispose of waste. These sites can include architecture such as wikiups, pit houses, and other structures. Based on the number of Rose Spring sites, population reaches its peak in the Mojave Desert during this time, likely resulting from more efficient hunting techniques with the bow and arrow and favorable environmental conditions (Sutton et al. 2007, pp. 241–242). Beginning roughly in the middle of Rose Spring Complex and intensifying for hundreds of years, the MCA began drying lakes and other permanent water sources, taxing already stressed resources and causing shifts in human settlement patterns. These trends may have eventually brought an end to the Rose Spring Complex (Sutton et al. 2007, pp. 241–242).

Late Prehistoric Complex (900 B.P.–Historic Contact)

With the environment continuing to deteriorate from the MCA and people finding ways to adapt, the Late Prehistoric Complex in the Mojave Desert is drastically different from preceding complexes. This period also saw a few outside influences, such as the Anasazi and Hakatayan from the Colorado River and (most notably) the spread of Numic Paiute and Shoshone peoples eastward from the western Mojave Desert (Numic Spread). Artifacts from this time include Desert series projectile points, ceramics (Brownware and Lower Colorado Buffware), ground and battered stone, incised stones, slate pendants, and shell and steatite beads (Warren and Crabtree 1986). Toolstone profiles show a significant drop in obsidian use and an increase in crypto-crystalline silicate. For the most part, subsistence settlement systems in the Mojave Desert remained like those of previous periods, with a variety of site types represented including special purpose sites and seasonal camps; however, some major village sites with associated cemeteries do appear, suggesting more complex settlements (Sutton et al. 2007, p. 242).

Ethnographic Setting

The applicant proposes to build and operate the WRESC on land traditionally affiliated with California Native Americans belonging to four ethnolinguistic groups recognized by anthropologists: the Kawaiisu, Kitanemuk, Serrano, and Tataviam.

Kawaiisu

The Kawaiisu aboriginal territory, as initially documented by ethnographers, identifies the tribe's core area in the southern Sierra Nevada range in the Piute and Tehachapi Mountains, where many winter settlements were inhabited between the Mojave Desert and the San Joaquin Valley. However, recent research and reconsideration of the ethnographic literature now supports a more expansive territory that can be separated into mountain and desert subdivisions of the Kawaiisu (Garfinkel and Williams 2010, p. 23). The area of the Mountain Kawaiisu (*Nuwiwi*) extended from Double Mountain in the south to Owens Peak in the north, and west to east from the confluence of Walker Basin and Caliente creeks to Red Rock Canyon in the El Paso Mountains (Garfinkel and Williams 2010, p. 26). The area of the Desert Kawaiisu (Panumint) encompassed the desert areas east of Tehachapi and extending into Death Valley (Earle 2005, pp. 5–6). The Kawaiisu territory extended north of Rosamond and Rogers lakes, reaching an area north of Barstow. Their desert area included areas of present-day Ridgecrest and Trona, along with significant portions of Edwards Air Force Base, the Naval Weapons Center at China Lake, Fort Irwin, and southern parts of Death Valley (Garfinkel and Williams 2010, p. 26).

The name Kawaiisu (or a close variant) first entered the ethnographic literature by Stephen Powers (1976, p. 393) in 1877, who noted the Yokut name of the people inhabiting the area of Tehachapi Pass. The name is believed to translate to "eaters of raw or dried meat," reflecting their traditional practice of sun-drying meat (Garfinkel

and Williams 2010, p. 11). However, Kawaiisu people refer to themselves as *Nuwu* or *Nuwuwu*, which means “person” or “people” in their language (Kroeber 1925, p. 602).

The Kawaiisu employed a hunting and gathering strategy for subsistence that relied upon the wide variety of botanical resources available to them across their varied terrain. Ethnobotanists have identified over 230 plant species used by the Kawaiisu, including 112 used for food and beverages, ninety-four as medicines, 27 of which held supernatural and mythological associations. (Zigmond 1986, p. 399). The process of harvesting and using these plants for a great variety of applications demonstrates traditional ecological knowledge, as they carefully managed their resources to ensure sustainability. The Kawaiisu passed this knowledge and related cultural practices down through generations, reflecting a rich cultural heritage and deep understanding of the local ecosystem.

The Kawaiisu relied on Indian ricegrass (*Achnatherum hymenoides*) as a vital food source, harvesting it by cutting the plants at the base and gathering them in large baskets. They also used two species of yucca—Joshua tree (*Y. brevifolia*) and Mojave yucca (*Y. schidigera*)—harvesting their fruits and hearts in the spring, which were roasted and provided a nutritious, sweet potato-like flavor (Garfinkel and Williams 2010, p. 77). Like many other California Indians, the acorn was a staple for the Kawaiisu, and the acorns of the black oak *(Quercus kelloggii*) were a preferred favorite as they required the least leaching to process and were the sweetest. Acorns ripened in the fall and were collected using poles and baskets, then pounded into flour with bedrock or portable mortars and leached to remove bitter tannins before being baked into small cakes. If acorns were scarce, the Kawaiisu would also gather buckeye nuts (*Aesculus californica*) as an alternative food source. Nuts of the bull and pinyon pines (*Pinus sabiniana* and *P. monophyla*) were available to the Kawaiisu in rich abundance in the higher lands of their territory and could be harvested in late summer or early fall. Pine nut harvesting among the Kawaiisu was a communal activity involving the entire family, which would travel to pinyon grounds like the Scodie Mountains to gather nuts. They would knock the cones from the trees using long poles or by climbing, roast them on a bed of sage to open the scales, and then extract the seeds, which were winnowed to remove the shells. (Garfinkel and Williams 2010, p. 77).

According to Steward (1938, pp. 84–85), the Desert Kawaiisu from Panamint Valley harvested mesquite (*Prosopis juliflora*) at their Warm Springs winter village, where they commonly made and traded mesquite bean cakes. They also traveled to higher elevations to gather seeds and pinyon nuts, hunt desert bighorn sheep (*Ovis canadensis*), and collect chia (*Salvia columbariae*) and Indian ricegrass seed (*A. hymenoides*) from the Argus Range and Coso Mountains.

Hunting was a vital part of the Kawaiisu substance strategy, allowing them to pursue various large and small game, including bighorn sheep (*O. canadensis*) in desert areas and deer (*O. hemionus*) in the Tehachapis. They often collaborated with neighboring groups, such as the Yokuts and Panamint Shoshone, on communal hunts of pronghorn *(Antilocapra americana*), and during the spring, they moved to the Argus Range to

pursue pronghorn (*A. americana*) and bighorn sheep (*O. canadensis*). (Garfinkel and Williams 2010, p. 77). The Kawaiisu diet also included a variety of small game, such as jackrabbit (*Lepus californicus*), which was hunted in communal hunts; quail (*Oreotyx pictus* and *Callipepla* spp.), captured in specialized basket traps; and chuckwallas (*Sauromalus ater*), which could be pried out of rock crevices with long poles.

Social and political organization among the Kawaiisu was largely limited to family units, with related families often living near each other, forming informal bands that collaborated on food gathering and other activities. (Zigmond 1986, p. 405). Political leadership took the form of chieftainships where leaders (*niya·gadi*) were acknowledged based upon their acquired wealth and generosity (Kroeber 1925, p. 603; Zigmond 1986, p. 405). Tribal leaders sponsored communal ceremonies at great expense, but their position lacked coercive authority (Garfinkel and Williams 2010, p. 78). Political leadership and wealth were not inherited as a man's wealth was destroyed upon his death, leaving a chief's son in an equal position as others in the community to acquire wealth and political influence individually (Kroeber 1925, p. 603).

No single individual is known to have held political leadership of all Kawaiisu people (Garfinkel and Williams 2010, p. 78) and positions of leadership appear to have been reserved for those assigned male at birth, though not limited to cisgender men. Zigmond (1986, p. 406) reports that one of the last Kawaiisu chiefs was a two-spirit individual who was born male but as an adult presented feminine and did women's work. Cisgendered women, however, are not known to have held the position.

The Kawaiisu, like other foraging groups in California, established permanent winter villages near reliable water sources that accommodated the leaching and processing of acorns. Mountain Kawaiisu winter villages in the Tehachapi Mountains consisted of small settlements of six or more houses. These winter villages served as venues for fiestas, mourning ceremonies, and other communal gatherings following the fall harvest of tree crops, while smaller groups of related individuals set up temporary camps for foraging and hunting during the spring, summer, and fall. Village sites typically included bedrock milling areas for acorn processing while fall gathering camps for pinyon pine nuts featured cone roasting pits and nut grinding slicks (Garfinkel and Williams 2010, p. 76).

The Kawaiisu winter house, known as *tomo kahni*, featured a 15–25-foot diameter circular base at ground-level constructed with vertical, forked willow poles that were bound at the top to create a smoke hole (Zigmond 1986, p. 401). Horizontal poles were tied to both the inside and outside of the vertical supports, and the gaps were filled with brush; waterproofing was achieved with bark and tule mats, which also served as a door. A smaller flat-roofed summer house (*havakahni*) that was open to the elements on one side was used in the warmer months to provide shade, serve as a windbreak, and accommodate several people at one time (Garfinkel and Williams 2010, p. 76). Other structures common to Kawaiisu settlements include an earth-covered sweathouse (*tivikahni*); circular brush enclosures that acted as windbreaks for temporary camps and

celebrations; and small granaries built two or more feet off the ground to store acorns and seeds (Zigmond 1986, p. 401).

The Kawaiisu territory offers many potential locations for the creation of rock art. The predominant granitic rocks in the Tehachapi Mountains, as well as rhyolitic outcrops in the northeastern Tehachapi Valley, provide excellent surfaces for pictographs (painted images or designs). In the desert regions, volcanic rocks—particularly basalts—serve as ideal canvases for the pecking, abrading, and scratching techniques used to create petroglyphs. The polychrome painted rock art from the mountainous regions distinctly draws inspiration from the Yokuts and possibly the Chumash to the west and southwest, while the desert rock art of the Kawaiisu exhibits close similarities to the rock art seen in other parts of the Great Basin—especially the Coso area, north of the El Paso Mountains and beyond China Lake Valley. (Garfinkel and Williams 2010, p. 103).

One notable rock art location (CA-KER-302) consisting of at least four boulders with petroglyphs on them is 0.67 mile south of the proposed WRESC transmission line in the vicinity of Hidden Valley. As noted by Garfinkel and Williams (2010, p. 40), these ancient rock drawings are the only petroglyphs in the westernmost portion of the Mojave Desert.

Kitanemuk

The principal territory traditionally claimed by the Kitanemuk are the southern Tehachapi Mountains at the southern end of the San Joaquin Valley and the southwestern most portion of the Mojave Desert (Kroeber 1925, p. 611). Their pre-contact population is estimated at 500–1,000 persons, based on the population size of Native American groups living in territories of similar size and character. The Kitanemuk were assimilated into missions San Fernando Rey, San Gabriel, and San Buenaventura early in the mission period. In the post-mission period, Kitanemuks lived at Fort Tejon in the 1850s and later probably at the Tule River Reservation as well. When interviewed by an ethnographer in 1917, the surviving Kitanemuks were living at Tejon Ranch (Blackburn and Bean 1978, p. 564).

The primary ethnographic data on the Kitanemuk were gathered by J. P. Herrington in 1917 through interviews with a small number of surviving Kitanemuk people. Working for the Bureau of American Ethnology at the time, Harrington's extensive notes have not been comprehensively synthesized and published. While the ethnographic information in Harrington's notes focuses mostly on the portion of the Kitanemuk's range within the Tehachapi Mountains, some information is provided related to the lower desert areas of the Antelope Valley, including Willow Springs, one mile north of the proposed WRESC gen-tie route. Harrington's Kitanemuk informants indicated that Kitamemuk people lived at Willow Springs (known to them as *pánukave*[a]), where they were known to eat tule (Harrington n.d.).

The Kitanemuk subsistence technology was like that of their neighbors to the north and west, and their ritual practices and belief system are also presumed to be influenced by

the Chumash and Yokuts (Blackburn and Bean 1978, pp. 564 and 568). Distinctive square communal tule houses were used by the Kitanemuk. The design of these homes, as noted by the Spanish explorer Francisco Garcés, facilitated a communal living arrangement while still providing individual family spaces (Kroeber 1925, p. 612).

Kitanemuk social organization was patrilineal, but lineages were not totemic. They had a well-developed social ranking system. Political leadership was vested in a chief, with other community services provided by a manager of ceremonies, two messengers, shamans, diviners, and other ritual practitioners (Blackburn and Bean 1978, p. 567). Kitanemuk villages had extensive interactions among themselves and often participated in coordinated activities, such as a mourning anniversary, held every four or five years, at which those from several villages who had died in the intervening interval were mourned collectively (Blackburn and Bean 1978, pp. 566–567).

Serrano

The Serrano (from Spanish for mountaineer), were so named by the Spanish because they lived in and around the San Bernardino Mountains. A linguistically related group, the Vanyume (also known as the Desert Serrano), occupied the Mojave Desert north of the mountain territory of the Serrano. The name, Vanyume, was derived from "Beñeme," which was the Mohave Indian name for these people, as recorded in Spanish by Father Francisco Garcés, who traveled through the region in 1776 (Coues 1900, vol. I, p. 240). While a substantial amount of information exists about the Serrano, ethnographers know little about the Vanyume, describing them as "a sparse and poor population living along the Mojave River." Due to the deleterious effects of missionization and their assimilation by other native groups during the early-to-mid-1800s, the Vanyume were extinct before 1900. (Bean and Smith 1978, p. 570). The interactions between the Serrano and the Vanyume were not documented, but the ethnographic record appears to suggest that Serrano "desert groups" (perhaps the Vanyume) annually traveled to the foothills to gather nuts and to trade desert foodstuffs "with their kindred" for resources not available in the desert (Bean and Smith 1978, p. 571), indicating an established trading relationship.

Prior to the time of historic contact, the Serrano (and presumably the Vanyume) were hunters and gatherers. Large mammals, such as deer, mountain sheep, and pronghorn antelope, were hunted with bows and arrows, and smaller animals, such as rabbits and various rodents, were taken with throwing sticks, nets, and snares. Acorns, piñon nuts, yucca roots, and mesquite beans were among the staple foods, supplemented by chia seeds, roots, tubers, and greens. Food preparation techniques included baking in earth ovens, boiling with heated stones and water in water-tight baskets, parching in trays with hot coals, and sun-drying for later use (Bean and Smith 1978, p. 571).

The Serrano were not organized on a tribal basis. Rather, the patrilineal clan was the autonomous political and landholding unit, with bonds between clans based on marriage, ceremonial reciprocity, and participation in ritual. Clan alliances were formed among the Serrano, but also with the clans of other neighboring groups, such as the

Cahuilla, Chemehuevi, Gabrielino, and Cupeño. The clan leader, who was much revered, had an economic role—determining when and where to hunt and collect—and a religious one, setting the times for ceremonies and presiding over them. The office was hereditary and included residence in the clan's large ceremonial house (Bean and Smith 1978, p. 572).

The accessibility of water was the determining factor in the location of Serrano villages. The structures of the villages included family houses, each with a ramada, a large ceremonial house, granaries and sweathouses. The family homes, occupied by extended families, were circular, willow-framed, and tule-thatched domed structures used mostly for sleeping and storage, while the ramadas provided open, thatched-roofed, pole-supported, shaded workspace adjacent to the dwellings. The circular sweathouses, partially dug into the earth and with a central fire hearth, had willow framing and thatch covering, like the dwellings, but with an additional covering of earth. They were near the village water source so that the sweathouse users could wash themselves after their time in the sweathouse. The ceremonial house was the religious center of the village and of the clan or clan alliance, with the annual mourning ceremony (like that of the Kitanemuk) being one of the more important (Bean and Smith 1978, p. 571).

A population estimate for the pre-contact Serrano was 1,500–2,500 (Bean and Smith 1978, p. 573). Entries in the diaries of two early Spanish missionaries provide some evidence on, presumably, Vanyume settlement pattern, since the priests limited their travel in the Mojave Desert region to the Mojave River. Father Garcés traveled the Mojave River in March 1776 (Coues 1900, vol. I, pp. 241–248; Walker 1986, p. 79), and Father Joaquín Nuez later traveled the river in 1819 (Beattie 1955, pp. 55–56). Both priests recorded villages encountered and the distances between villages. From these accounts, it appears that aboriginal settlements along the Mojave River contained up to 70 people and were situated approximately 10 miles apart along the river. Although no Serrano (or Vanyume) name for the entire Mojave River as a single geographic feature is known, the Indians had names for particular segments of the river, which appear to have corresponded with clan or lineage territories (Bean et al. 1981).

Despite their early contact with Europeans, the Serrano were not much affected by the Spanish soldiers and missionaries until the Mission San Gabriel established in 1819 an asistencia (cattle-grazing station) near what is today the city of Redlands. Thereafter, most of the Serrano were removed to the various missions, and too few remained to reestablish their traditional mode of living after the dismantling of the missions. But some Serrano survived in remote parts of their former territory and preserved some Serrano traditional culture. Today, some Native Americans of Serrano heritage live with other southern California Native Americans on the Morongo and San Mañuel reservations (Bean and Smith 1978, p. 573).

Tataviam

The traditional territory most strongly identified with the Tataviam was the Liebre and Sawmill mountains, but it also included the southern fringe of the Antelope Valley (King and Blackburn 1978, p. 535). Tataviam population at the time of historic contact has been estimated at less than 1,000 persons, occupying two or three widely spaced large villages of perhaps 200 persons each, with medium-sized (20–60 persons) and small (10–15 persons) villages interspersed (King and Blackburn 1978, p. 536). By the early nineteenth century, all the Tataviam had been taken into the Mission San Fernando Rey. After the mission was secularized in 1834, the Tataviam neophytes dispersed, intermarrying and residing with other groups, particularly the Kitanemuk, with whom they had previously interacted most intensively if not always amicably (Blackburn and Bean 1978, p. 564). The last speaker of the Tataviam dialect died in 1916 (King and Blackburn 1978, p. 536).

With this scanty history, the Tataviam are poorly known ethnographically, documented only in the information provided by their surviving neighbors (King and Blackburn 1978, p. 537). The Kitanemuk referred to the Tataviam as the “people facing the sun” because the Tataviam’s traditional territory was mostly sunny, south-facing mountain slopes (King and Blackburn 1978, p. 537). Consequently, the Tataviam diet, while in all other ways like that of neighboring groups, emphasized the yucca plant (*Y. whipplei*), abundantly available on the sunny slopes of their traditional territory. The Tataviam baked the yucca buds in earth ovens, and consumed acorns, sage seeds, juniper and islay berries, deer, antelope, and small mammals. Their social organization probably was like that of the Kitanemuk, but their ritual practices apparently were like those of the Chumash and Gabrielino (King and Blackburn 1978, p. 536).

Historic Setting

Early Spanish and American History in the Region

The Spanish period in this region began with the permanent settlement of Spaniards and the construction of the mission and presidio in San Diego in 1769. However, earlier Spanish explorations in Southern California took place as early as 1542, when Juan Rodríguez Cabrillo sailed along the coast of California and encountered Native Americans several times in Southern California. However, one of the first documented examples of European contact with the natives of Antelope Valley occurred in 1776, when Father Francisco Garcés travelled through the Mojave Desert. The establishment of the San Fernando Mission in 1797 in the nearby San Fernando Valley at the existing Rancho of Achooykomenga, which was established as an agricultural labor camp, disrupted native life in Antelope Valley. In 1808, Spanish military expeditions into Antelope Valley occurred, and the Spanish government and officials at the San Fernando Mission forcibly resettled native people and native communities from Antelope Valley to the mission (California State Parks n.d.a).

While Spanish settlements, especially the San Fernando Mission, and Spanish expeditions into the valley disrupted native life and reduced native populations in

Antelope Valley, a continuous non-native presence in Antelope Valley would not begin in force until American settlers and American government entered the valley, and California. Early American settlement in Antelope Valley primarily occurred because of the Gold Rush. Use of the Old Spanish Trail by those from the east travelling into Southern California as well as miners looking for gold in the Tehachapi Mountains, Fremont Valley, and Antelope Valley constituted the first sustained American contact with the region. The nearby Sebastian Indian Reservation, the first reservation in California, was created in 1853, partially in response to encroachment and hostilities against Native Americans from American miners. One year later Fort Tejon was constructed by the United States Army to defend the reservation. The U.S. government forcibly relocated most Kitanemuk to the reservation, ostensibly to protect them from these conflicts (Blackburn and Bean 1978, p. 564; California State Parks n.d.a)

Water, the most important natural resource for both travelers and miners alike, shaped early patterns of settlement for generations. Springs became important waypoints and watering stations for travelers and miners. Willow Springs, the most important spring was used by early American settlers in the region, including John C. Frémont in 1844 and the desperate Jayhawk party in 1850 (California State Parks n.d.b).

Homesteading and Agriculture

While gold brought many new American settlers to California, through Antelope Valley, few settled long term in this region until the late 1800s. Some of the first to do so were homesteaders. The first homesteading activities in the California desert took place in Antelope Valley in the early 1870s. Enabled by the Homestead Act of 1862, Antelope Valley was chosen by the initial wave of homesteaders because of its location along the edge of the desert, where aquifers lay close to the surface and water tables were high. Easy access to artesian water sources allowed homesteaders to settle in Antelope Valley without the costly technology needed to access deeper sources of water (Norris 1982, pp. 298–299).

In 1877, the US government further incentivized would be settlers to claim homesteads in what was considered unproductive marginal land with the passage of the Desert Land Act. This was an expansion of the Homestead Act of 1862. These acts were meant to motivate Americans to move westward. A specific goal of the Desert Land Act was to entice settlers to develop areas with agricultural potential, but that required the development of irrigation systems that the federal government hoped settlers would privately build and manage. These acts allowed hundreds of thousands of Americans to own land. This benefited the American government by bringing regions settled this way further under government control. Americans on the ground meant American control. It also acted as a relief valve for the more populated eastern United States. To claim land under these acts, settlers needed to *improve* the land, and a later amendment to the Desert Land Act included government oversight of irrigation systems to prevent fraudulent claims. The homesteading acts, especially the Desert Land Act significantly contributed to the development of the American Southwest (Landstrom 1954, p. 500).

Southern California, and especially the Los Angeles region, experienced rapid development when the Santa Fe Railroad was completed in the early 1880s. This increased competition for land, which drastically escalated land values and land speculation in the San Gabriel Valley. The burgeoning bubble led many into Antelope Valley to escape the extreme prices of real estate. The Homestead acts, combined with economic pressures from the real estate boom in the nearby Los Angeles area and increasingly easy travel into the valley influenced early growth patterns around Rosamond. The overlapping timing of these factors all contributed to the first critical mass of American settlers in the region occurring in the late 1800s. These settlers primarily relied upon agricultural production to sustain themselves and their homesteads. However, many homesteaders were unprepared for the harsh realities of desert life and agriculture and many failed (Johnson 1911, pp. 7–9; Norris 1982, p. 304).

At the turn of the twentieth century, urban areas experienced the most growth in population, and industry. Conversely, urbanization also led many to seek a more agrarian lifestyle, as did the homesteaders who settled in Antelope Valley and other rural and agrarian regions and communities California. Many homesteads failed during drought years in the drier, arid regions of California such as Antelope Valley because of the necessity of more extensive irrigation systems. As a result, settlers in these regions began to form farming communities to more efficiently create resilient irrigation systems. After the Wright Act of 1887, many of these communities created irrigation districts to ensure that all farmers in these communities would have access to water rights in these agricultural communities despite the existing rights of private landholders through eminent domain (AECOM 2011, p. 17).

Los Angeles and San Bernardino counties experienced more agricultural growth than any other region of California except for the Central Valley, which had abundant water sources including the Sacramento-San Joaquin River Delta. By 1888, twenty-one percent of the state's irrigated land was situated in Los Angeles and San Bernardino counties. While the Central Valley experienced explosive agricultural growth and investment, the dry and isolated conditions that caused many early homesteads to fail made commercial agriculture a riskier proposition, one serviced primarily by artesian water sources. Because of this, in San Bernardino County, gravity-fed irrigation systems were common. The massive effort to develop irrigation in California's deserts despite the difficult climate led to massive irrigation districts, including the Imperial Irrigation District (the largest in the state), allowed the region to have a significant agricultural output. Portions of California's deserts even became a significant producer of alfalfa, a very water-intensive crop. However, the most successful commercial agriculture producing portion of this region, Imperial Valley had access to significant water resources through the Colorado River. San Bernardino County was unable to mirror this success without any abundant water. As such, agriculture became less important to the overall growth of Southern California, especially in the twentieth century, when suburbanization spread to former and potential agricultural land. This portion of Antelope Valley experienced significant agricultural and residential decline in the late

1890s following multiple drought years that decimated many crops and caused most of the settlers to desert their homesteads. It would not be until the early twentieth century that Rosamond and other nearby towns rapidly suburbanized (AECOM 2011, p. 17).

Military Activities and Suburban Growth

The Army Air Corps established the Muroc Bombing and Gunnery Range under Lieutenant Colonel H. H. Arnold. The range, named after the nearby community of Muroc, became an Army Air Base in July 1942 as part of the creation and activation of military facilities across the Mojave Desert during World War II. It quickly became used for test flights of experimental aircraft including the Bell XP-59A Aira Comet and Lockheed XP-80 jet planes. Air Force Captain test pilot Chuck Yeager made history at Muroc Army Air Base on October 14, 1947, while flying the experimental Bell XS-1 #1, reaching Mach 1.06. Yeager was the first human to break the sound barrier and travel faster than the speed of sound (Edwards Air Force Base n.d.a; National Air and Space Museum n.d.). In 1949, the Muroc Army Air Base was renamed Edwards Air Force Base both to reflect the 1947 separation of the Army Air Corps from the Army into the Department of the Air Force, and to honor the recently deceased test pilot Captain Glen Edwards, who passed away during a test flight in 1948. The Air Force base has since grown exponentially in size to become the second largest United States Air Force base, with an area of 481 square miles (Edwards Air Force Base n.d.a, n.d.b).

Population growth and suburban expansion in Rosamond, like much of Southern California, quickly accelerated in the post-war era. While Rosamond did not see the explosive growth of the Los Angeles, San Diego, or Orange County suburbs, it still was subject to many of the same economic and developmental pressures that both expanded the suburbanization of Southern California's population centers and suburbanized Southern California. By midcentury, older homesteads in the Mojave Desert began to wane as newer suburban-style housing began to take over desert communities. The Edwards Air Force Base further contributed to the suburban development of Antelope Valley since military personnel and civilian workers required housing and created economic pressures. As Rosamond suburbanized it began to pull away from its earlier agricultural origins (Day 2024; Haltom 2023, pp. 5–6; Rosamond n.d.).

On November 23, 1953, the Willow Springs International Raceway opened with its inaugural race. Initially the raceway featured an oiled dirt surface, but by 1954 the main course was paved. The raceway expanded its course offerings in the 1980s when two new road courses, and both dirt and paved ovals were added. The Willow Springs Internation Raceway is an important part of motor sports history. After its construction, it quickly gained a reputation for being the fastest track west of the Mississippi. Both the historical and continued cultural significance of the Willow Springs International Raceway is displayed in 2019's film, *Ford v. Ferrari*, which used the racetrack as a filming location and historical setting for the film. In a pivotal scene in the film, Christian Bale portrays the real-life race car driver Ken Miles, racing, and ultimately winning the 1963 Willow Springs 100. The track has also been featured in several other motorsports

and motor vehicle-centric movies as a filming location, including *Furious 7* (IMDB n.d.; Mangold 2019; Motor Sport Magazine n.d).

The region continued to develop following the construction of the Willow Springs International Raceway. Paved roadways crossed the desert from Palmdale and Lancaster, and infrastructure expanded in and around these communities. The more rural areas to the west and north of Rosamond developed slower than other portions of Antelope Valley. However, this allowed for the development of renewable energy projects in these less populated areas. In the 1980s, one of the first large scale wind farms in the country was built in the Tehachapi Mountains overlooking the valley. Several other wind and solar power facilities have been built in the last 40 years, as well as substations and transmission corridors (WSP 2024a, p. 13).

Regulatory

Projects proposed before the California Energy Commission (CEC) are reviewed to ensure that the proposed facilities would comply with all applicable laws, ordinances, regulations, and standards (LORS) (Pub. Resources Code, § 25525; Cal. Code Regs., tit. 20, §§ 1201(r), 1744(b)).

See **Table 5.4-2** for a summary of applicable LORS.

TABLE 5.4-2 LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Applicable Law	Description
Federal	
Antiquities Act of 1906	Applies when a scientific archaeological investigation may occur on federal public lands. Antiquities Act establishes permitting precedent for archaeological investigations and criminal and civil penalties for the intentional theft of destruction of cultural resources
National Historic Preservation Act, Section 106	Applies to among other things, a project, activity, or program funded in whole or in part by a federal agency, those carried out with federal financial assistance and those requiring a federal permit, license or approval that has the potential to cause adverse effect to historic properties listed on or eligible for the National Register of Historic Places. The lead federal agency must consider ways to avoid, minimize and mitigate these adverse effects and provide the Advisory Council on Historic Preservation an opportunity to comment, prior to the issuance of permits or funding of the undertaking.
Archaeological Resources Protection Act	Applies when an undertaking has the potential to affect archaeological resources on federal or Indian lands. Reinforces permitting and penalty statutes established by the Antiquities Act and further establishes the prohibition of public disclosure of documents pertaining to the nature and location of archaeological resources, first defined in Section 304 of the National Historic Preservation Act
Native American Graves Protection and Repatriation Act	Applies if Native American human remains and other cultural items are removed from federal or tribal lands.
State	
Pub. Resources Code, § 5097.98	Requires a landowner on whose property Native American human remains are found to limit further development activity in the vicinity until s/he confers with the Native American Heritage Commission-identified most likely

TABLE 5.4-2 LAWS, ORDINANCES, REGULATIONS, AND STANDARDS	
Applicable Law	**Description**
	descendants (MLDs) to consider treatment options. In the absence of MLDs or of a treatment acceptable to all parties, the landowner is required to reinter the remains elsewhere on the property in a location not subject to future disturbance.
Pub. Resources Code, § 5097.99	Section 5097.99 prohibits the acquisition, possession, sale, or dissection with malice or wantonness of Native American remains or artifacts taken from a Native American grave or cairn.
Health and Safety Code, § 7050.5	This code prohibits the disturbance or removal of human remains found outside a cemetery. It also requires a project owner to halt construction if human remains are discovered and to contact the county coroner.
Local	
Kern County General Plan: Policy 25	The County will promote the preservation of cultural and historic resources which provide ties with the past and constitute a heritage value to residents and visitors.
Willow Springs Specific Plan: Cultural Resources Goal1 Policy 1	To preserve cultural resources contained on sensitive sites within the Willow Springs Specific Plan area.

Notes and Abbreviations: CEQA = California Environmental Quality Act; ICPDS = Imperial County Planning and Development Services; MLDs = most likely descendants; MO = Municipal Ordinance

Methods

The development of the inventory of cultural resources in and near the proposed WRESC is the requisite first step in the assessment of whether the WRESC would cause a substantial adverse change in the significance of historical, unique archaeological, or tribal cultural resources, and could, therefore, have a significant effect on the environment (Pub. Resources Code, § 21084.1). The effort to develop the inventory for the proposed WRESC involved background research, consultation with California Native American tribes, primary field research, interpretation of the results of the inventory effort, and evaluation of the significance of cultural resources found in the project area of analysis (PAA). This section discusses the methods and the results of each inventory phase, develops the historical resources inventory for the analysis of the proposed WRESC, and interprets the inventory to assess how well it represents the cultural resources in the PAA.

Project Area of Analysis

The PAA defines the geographic area in which the proposed project has the potential to affect cultural resources. Effects may be immediate, further removed in time, or cumulative. They may be physical, visual, auditory, or olfactory in character. The PAA may or may not be one uninterrupted expanse. It could include the project area, which would be the site of the proposed plant (project site), the routes of requisite transmission lines and water and natural gas pipelines, and other offsite ancillary facilities, in addition to one or several discontiguous areas where the project could be argued to potentially affect cultural resources. Staff defines the WRESC's PAA as comprising (a) the proposed project site and associated facilities, (b) an ethnographic

study area, and (c) an architectural study area set one parcel beyond the proposed project site.

The proposed project includes the following key features:

- Advanced Compressed Air Energy Storage (A-CAES) Energy Storage Process, Cooling Systems and Electric Transmission
  - Eight electric-motor-driven air compressors configured in four trains, totaling nominally 500 megawatts (MW) net
  - Four nominally 130-MW air-powered turbine generators with 100-foot-tall air vent stacks
  - Heat extraction and recovery main process heat exchangers
  - Thermal storage system using water, including up to six 87.5-foot-diameter by 100-foot-tall (maximum) hot-water spherical storage tanks, and 2-foot diameter, 60-foot-tall cold-water storage tanks
  - Cooling system: Three air-cooled heat exchangers with evaporative mist system using excess internally produced process water
  - One approximately 21.5-acre, 600-acre-foot capacity hydrostatically compensating surface reservoir with liner and interlocking shape floating cover
  - Aboveground piping pipe racks and filter houses
  - Underground compressed air storage cavern (~900,000 cubic yards capacity)
  - Interconnecting conduits for movement of compressed air to and from the cavern
  - Potential permanent aboveground architectural berm for onsite re-use of excavated cavern rock
  - Onsite 230-kilovolt (kV) substation with oil-filled transformers with 230/13.8 kV rating
  - One approximately 19-mile-long 230kV single-circuit double-bundle conductor generation-tie (gen-tie) line interconnecting to the Southern California Edison (SCE) Whirlwind Substation with a preferred gen-tie route and route options
  - Approximately 186 transmission poles (~0.2 acre of permanent disturbance)
- Operation and Maintenance Facilities, Ancillary Support Systems, and Other Features
  - Site stormwater drainage system and stormwater percolation/evaporation ponds
  - Water supply connection to an existing Antelope Valley East Kern Water Agency's supply pipeline adjacent to Sierra Highway east of the WRESC Site
  - Fire detection and fire monitoring systems
  - Firewater tank and fire suppression system
  - Acoustic enclosures for Turbomachinery

  - Weather Enclosures for Motor Control Center
  - One primary all-electric and one secondary diesel-fired 345-kW (460 horsepower) emergency fire pump
  - Three diesel-fired up to 2.5 MW, 4.16 kV emergency backup power supply engines to maintain critical loads in the event of a loss of power
  - One combined office, control room, and maintenance building
  - Employee and visitor parking area with electric vehicle charging ports and landscaping
  - Primary and secondary entrances with security access gates and site perimeter fencing
  - Permanent plant access roads within the WRESC Site
  - Extension/upgrades to Dawn Road between State Route (SR) 14 interchange and Sierra Highway
- Temporary Construction Facilities
  - Up to 122.2-acres of laydown areas including cavern construction laydown area, construction phase earthwork areas, cavern rock temporary re-use areas, cavern rock temporary backup re-use areas, and parking areas on adjacent and nearby parcels
  - Rock crushing facility and concrete batch plant to support cavern construction and excavated rock management (acreage included in total temporary disturbance)
  - Two temporary entrances for construction; the Dawn Road construction entrance may be converted to permanent
  - An estimated up to 1.5 miles of unpaved temporary access road along the gen-tie line corridor as needed (approximately 3.7 acres)
  - Approximately 35 conductor pull and tensioning sites (21.5 acres total)
  - Approximately 75-foot-by-75-foot temporary disturbance for placement of each transmission pole (approximately 23.6 acres total)

For ethnographic resources, the PAA is expanded to consider sacred sites, tribal cultural resources, traditional cultural properties (places), and larger areas such as ethnographic landscapes that can be vast and encompassing, including viewsheds that contribute to the historical significance of such historical resources.

In the rural context of the proposed WRESC, the PAA for built environment resources is defined as the proposed project site, any linear facilities, and a buffer of 0.5 mile around the project site and facilities. Portions of both the preferred route of the proposed linear facilities and its alternatives venture into suburban contexts which confer a lesser buffer since a suburban landscape is less susceptible to more distant

visual effects associated with gen-tie lines and other project related structures and activities. The proposed project site at the WRESC is primarily undeveloped land, largely consisting of desert scrub, while related proposed linear infrastructure, lay down areas, and other proposed project elements extend to the west and southwest of the project site. The WRESC is bounded on the east and west by SR 14 and Sierra Highway, respectively. To the east of the WRESC, the PAA includes Sierra Highway and undeveloped parcels with desert scrub. To the west, the PAA includes SR 14/Aerospace Highway and undeveloped parcels with desert scrub. To the north, the PAA includes undeveloped parcels with desert scrub. To the south, the PAA includes Sierra Highway and undeveloped parcels with desert scrub.

Background Research

The background research for the staff assessment employs information that the applicant and the CEC staff gathered from literature and record searches, and information that staff obtained through consultation with affiliated Native American entities. The purpose of the background information is to help formulate the initial cultural resources inventory for the present analysis, to identify information gaps, and to inform the design and the interpretation of the field research that will serve to complete the inventory.

Records Search and Literature Review. The literature review and records search are purposed to gather and interpret documentary evidence of the known cultural resources in the PAA. The source for the present search was the Southern San Joaquin Valley Information Center (SSJVIC) of the California Historical Resources Information System (CHRIS).

The applicant conducted a records search at the SSJVIC on May 17, 2023 (SSJVIC No. 23-185) and a supplemental search on September 6, 2023 (SSJVIC No. 23-380). The records search covered the proposed WRESC project area and a 1-mile buffer around all proposed project elements. The records searches included examinations of the SSJVIC's base maps of previous cultural resource studies and known cultural resources. (Amorelli et al. 2024, p. 33; ESHD 2024i, pp. 5.3-12 through 5.3-18) The CEC staff supplemented these records searches by examining its in-house holdings of previous cultural resource studies and known cultural resources, as well as internet sources of information, such as:

- National Register of Historic Places (NRHP) listings
- California Register of Historical Resources (CRHR) listings
- California Historical Landmarks listings
- California Points of Historical Interest listings (OHP 2023.)

The literature review and records search indicate that 292 previous cultural resource studies have been conducted within 1 mile of the proposed project site. Of these, 64

cultural resource studies have been conducted within or adjacent to the archaeological and historic built environment portion of the PAA.

The literature review and records search indicate that 767 cultural resources have been previously documented in the records search area and 29 of those are in or directly adjacent to the PAA (**Table 5.4-3**).

TABLE 5.4-3 LITERATURE REVIEW RESULTS: PREVIOUSLY RECORDED CULTURAL RESOURCES IN THE PAA

Resource Identifier	Type	Description	Location	Significance	Date(s) Recorded
P-15-000756 CA-KER-756	Native American archaeological site	Lithic scatter	Alternative A	Unevaluated	1974, 2011, and 2018
P-15-002314 CA-KER-2314	Native American archaeological site	Lithic scatter	Alternative A	Unevaluated	1988 and 1995
P-15-002487 CA-KER-2487	Native American archaeological site	Santiago Spring Site	Alternative B	Unevaluated	1989
P-15-002572 CA-KER-2572	Native American archaeological site	Burial and lithic scatter	Alternative B	Unevaluated	1990 and 1995
P-15-002753 CA-KER-2753	Historic site	Debris scatter	Alternative C	Unevaluated	1990 and 2012
P-15-003359 CA-KER-3359	Native American archaeological site	Lithic scatter	Preferred Gen-Tie Route	Unevaluated	1992
P-15-004783 CA-KER-4424	Native American archaeological site	Lithic scatter	Alternative B	Unevaluated	1995
P-15-004784 CA-KER-4425	Native American archaeological site	Lithic scatter	Alternative B	Unevaluated	1995
P-15-004785 CA-KER-4426H	Historic Site	Debris scatter	Alternative B	Unevaluated	1995
P-15-007591	Historic site	Tropico Gold Mine	Preferred Gen-Tie Route	Unevaluated	1968
P-15-008677	Multi-component	Can scatter and possible quarry site	Preferred Gen-Tie Route	Unevaluated	1993
P-15-012160	Historic structure	Metal barn	Alternatives A & B	Unevaluated	2006

TABLE 5.4-3 LITERATURE REVIEW RESULTS: PREVIOUSLY RECORDED CULTURAL RESOURCES IN THE PAA

Resource Identifier	Type	Description	Location	Significance	Date(s) Recorded
P-15-012171	Native American artifact (isolate)	Rhyolite core	Preferred Gen-Tie Route, Alternatives A & B	Unevaluated	2005
P-15-012542	Historic structure	Farmhouse	Alternatives A & B	Unevaluated	2007
P-15-012653	Historic structure	Farmhouse	Alternatives A & B	Unevaluated	2004
P-15-012725 CA-KER-7183H	Historic site	Debris scatter	Preferred Gen-Tie Route, All Alternatives	Unevaluated	2002
P-15-012793 CA-KER-7214H	Historic site	Debris scatter	Preferred Gen-Tie Route, All Alternatives	Recommended ineligible	2007 and 2010
P-15-013700	Historic isolate	Amethyst glass fragment	Preferred Gen-Tie Route	Unevaluated	2009
P-15-013701	Native American artifact (isolate)	Rhyolite bifacial reduction flake	Alternative C	Unevaluated	2009
P-15-014023 CA-KER-11218H	Historic structure	Mojave Tropico Road	Preferred Gen-Tie Route, All Alternatives	Unevaluated	2009 and 2019
P-15-014896	Historic site	Farm complex	Preferred Gen-Tie Route, All Alternatives	Unevaluated	2010 and 2015
P-15-014902	Historic site	House ruins	Preferred Gen-Tie Route, All Alternatives	Unevaluated	2010
P-15-014903 CA-KER-8325H	Historic structure	Agricultural standpipe	Preferred Gen-Tie Route, All Alternatives	Unevaluated	2010
P-15-014906 CA-KER-8328H	Historic site	Tamarisk wind row	Preferred Gen-Tie Route, All Alternatives	Unevaluated	2010
P-15-017221 CA-KER-9431H	Historic archaeological site	Debris scatter	Preferred Gen-Tie Route	Unevaluated	2012
P-15-017244	Native American artifact (isolate)	Clam shell	Preferred Gen-Tie Route, Alternatives A & B	Unevaluated	2013
P-15-018655 CA-KER-10204H	Historic archaeological site	Open-pit mining operation with associated debris scatters	Alternative B	Unevaluated	2011

TABLE 5.4-3 LITERATURE REVIEW RESULTS: PREVIOUSLY RECORDED CULTURAL RESOURCES IN THE PAA

Resource Identifier	Type	Description	Location	Significance	Date(s) Recorded
P-15-018681 CA-KER-10204H	Historic structure	LADWP Owens Gorge 230 kV Transmission Line	Preferred Gen-Tie Route, All Alternatives	Unevaluated	2014
P-15-020596	Historic structure	Access Road to SCE Big Creek Hydroelectric System Vincent 220 kV Transmission Line	Preferred Gen-Tie Route, All Alternatives	Recommended not eligible	2020

Notes: Alternatives refer to gen-tie route alternatives or options; KER = Kern County; LADWP = Los Angeles Department of Water and Power; PAA = project area of analysis; SCE = Southern California Edison.

Results of a historic map review indicate that by 1917, several mining claims, including the Lida Mine, had been claimed on Tropico Hill and that several isolated homesteads were along Rosamond Boulevard. The 1915 U.S. Geological Survey (USGS) Elizabeth Lake map depicts Sierra Highway following its current alignment, but segments of Mojave Tropico Road and Rosamond Boulevard were still unimproved and did not follow the present alignments. A network of dirt roads was developed in the Hidden Valley area to connect several isolated homesteads to Rosamond by 1943, and Mojave Tropico Road matches its modern alignment by this time. The neighborhood to the south of Tropico Hill had been constructed by this time, and development along Rosamond Boulevard had increased, though very little extended beyond 67th Street West, as most areas west of Willow Springs and north of Rosamond Boulevard were identified as a state game refuge. Homesteads beyond this point begin to appear around 1948. On the 1956 USGS Rosamond, California, 15-minute quadrangle map, a structure is noted in the area that is now the WRESC Site. This structure and an ancillary building are visible on the 1959 historic aerial survey, as well as several dirt roads that border the WRESC Site on the south and west. These dirt roads are still extant today. By 1965, more rural dirt roads began to appear, west of Willow Springs, and by 1972, SR 14 and Dawn Road follow their current alignments. Additionally, the structure and ancillary building on the WRESC Site appear to have been destroyed. Development in the Hidden Valley area slowly increased from this time until the late 1980s. In 1994, several parcels to the west of SR 14 were graded, but remain undeveloped today. A water tank on a parcel owned by the California State Lands Commission first appeared at this time and is still extant today.

The CEC staff conducted additional research at the CEC library through interlibrary loan services, the California History Room of the California State Library in Sacramento, and online sources. The CEC staff also consulted the reports contained in the applicant's records searches to improve the historic map coverage acquired by the applicant. The purpose of this research was to obtain a visual understanding of the natural and

cultural development of the land in and around the PAA, identify locations of potential historic built environment and archaeological resources, and have a partial, chronological record of disturbances in the PAA. To this end, staff attempted to locate detailed maps of the PAA at 10-year intervals (per Conzen 1990, p. 189), beginning about A.D. 1915 and moving toward the present. All consulted historic maps are identified in **Table 5.4-4**.

TABLE 5.4-4 HISTORIC MAPS CONSULTED

Map Name	Scale	Survey Date	Reference
Elizabeth Lake, CA	30-minute	1915	USGS 1915
Rosamond, CA	15-minute	1943, 1956	USGS 1943a, 1956
Willow Springs, CA	15-minute	1943, 1965	USGS 1943b, 1965a
Soledad Mountain, CA	7.5-minute	1947, 1973	USGS 1947a, 1973
Rosamond, CA	7.5-minute	1947	USGS 1947b
Los Angeles, CA	1-degree	1949	USGS 1949
Little Buttes, CA	7.5-minute	1965	USGS 1965b
Fairmont Butte, CA	7.5-minute	1965	USGS 1965c
Map of T 10N, R 12W		1855, 1856	GLO 1856a
Map of T 10N, R 13W		1855	GLO 1856b
Map of T 9N, R 12W		1856	GLO 1856c
Map of T 9N, R 13W		1855	GLO 1856d
Map of T 9N, R 14W		1855	GLO 1856e
Map of T 9N, R 15W		1855, 1934	GLO 1856f, 1935
Aerial Photographs		1948, 1959, 1963, 1972, 1974, 1987, 1990, and 1994	NETROnline

Notes: GLO = General Land Office; N = North; R = Range No.; T = Township No.; USGS = U.S. Geological Survey; W = West

Native American Consultation

The Governor's Executive Order B-10-11, issued on September 19, 2011, directs state agencies to engage in meaningful consultation with California Indian Tribes on matters that may affect tribal communities. The California Natural Resources Agency adopted a Final Tribal Consultation Policy on November 20, 2012. The adopted policy exhorts informed decision making by collaboratively working with tribes to seek positive, achievable, and durable outcomes. The CEC Tribal Consultation Policy furthers the CEC's efforts to engage in effective dialogue concerning proposed power facility potential impacts to cultural resources of concern to tribes (CEC 2024). In addition to agency requirements to consult tribes, the CEC's Siting Regulations require applicants to contact the California Native American Heritage Commission (NAHC) for information on Native American sacred sites and a list of Native Americans interested in the project vicinity. The applicant is then required to notify those Native Americans on the NAHC's list about the project and include a copy of all correspondence with the NAHC and Native Americans, including any written responses received, as well as a written

summary of any oral responses in the application for certification (AFC) (Cal. Code Regs., tit. 20, § 1704(b)(2), Appendix B(g)(2)(D)).

The NAHC is the primary California government agency responsible for identifying and cataloging Native American cultural resources, providing protection to Native American human burials and skeletal remains from vandalism and inadvertent destruction, and preventing irreparable damage to designated sacred sites and interference with the expression of Native American religion in California. It also provides a legal means by which Native American descendants can make known their concerns regarding the need for sensitive treatment and disposition of Native American burials, skeletal remains, and items associated with Native American graves.

The NAHC maintains three databases to assist cultural resources specialists in identifying cultural resources of concern to California Native Americans. The NAHC's Sacred Lands File database has records for areas, places, sites, and objects that Native Americans consider sacred or otherwise important, such as cemeteries and gathering places for traditional foods and materials. The NAHC Contacts database has the names and contact information for individuals, representing a group or themselves, who have expressed an interest in being contacted about development projects in specific areas. Finally, the Digital Atlas of California Native Americans is the NAHC's comprehensive web-based resource, comprising a geographic information system of tribal lands and territories, native history and use of the environment, and tribal atlas pages written by California Native American tribes (https://nahc.ca.gov/cp/).

Applicant's Methods. On December 21, 2023, the applicant requested from the NAHC a search of the Sacred Lands File and a list of contacts among California Native American tribes affiliated with WRESC area. A response was received on December 27, 2023, identifying 14 Native American tribes or tribal representatives who have knowledge of tribal cultural resources in or surrounding the project area that should be contacted to assist the applicant's identification efforts. The applicant used the contact list provided by the NAHC to send outreach letters via certified mail and email on January 12, 2024, to all individuals identified on the list. The letters and emails provided a project description and maps depicting the proposed project and requested information about cultural and tribal cultural resources in the proposed WRESC study area. The applicant also placed follow-up phone calls on February 7 and 15, 2024. (ESHD 2024i, pp. 5.3-34 and 5.3-35.)

CEC Staff's Methods. On April 8, 2024, the CEC staff requested from the NAHC a search of the Sacred Lands File and a list of contacts among California Native American tribes affiliated with the WRESC area. Following receipt of the NAHC's response, the CEC staff mailed letters to 21 individuals among the following 14 California Native American tribes on July 26, 2024:

- Barbareño/Ventureño Band of Mission Indians (Chumash)
- Chumash Council of Bakersfield (Chumash)

- Coastal Band of the Chumash Nation (Chumash)
- Fernandeño Tataviam Band of Mission Indians (Tataviam)
- Kern Valley Indian Community (Kawaiisu/Tubatulabal)
- Kitanemuk & Yowlumne Tejon Indians (Kitanemuk/Southern Valley Yokut)
- Morongo Band of Mission Indians (Cahuilla/Serrano)
- Northern Chumash Tribal Council (Chumash)
- Quechan Tribe of the Fort Yuma Reservation (Quechan)
- San Fernando Band of Mission Indians (Kitanemuk/Vanyume/Tataviam)
- Yuhaaviatam of the San Manuel Nation (Serrano)
- Serrano Nation of Mission Indians (Serrano)
- Tejon Indian Tribe (Kitanemuk)
- Tule River Indian Tribe (Yokut)

The CEC staff letters summarized the proposed WRESC project and invited consultation with the CEC on the project and the development of the applicant's revised Phase II Cultural Resources Testing Plan under the provisions of the California Environmental Quality Act (CEQA) for those tribes that have filed consultation request letters with the CEC (Pub. Resources Code, § 21080.3.1(b)). For tribes that have not submitted consultation request letters under the Public Resources Code, section 21080.3.1(b), the CEC staff's letters invited consultation under the provisions of the CEC's Tribal Consultation Policy. The CEC staff followed up the letters with emails requesting consultation on August 16, 2024.

Outreach and Consultation Results. The NAHC reported a negative Sacred Lands File search result to CEC staff on April 12, 2024 (Vela 2024).

In an email dated January 17, 2024, a tribal representative for the Yuhaavitam of the San Manuel Nation (formerly the San Manuel Band of Mission Indians) responded to the applicant's letter expressing gratitude for the opportunity to review the project documentation and indicated that the proposed project site is deemed highly culturally sensitive due to its closeness to previously recorded sites and the potential for subsurface resources. Consequently, the Tribe expressed the desire for government-to-government consultation with the lead agency. (Amorelli et al. 2024, p. 91). On August 15, 2024, Kristen Tuosto, Tribal Archaeologist for the Yuhaavitam of the San Manuel Nation responded to CEC staff's invitation to consult, stating that the proposed project is within Serrano ancestorial territory and of interest to the tribe. Additionally, Ms. Tuosto's response included comments to the applicant's Phase II testing plan, which staff forwarded to the applicant's cultural resources consultant for consideration in revisions to the testing plan.

The Tejon Indian Tribe responded to the applicant's letter in a telephone conversation with WSP, the applicant's cultural resources consultant on February 7, 2024, indicating that the tribe would like to confirm the continued presence of Tejon representatives during any ground disturbances. (Amorelli et al. 2024, p. 91) In a telephone conversation with CEC staff on August 16, 2024, Candice Garza, CRM Scheduler for the Tejon Indian Tribe confirmed receipt of the CEC consultation invitation and requested consultation with the CEC on the proposed project. Ms. Garza stated that the tribe has significant concerns with the project and was preparing comments on the applicant's Phase II Cultural Resources Testing Plan.

In a telephone conversation with the applicant's cultural resources consultant on February 2, 2024, Mr. Manfred Scott, Chairman of the Kw'ts'an Cultural Committee conveyed that the Tribe had no concern with the proposed project and defers to more local tribes. (Amorelli et al. 2024, p. 91) Likewise, in an email response to CEC staff on October 3, 2024, a representative of the tribe indicated that the Fort Yuma Quechan Tribe did not wish to comment on the project and defers to more local tribes.

The Fernandeño Tataviam Band of Mission Indians responded via email to both the applicant's cultural resources consultant and CEC staff that the Tribe will not be requesting consultation or providing input regarding the proposed project. (Amorelli et al. 2024, p. 91)

In telephone conversations with WSP and CEC staff, Mr. Robert Robinson, Chairman of the Kern Valley Indian Community indicated that the project is within the culturally sensitive ancestral territory of the tribe and requested consultation with the CEC. In a telephone conversation with the CEC staff on August 8, 2014, Chairman Robinson expressed concerns that the project area is culturally sensitive, contains buried Native American cultural materials, and further stated that a tribal representative should be present during any future ground disturbance. Chairman Robinson requested that the following project document and studies be provided to the Kern Valley Indian Community to better inform consultation:

- Cultural records search conducted with a buffer at least 1 mile from the Project Area
- Currently proposed project design and mass grading maps
- Copy of the Cultural Technical Report when submitted to the CEC. (Amorelli et al. 2024, p. 91)

In a telephone conversation with WSP on February 7, 2024, Mr. Gabe Frausto, Chairman of the Coastal Band of the Chumash Nation requested project documents to better inform consultation, and monitoring of future boreholes and testing, and further expressed appreciation that an archaeologist and Tejon tribal monitors were present during exploratory boring. (Amorelli et al. 2024, p. 91). The CEC staff have not received a response to the consultation invitation from the Coastal Band of the Chumash Nation.

The Morongo Band of Mission Indians responded via email to CEC staff on August 19, 2024, stating that the proposed project is outside the boundaries of the ancestral territory or traditional use area of the Cahuilla and Serrano people of the Morongo Band of Mission Indians and did not request consultation.

CEC staff have not received responses to their consultation invitations from representatives of the Barbareño/Ventureño Band of Mission Indians, Chumash Council of Bakersfield, Kitanemuk & Yowlumne Tejon Indians, Northern Chumash Tribal Council, San Fernando Band of Mission Indians, Serrano Nation of Mission Indians, and Tule River Indian Tribe.

Cultural Resources Inventory Fieldwork

This section discusses the methods and the results of each field inventory phase and interprets the resultant inventory to assess how well the inventory represents the cultural and tribal cultural resources of the project area. Descriptions of each cultural resource in the inventory, evaluations of the eligibility of each resource for inclusion in the CRHR, whether it qualifies as a unique archaeological resource or a tribal cultural resource, per CEQA, assessments of project impacts on each known historical resource, consideration of and potential impacts on archaeological resources that might be buried in the PAA, and proposed mitigation measures for significant impacts may be found in the "Cultural Resource Descriptions and Significance Evaluations" subsection below.

The field efforts to identify cultural resources in the PAA consist of the applicant's pedestrian archaeological survey, historic built-environment survey, and Phase II evaluations. Personnel meeting the Secretary of the Interior's professional standards for archaeology and historic architecture led the applicant's cultural resource surveys, per the California Code of Regulations, Title 20, Section 1704(b), Appendix B(g)(2)(C) (Amorelli et al. 2024, pp. 33–34 and 62).

Pedestrian Archaeological Survey Methods. On behalf of the applicant, qualified archaeologists conducted an intensive pedestrian survey of the archaeological study area between June 5, 2023, and February 28, 2024. Surveys of the Project Boundary were conducted at transect intervals no wider than 15 meters. Surveys of linear facilities were conducted by spacing one or two archaeologists equidistant on each side of improved public right-of-way (ROW), private property boundaries and topography permitting, with the addition of one archaeologist on the centerline of unimproved public ROWs, as safety permitted. Linear facilities on natural desert terrain were surveyed by two archaeologists at a time, at transect intervals no wider than 15 meters on each side of the gen-tie routes.

WSP archaeologists prepared new and updated California Department of Parks and Recreation (DPR) 523 Series forms for each identified resource using photos and notes taken during the survey. Previously recorded sites and isolates that were revisited and relocated received updated DPR 523 forms describing survey dates, resource

characteristics, and status of the resource; newly recorded sites and isolates were recorded with new DPR 523 forms (Amorelli et al. 2024, Appendix D).

Historic Built Environment Survey Methods. A historic architecture windshield survey was completed from the public ROW for the project site and along all linear gen-tie routes. In accordance with CEC Data Adequacy Worksheet requirements, the built-environment study area (BESA) extended 0.5 mile from all proposed plant facility sites and aboveground gen-tie routes in rural areas and one parcel's distance out from proposed WRESC Site and aboveground gen-tie routes in urban and suburban areas (Amorelli et al. 2024, Appendix C).

During the field survey, WSP's architectural historian used high-resolution digital photography and geographic information system mapping to document the resources in the BESA that were over 45 years old or older or that appeared to be potentially exceptionally significant regardless of their age. Resources previously determined not eligible were not resurveyed.

Following the field survey, WSP architectural historians prepared new and updated DPR 523 forms for each surveyed resource. Eighty-one identified built environment resources were evaluated using the CRHR criteria for evaluation, including significance and integrity. Full evaluations were recorded on DPR 523 forms for each surveyed resource. (Amorelli et al. 2024, Appendix D).

Phase II Archaeological Investigations

At the request of GEM A-CAES, LLC, WSP completed a Phase II cultural resources testing program, as part of the environmental review process for the proposed project (WSP 2025). During the initial investigation, WSP recorded six newly discovered sites within the power plant facility footprint and revisited four sites along the path of gen-tie development. These sites specifically include four lithic scatters (WRESC-ZEV-PRE-SITE-1, WRESC-ZEV-PRE-SITE-2, WRESC-P1-PRE-SITE-1, and WRESC-P2-PRE-SITE-2), a historic homestead (WRESC-ZEV-HIST-SITE-1), a historic period dirt road (WRESC-ZEV-HIST-SITE-2), a historic prospect mine (CA-KER-3816H), a historic farmhouse (CA-KER-8324H), a historic agricultural standpipe (CA-KER-8325H), and a historic tamarisk windbreak (CA-KER-8328H). Following the initial data adequacy review of the Phase I cultural resources assessment, the CEC staff requested that sites be evaluated for CRHR eligibility and that some evaluations be supported by a testing program.

Methodology for testing involved several different excavation techniques. Depending on factors such as site type and soil type, these methods included surface test units (STUs), shovel test pits (STPs), test excavation units (TEUS), and resurvey where necessary. Testing of sites of Native American origin in wind-blown soils (WRESC-ZEV-PRE-SITE-1, WRESC-ZEVPRE-SITE-2, WRESC-P1-PRE-SITE-1 and WRESC-P1-PRE-SITE-2) necessitated the use of STUs for initial excavation and discovery. All STUs measured 2 meters by 2 meters and were excavated at arbitrary 5-centimeter levels. STUs were distributed at an approximate spacing of 15 meters to determine if subsurface

resources were present within and beyond the surface-recorded site boundaries and placed in a manner that avoided the relocation of surface-identified resources, where possible. Excavation of STUs continued until either culturally sterile soils were encountered, or deposition of hardpan soils was prohibitive to manual excavation, whichever was encountered first. A wood lath was driven at the northwest corner of each STU and a string line was attached to the lath at exactly 10 centimeters above ground surface to ensure consistency of depth measurements. Testing of historic period sites was conducted by means of STPs. STPs did not exceed 0.5 meter by 0.5 meter in size and were excavated at arbitrary 20-centimeter levels to a depth of one meter or until hardpan refusal prohibited manual excavation. Upon encountering culturally sterile soils in an STU, an STP would be excavated within the STU in the area that yielded the highest quantity of resources. If subsurface resources were encountered within an STP, the test pit was expanded to a TEU. Depth measurements within STPs were taken from ground surface. TEUs were excavated as a means of investigating surface-identified historic resources and built environment features and when findings within an STP warranted additional investigation. TEUs measured 1 meter by 1 meter and were excavated at 10-centimeter arbitrary levels until culturally sterile soil was encountered or hardpan refusal prohibited manual excavation; whichever came first. A wood lath was driven at the northwest corner of each unit and a string line was attached to the lath at exactly 10 centimeters above ground surface to ensure consistency of depth measurements. All excavated soil was collected in 5-gallon buckets and screened through 1/8-inch mesh. Excavation was paused between each level to prevent cross contamination of soils between levels and to ensure that all recovered resources were appropriately documented in respect to their approximate horizontal and vertical provenience. Provenience for resources identified in-situ was taken by submeter GPS point and by analog measurements with metric tape measures at level depths measured from a string line attached to a unit datum and by X and Y measurements from the nearest corner of the unit. Historic period resources were bagged in archival quality bags with artifact tags identifying the resources' provenience and processed and catalogued offsite. Native American resources were photographed with a metric photo scale prior to being bagged. Analysis of Native American resources was conducted in field and the resources were placed in film capsules padded with cotton and temporarily reburied within the units they were recovered from. Offsite analysis of Native American cultural resources was limited to review of photographic records. All photographs are retained on WSP's confidential cultural resources server. Testing of these sites began on November 18, 2024, and was completed on February 6, 2025.

Results of the Inventory

The inventory of cultural resources in the PSA is the collective result of archival and literature research, consultation with local tribes, discussions with local governments and public interest groups, and field investigations conducted by the applicant. For the proposed WRESC, these efforts have led to the identification of 165 cultural resources, which includes 35 archaeological sites, 82 built-environment resources and 48 isolated artifacts. Of the 35 archaeological sites, twenty-three date to the historic era, nine are Native American, and three are multi-component. Isolates include 20 Native American

artifacts and 29 historic-period artifacts (predominately cans). Descriptions of the resources, staff conclusions regarding historical significance, and recommendations as to whether the resource warrants further consideration under CEQA are presented below.

Pedestrian Archaeological Survey Results. The WRESC Site was surveyed over a four-day period from June 6 to 9, 2023, by WSP archaeologists Allegria Garcia, Michael Amorelli, Grant Conley, and Thomas Schloeman. Ground visibility was good, approximately 70 percent. The WRESC Site is mostly flat with a mix of Quaternary (Pleistocene- or Holocene-age) alluvial sand and younger Holocene shallow aeolian deposits. Vegetation is primarily a creosote bush community with sporadic western Joshua trees. Previously disturbed areas of the WRESC Site include the portion of Dawn Road that crosses the southern area, as well as an unnamed dirt road entering the property from the west, meeting Dawn Road near the southeast corner. Another north to south-trending dirt road bisects the parcel near the center. A short two-track dirt road enters the parcel at the northeast corner, ending at the remnants of a historic-period homestead. All roads associated with the parcel have large dumps of modern trash in and around the ROWs. Additionally, two areas on the WRESC Site had previously been cleared of vegetation for geotechnical investigations. The clearance and development of these pads were monitored by WSP archaeologist Allegria Garcia and representatives from the Tejon Tribe, under a ministerial permit from Kern County.

Within the WRESC Site proper two new historic sites (WRESC-ZEV-HIST-SITE-1 and WRESC-ZEV-HIST-SITE-2) and two new Native American archaeological sites (WRESC-ZEV-PRE-SITE-1 and WRESC-ZEV-PRE-SITE-2) were identified along with eight Native American archaeological and nine historic-era isolated artifacts. The isolates include eight flakes (7 rhyolite; 1 chalcedony), six church key opened cans, one sardine can, one matchstick filler can, and one glass bottle. Under the eligibility criteria of the CRHR, isolates are generally not considered eligible unless they possess unique or substantial qualities qualifying them as a unique archaeological resource to warrant their listing. All isolates recorded within the WRESC Site parcel did not meet this distinction, therefore, are ineligible for inclusion in the CRHR under any criteria.

Most of the P1 Staging Area was surveyed by WSP archaeologist Michael Amorelli on June 5 and 6, 2023, and January 19, 2024. Ground visibility in this area was very good, approximately 80 percent, with a lower concentration of creosote scrub community vegetation and western Joshua trees. Soils are generally more compact and lighter in color than the WRESC Site parcel, ranging from light tans to light pinks. Coarse surface sand and gravel indicate previous alluvial action through this portion of the Project Area. Terrain is mostly flat and higher elevation than the WRESC Site parcel with intermittent shallow ephemeral washes. Approximately 18 percent of this staging area, near Sierra Highway, was not surveyed out of safety concerns, due to the long-term presence of several unauthorized occupied motorhomes with unauthorized residents.

The prevalence of modern illegal dumping is less prevalent on this portion of the Project Area due to the distance from major accessible roads. Sites identified in this area

include two sparse flake scatters, WRESC-P1-PRE-SITE-1 and WRESC-P1-PRE-SITE-2. In addition to the two sites, seven flake isolates were identified, as well as a historic-period metal jerry can, and a church key opened beverage can. As mentioned above, isolates are generally ineligible for listing unless they embody some significant or unique characteristic to make them eligible for listing on the CRHR.

The P2 Staging Area is divided into northern and southern sections. Both were surveyed by WSP archaeologist Michael Amorelli on January 19, 2024, and February 28, 2024. P2 North is north of the P1 Staging Area and is bordered by an unnamed dirt road. Soils in this area are more compacted and indicative of earlier alluvial action than those in the P1 Staging Area. Vegetation in P2 North was sparse, and ground visibility was approximately 85 percent. P2 South, south of Dawn Road, is more densely vegetated, with softer tan sands and recent alluvial washes. Ground visibility in P2 South was roughly 60 percent. Both P2 sections are heavily impacted at their margins by illegal dumping. An unnamed dirt road extending from Sierra Highway to a dirt frontage road east of SR 14 has large concentrations of modern refuse along and in the middle of the right-of-way. P2 South is bordered on north by Dawn Road and on the south, east, and west by unnamed dirt roads. P2 South has modern trash throughout.

No sites were identified in the P2 Staging Area, but four isolates were identified: one rhyolite flake in P2 South and an oil can, an oil filter, and a church key opened beverage can in P2 North. These isolates are ineligible for inclusion in the CRHR.

The Preferred Gen-Tie Route was surveyed by WSP archaeologists Allegria Garcia, Michael Amorelli, and Grant Conley on July 11–14, 2023, with several gaps in the original survey being subsequently surveyed by Michael Amorelli on July 29 and 31, 2023. To date, several portions of the route have not been surveyed due to lack of permission to enter. These include areas in Section 31 and the western half of Section 32 of Township 10 North, Range 12 West, north of Dawn Road. A portion of the route between Dacite Avenue and 65th Street West, along Felsite Avenue has not yet been surveyed, as permission has not yet been obtained from the landowners. Areas west of 170th Street West at the SCE Whirlwind Substation were not surveyed as no clearance was given to access SCE property.

The route begins north of Dawn Road with an option for undergrounding along the Dawn Road alignment. Dawn Road is mostly an unimproved dirt road, paved only within 1,000 feet of either side of SR 14. East of SR14, near the WRESC site, Dawn Road has high concentrations of modern illegal dumping. West of SR 14, Dawn Road is a wide rural residential dirt road with dense creosote scrub community vegetation with ephemeral washes and occasional rhyolite outcrops between small clusters of rural homes. The area immediately north of Dawn Road is mostly intact native desert terrain, with sharply inclining and declining hills in areas and occasional exposures of quartz monzonite and rhyolite bedrock. The route extends south along Mojave Tropico Road, a paved rural road varying in elevation from 2,488 feet above mean sea level (AMSL) at its intersection with Dawn Road to 2,292 feet AMSL on the south, at the intersection with Felsite Avenue. Higher-elevation portions of the road have a terrain of rolling hills

to the east and west, with fanglomerate surface exposures along Fiss Hill to the east and igneous tuff and breccia exposures on the north side of Tropico Hill. The shoulders of the road are highly disturbed and maintained dirt shoulders, with soil windrows as tall as 1 foot. South of Tropico Hill, both sides of the road are highly disturbed for residential development. Single-family residences line Felsite Avenue on the north, and a graded parcel borders the road on the south. West of Dacite Avenue, “No Trespassing” and “Private Road” signs are posted on Felsite Avenue. The route extends west on Rosamond Boulevard, which is mostly flat, and level graded, highly disturbed with former and current agricultural and residential development. Rosamond Boulevard has wide, highly disturbed and maintained shoulders with large soil windrows. Much of Rosamond Boulevard has been recently developed with road widening and extension for solar energy, with wood pole transmission alignments follow both sides of Rosamond Boulevard on the north and south sides from Mojave Tropico Road to SCE Rosamond Substation at Rosamond Boulevard and 60th Street West. Wood pole alignments follow only the north side of the road to 110th Street West, where large steel pole gen-tie alignments for solar facilities begin and continue to the SCE Whirlwind Substation at 170th Street West and Rosamond Boulevard.

Three historic-period sites were identified during the survey (WRESC-PREF-HIST-SITE-1, WRESC-PREF-HIST-SITE-2, and WRESC-PREF-HIST-SITE-3). Four isolates were recorded along the Preferred Gen-Tie Route: one rhyolite reduction flake and three church key opened beverage cans.

The portion of the Alternative A alignment that did not overlap the Preferred Gen-Tie Route was surveyed by WSP archaeologist Michael Amorelli on September 29, 2023. The entirety of the Alternative A route was surveyed. The route exits the WRESC site at Sierra Highway and extends south, before turning west on Rosamond Boulevard, meeting the Preferred Gen-Tie Route at Mojave Tropico Road. Vegetation along the route is creosote scrub community and the change in elevation is gradual, ranging from 2,528 feet AMSL at Dawn Road and Sierra Highway to 2,343 feet AMSL at Sierra Highway and Rosamond Boulevard. The route goes through the Rosamond Hills and parallels the Southern Pacific Railroad (CA-KER-2050H). The road varies from on grade to built grade with drainage features installed below. The southeast portion of the route has been highly impacted by development in the community of Rosamond. No newly recorded resources were identified along the alignment of Alternative A.

The portion of the Alternative B alignment that did not overlap the Preferred Gen-Tie Route or Alternative A was surveyed by WSP archaeologists Michael Amorelli and Allegria Garcia on September 28–29, 2023. The entire Alternative B route was surveyed. The route follows Dawn Road west from the WRESC site, turning south along a paved frontage road west of SR 14. Vegetation along the route is creosote scrub community. Terrain slopes gradually from Dawn Road to approximately the township survey line. At that point, the route takes a steeper decline at the face of the Rosamond Hills to Felsite Avenue. Ground disturbance along the portion of the route between Dawn Road and Felsite Avenue is minimal, mostly related to historic mining and various dirt roads and

trails. Below Felsite Avenue, areas along the route have been disturbed by road development and commercial construction. The route meets the route of Alternative A at Rosamond Boulevard.

During the survey of the Alternative B route, one very large historical can scatter (WRESC-ALTB-HIST-SITE-1) was identified, immediately south of 30th Street West/Rattlesnake Road. The site measures 840 feet by 133 feet and is characterized by more than a dozen small groupings of cans scattered throughout the site, with a high concentration at the center, where a minimum of 300 cans, mostly knife-opened Quaker State and Texaco oil cans dating to the 1930s, were identified with additional glass fragments and other historic-period artifacts. Because of the mounded nature of the cans and potential for subsurface constituents, surface collection and subsurface testing will be necessary to adequately evaluate the site's eligibility for inclusion on the CRHR. Along the Alternative B route, ten historic-period isolates were also observed, including bottle glass fragments and various diagnostic can types. Six additional cans and two bottle glass fragments were observed and mapped but were not recorded as they did not have specifically diagnostic features.

The portion of the Alternative C alignment that diverges from the Preferred Gen-Tie Route was surveyed along Sweetser Road from 65th Street West to Mojave Tropico Road by WSP archaeologists Michael Amorelli, Allegria Garcia, and Grant Conley on July 11, 2023. The portion of the route along 65th Street West from Sweetser Road to Rosamond Boulevard was not surveyed due to the presence of "Private Road" and "No Trespassing" signs. Should Alternative C be pursued, a supplemental survey of 65th Street West will be necessary with the permission of landowners. Sweetser Road, between 60th Street West and Mojave Tropico Road is a poorly maintained asphalt road with graded shoulders. The area between 60th Street West and 65th Street West has been impacted by rural residential development. Vegetation in the area is primarily creosote scrub community with sporadic western Joshua trees. No new sites or isolates were recorded.

The intensive pedestrian survey resulted in identification of 10 new archaeological sites (four Native American and six historic) plus an additional 45 isolates (18 Native American and 27 historic) were identified and recorded. Additionally, one previously recorded site, Tropico Gold Mine (P-15-007591), was determined to be eligible for inclusion on the CRHR. All isolates were considered ineligible for inclusion on the CRHR. Areas within the Rosamond Hills, in the vicinity of the WRESC site and the origin point of the Preferred Gen-Tie Route and Alternatives B and C are highly sensitive for both prehistoric resources and sites associated with historic-period mining.

Phase II Archaeological Investigations Results

Testing and evaluation of the sites resulted in the revision and rerecording of several site boundaries. This includes the reclassification of WRESC-ZEV-HIST-SITE-1 and WRESC-ZEV-PRE-SITE-1 as a single multicomponent site: WRESC-ZEV-MULTI-SITE-1. Additionally, the boundary of WRESC-ZEV-PRE-SITE-2 has been expanded to

encompass an area of 0.59 acre. WRESC-P1-PRE-SITE-1 and WRESC-P1-PRE-SITE-2 have been determined to be a single continuous lithic scatter, combined into a single larger 3.1-acre boundary subsumed as WRESC-P1-PRE-SITE-1 (WSP 2025i).

Based on the findings of subsurface testing and evaluation of the associated data, four sites, WRESC-ZEV-MULTI-SITE-1, WRESC-ZEV-PRE-SITE-2, WRESC-ZEV-PRE-SITE-3 and WRESC-P1-PRE-SITE-1 are recommended eligible for listing on the CRHR under Criterion 4, due to the potential for these sites to yield additional data significant to the understanding of the pre-contact history of the Antelope Valley.

Two resources, CA-KER-8325H and CA-KER-8328H, are recommended ineligible for listing on the CRHR under all criteria. Two additional resources, CA-KER-3816H and CA-KER-8324H, were determined to be outside of the area of direct impact and were not evaluated further.

Archaeological Resources

Archaeological sites are summarized in **Table 5.4-5**, archaeological isolates in **Table 5.4-6**. Detailed descriptions of archaeological sites follow the tables.

TABLE 5.4-5 ARCHAEOLOGICAL SITES (BOLD=POTENTIAL TO AFFECT)

Resource Identifier	Site Type	Description	Location within Project	Significance
WRESC-ZEV-MULTI-SITE-1	Native American-Historic	Lithic Scatter and Homestead Ruin	WRESC	Recommended eligible
WRESC-ZEV-PRE-SITE-2	Native American	Lithic Scatter	WRESC	Recommended eligible
WRESC-ZEV-HIST-SITE-2	Historic	Road	WRESC	Recommended ineligible
WRESC-ZEV-PRE-SITE-3	Native American	Lithic Scatter	WRESC	Recommended eligible
WRESC-P1-PRE-SITE-1	Native American	Lithic Scatter	P1 Staging Area	Recommended eligible
WRESC-PREF-HIST-SITE-1	Historic	Mining Site	Preferred Gen-Tie	Recommended ineligible
WRESC-PREF-HIST-SITE-2	Historic	Debris Scatter	Preferred Gen-Tie	Recommended ineligible
WRESC-PREF-HIST-SITE-3	Historic	Remnants of a Farm Complex	Preferred Gen-Tie	Assumed eligible
P-15-003359 CA-KER-3359	Native American	Lithic Scatter	Preferred Gen-Tie	Area not surveyed Resource assumed eligible
P-15-007591 Tropico Gold Mine	Historic	Gold Mine	Preferred Gen-Tie	Recommended eligible
P-15-008677	Native American/ Historic	Can Scatter and Possible Lithic Scatter	Preferred Gen-Tie	Area not surveyed Resource assumed eligible
P-15-017221 CA-KER-9431H	Historic	Debris Scatter	Preferred Gen-Tie	Not relocated

TABLE 5.4-5 ARCHAEOLOGICAL SITES (BOLD=POTENTIAL TO AFFECT)

Resource Identifier	Site Type	Description	Location within Project	Significance
CA-KER-3816H	Historic	Prospect mine	Preferred Gen-Tie	Did not extend into project area
P-15-012725 CA-KER-7183H	Historic	Debris Scatter	All Gen-Tie Alternatives	Area not surveyed Resource assumed eligible
P-15-012793 CA-KER-7214H	Historic	Debris Scatter	All Gen-Tie Alternatives	Recommended ineligible
P-15-014023 CA-KER-11218H	Historic	Road	All Gen-Tie Alternatives	Recommended ineligible
P-15-014896	Historic	Farm Complex	All Gen-Tie Alternatives	Site developed (see below)
P-15-014902 CA-KER-8324H	Historic	Stone House Ruins	All Gen-Tie Alternatives	Assumed eligible
P-15-014903 CA-KER-8325H	Historic	Standpipe	All Gen-Tie Alternatives	Recommended ineligible
P-15-014906 CA-KER-8328H	Historic	Windrow of Tamarisk Trees	All Gen-Tie Alternatives	Recommended ineligible
P-15-018681 CA-KER-10204H	Historic	Transmission Line	All Gen-Tie Alternatives	Recommended ineligible
P-15-020596	Historic	Road	All Gen-Tie Alternatives	Recommended ineligible
P-15-000756 CA-KER-756	Native American	Lithic Scatter	Alt-A	Not relocated
P-15-002314 CA-KER-2314	Native American	Lithic Scatter	Alt-A	Boundary did not extend into project area
P-15-002487 CA-KER-2487H	Native American/ Historic	Lithic Scatter Historic Debris	Alt-B	Not relocated
P-15-002572 CA-KER-2572	Native American	Burial Site	Alt-B	Assumed eligible (see discussion below)
P-15-004783 CA-KER-4424	Native American	Lithic Scatter	Alt-B	Not relocated (destroyed)
P-15-004784 CA-KER-4425	Native American	Lithic Scatter	Alt-B	Not relocated
P-15-004785 CA-KER-4426H	Historic	Debris Scatter	Alt-B	Recommended ineligible
P-15-018655 CA-KER-10180H	Historic	Open Pit Mine	Alt-B	Assumed eligible
WRESC-ALTB-HIST-SITE-1	Historic	Can Scatter	Alt-B	Assumed eligible
P-15-012160	Historic	Metal Barn	Alt-A & B	Assumed eligible
P-15-012542	Historic	Farmhouse	Alt-A & B	Assumed eligible
P-15-012653	Historic	House	Alt-A & B	Assumed eligible
P-15-002753 CA-KER-2753H	Historic	Trash Scatter	Alt-C	Not relocated

Isolates

TABLE 5.4-6 ISOLATES

Resource Identifier	Isolate Type	Description	Location within Project	Significance
WRESC-ZEV-PRE-ISO-1	Native American	Rhyolite flake	WRESC Site	Not Eligible
WRESC-ZEV-PRE-ISO-2	Native American	Rhyolite flake	WRESC Site	Not Eligible
WRESC-ZEV-PRE-ISO-3	Native American	Rhyolite flake	WRESC Site	Not Eligible
WRESC-ZEV-PRE-ISO-4	Native American	Rhyolite flake	WRESC Site	Not Eligible
WRESC-ZEV-PRE-ISO-5	Native American	Rhyolite flake	WRESC Site	Not Eligible
WRESC-ZEV-PRE-ISO-6	Native American	Rhyolite flake	WRESC Site	Not Eligible
WRESC-ZEV-PRE-ISO-7	Native American	Rhyolite flake	WRESC Site	Not Eligible
WRESC-ZEV-PRE-ISO-8	Native American	Chalcedony flake	WRESC Site	Not Eligible
WRESC-ZEV-HIST-ISO-1	Historic	Church key-opened can	WRESC Site	Not Eligible
WRESC-ZEV-HIST-ISO-2	Historic	Church key-opened can	WRESC Site	Not Eligible
WRESC-ZEV-HIST-ISO-3	Historic	Church key-opened can	WRESC Site	Not Eligible
WRESC-ZEV-HIST-ISO-4	Historic	Church key-opened can	WRESC Site	Not Eligible
WRESC-ZEV-HIST-ISO-5	Historic	Glass bottle	WRESC Site	Not Eligible
WRESC-ZEV-HIST-ISO-6	Historic	Church key-opened can	WRESC Site	Not Eligible
WRESC-ZEV-HIST-ISO-7	Historic	Matchstick filler can	WRESC Site	Not Eligible
WRESC-ZEV-HIST-ISO-8	Historic	Church key-opened can	WRESC Site	Not Eligible
WRESC-ZEV-HIST-ISO-9	Historic	Sardine can	WRESC Site	Not Eligible
WRESC-P1-PRE-ISO-1	Native American	Two rhyolite flakes	P1-Staging	Not Eligible
WRESC-P1-PRE-ISO-2	Native American	Cryptocrystalline silicate flake	P1-Staging	Not Eligible
WRESC-P1-PRE-ISO-3	Native American	Rhyolite flake	P1-Staging	Not Eligible
WRESC-P1-PRE-ISO-4	Native American	Chalcedony flake	P1-Staging	Not Eligible
WRESC-P1-PRE-ISO-5	Native American	Obsidian flake	P1-Staging	Not Eligible
WRESC-P1-PRE-ISO-6	Native American	Obsidian flake	P1-Staging	Not Eligible
WRESC-P1-PRE-ISO-7	Native American	Rhyolite flake	P1-Staging	Not Eligible

TABLE 5.4-6 ISOLATES

Resource Identifier	Isolate Type	Description	Location within Project	Significance
WRESC-P1-HIST-ISO-1	Historic	Jerry can	P1-Staging	Not Eligible
WRESC-P1-HIST-ISO-2	Historic	Church key-opened can	P1-Staging	Not Eligible
WRESC-P2-PRE-ISO-1	Native American	Rhyolite flake	P2-Staging	Not Eligible
WRESC-P2-HIST-ISO-1	Historic	Oil can	P2-Staging	Not Eligible
WRESC-P2-HIST-ISO-2	Historic	Oil filter	P2-Staging	Not Eligible
WRESC-P2-HIST-ISO-3	Historic	Church key-opened can	P2-Staging	Not Eligible
P-15-013700	Historic	Glass fragment	Preferred Gen-Tie	Not Eligible
WRESC-PREF-PRE-ISO-1	Native American	Rhyolite flake	Preferred Gen-Tie	Not Eligible
WRESC-PREF-HIST-ISO-1	Historic	Church key-opened can	Preferred Gen-Tie	Not Eligible
WRESC-PREF-HIST-ISO-2	Historic	Church key-opened can	Preferred Gen-Tie	Not Eligible
WRESC-PREF-HIST-ISO-3	Historic	Church key-opened can	Preferred Gen-Tie	Not Eligible
P-15-017244	Historic	Clam shell	Preferred Gen-Tie, Alt-A & B	Not relocated
P-15-012171	Native American	Rhyolite core	Preferred Gen-Tie, Alt-A & B	Not relocated
WRESC-ALTB-HIST-ISO-1	Historic	Church key-opened can	ALT-B	Not Eligible
WRESC-ALTB-HIST-ISO-2	Historic	Church key-opened can	ALT-B	Not Eligible
WRESC-ALTB-HIST-ISO-3	Historic	Bottle glass	ALT-B	Not Eligible
WRESC-ALTB-HIST-ISO-4	Historic	Church key-opened can	ALT-B	Not Eligible
WRESC-ALTB-HIST-ISO-5	Historic	Gas can	ALT-B	Not Eligible
WRESC-ALTB-HIST-ISO-6	Historic	Church key-opened can	ALT-B	Not Eligible
WRESC-ALTB-HIST-ISO-7	Historic	Church key-opened can	ALT-B	Not Eligible
WRESC-ALTB-HIST-ISO-8	Historic	Hinge-seamed Dr. Pepper can	ALT-B	Not Eligible
WRESC-ALTB-HIST-ISO-9	Historic	Church key-opened can	ALT-B	Not Eligible
WRESC-ALTB-HIST-ISO-10	Historic	Milk glass fragment	ALT-B	Not Eligible
P-15-013701	Native American	Flake	Alt-C	Not Eligible

Archaeological Resources

WRESC-ZEV-MULTI-SITE-1 (WRESC Site) First recorded by WSP archaeologists in 2023 as two separate sites (WRESC-ZEV-PRE-SITE-1 and WRESC-ZEV-HIST-SITE-1), testing revealed that the two sites overlap, and it was combined into one site with two components spanning approximately three acres. The surface of the Native American component consisted of a lithic scatter containing 16 rhyolite flakes. Vegetation surrounding the scatter consists of creosote, fiddleneck, and various grasses. Soils are tan silty alluvial sand with occasional shallow deposits of aeolian sand around vegetation. Of the 16 pieces, one is a large primary flake, seven are secondary flakes, and eight are tertiary. Phase II testing revealed that there is a subsurface deposit associated with the site and produced an additional 66 flakes (some worked) of a variety of material, including rhyolite, chert, chalcedony, quartz, and obsidian. A handstone fragment was also identified on the surface of the site.

The historic component of the site consists of a historic-period homestead ruin with an associated debris field. The site includes a concrete structure pad measuring 24 feet by 14 feet, with the ruins of an associated outbuilding measuring 18 feet by 12 feet with a wood frame foundation. Analysis of similar outbuilding foundations and home site ruins nearby on Edwards Air Force Base interpreted them as possible chicken coops. No standing walls of either structure remain; however, remnants of the toppled walls associated with the concrete pad are present. The walls were wood framed with grey stucco over chicken wire. The framing studs appear to have been burned, and walls toppled to the south. The 1989 Official Map of Kern County, compiled by the county surveyor, shows that the parcel was at one time the property of N. G. Siebel, who owned several other parcels in the vicinity, but no additional data on Siebel or later property owners could be found via historic maps or Bureau of Land Management General Land Office Records. The structure is noted on the 1956 U.S. Geological Survey (USGS) Rosamond, CA, 15-minute quadrangle but does not appear on the 1973 Soledad Mountain 7.5-minute quadrangle. The structures appear standing on the 1959 historic aerial survey but appeared to be in ruins by the 1972 aerial survey. Diagnostic materials within the debris field are limited to bottle bases, with several Maywood Glass bottle bases dating to 1958–1971, placing materials ambiguously within the historic period. Burned fence posts with barbed wire are still present to the northwest of the property. Excavations within this component recovered a variety of historic artifacts including .22-caliber bullet casings, concrete, a door hinge, faunal remains, non-diagnostic glass fragments (amber, clear, and milk glass), a teacup handle, nondiagnostic miscellaneous metal fragments, a metal button, nails (round head/square head), a plastic comb, and stucco fragments. Additionally, Native American artifacts within this component include four flakes of various material, as well as another handstone fragment.

No diagnostic artifacts were recovered from the Native American portion of the site and it cannot be directly associated with a particular period or individuals important to the past, therefore it is not recommended eligible under CRHR criteria 1 or 2. Diagnostic materials identified in the historic portion place the period of occupation between the

1950s and early 1970s, after the rise and decline of the Southern Pacific Railroad and after the development of Edwards Air Force Base. Therefore, it does not appear to be associated with significant events in the area and is not recommended eligible under CRHR Criterion 1. No information regarding the property owner during the period of historic occupation could be found and it could not be linked with persons important to the regional past; it is not recommended eligible under Criterion 2. The ruins do not embody any distinctive characteristics of type, period, or construction, and the site is, therefore, not recommended eligible under Criterion 3. Likewise, the lithic scatter also lacks any defining or distinguishing features and does not appear to be eligible under Criterion 3. Subsurface testing revealed that WRESC-ZEV-MULTI-SITE-1 could yield additional data significant to an understanding of the historic or Native American archaeology of the area and therefore WSP recommends the site eligible for the CRHR under Criterion 4 and is considered a historical resource under CEQA.

WRESC-ZEV-PRE-SITE-2 (WRESC Site) Site WRESC-ZEV-PRE-SITE-2 was first recorded as a sparse prehistoric lithic scatter containing 17 rhyolite flakes, measuring 18 meters by 37 meters. The scatter was first identified on June 7, 2023, with the total size of the site determined on July 29, 2023, during monitoring of pad development for geotechnical testing associated with the project. Monitoring of pad development revealed no subsurface flakes, and flakes in the path of construction were relocated by members of the Tejon Tribe and WSP archaeologists. Subsurface testing during Phase II evaluations recovered an additional 26 rhyolite flakes.

WRESC-ZEV-PRE-SITE-2 has not proven to be associated with a particular period or individuals important to the past; therefore, it is not recommended eligible under CRHR criteria 1 or 2. The lithic scatter lacks any defining or distinguishing features and does not appear to be eligible under Criterion 3. Phase II excavations recovered additional subsurface artifacts indicating that the potential for significant subsurface resources still exists, therefore the site is recommended eligible for the CRHR under Criterion 4 and is a historical resource under CEQA.

WRESC-ZEV-HIST-SITE-2 (WRESC Site) This site is an unnamed historic dirt road with no associated features. From the pavement, the road connects Dawn Road to Sierra Highway as it heads north on the Karin parcel. A linear feature is present on a survey from 1948 and 1953 USGS Soledad Mountain 7.5-minute quadrangle.

WRESC-ZEV-HIST-SITE 2 has not been found to be directly associated with significant events or individuals important to history. Therefore, the site is not recommended eligible under CRHR criteria 1 or 2. The site does not contain artifacts or objects defined as unique or significant under CEQA. Therefore, it is not recommended eligible for inclusion on the CRHR under Criterion 3. Phase II excavations failed to identify any historic subsurface deposits indicating the resource would not be able to answer significant research questions about the history of the region or provide insight into the past, therefore, it is not recommended eligible for listing on the CRHR under Criterion 4 and is not a historical resource under CEQA. Additionally, the resource lacks the ability to answer important scientific research questions, does not exhibit any special qualities

(i.e. oldest, best example), and is not directly associated with a historic event or person, as such it does not qualify as a unique archaeological resource under CEQA.

WRESC-ZEV-PRE-SITE-3 (WRESC Site) This site is a lithic scatter discovered during subsurface testing of WRESC-ZEV-HIST-SITE-2. The site could not be associated with significant events or individuals important to state or national history and is, therefore, recommended ineligible for listing on the CRHR under criteria 1 and 2. The site displays no unique lithic resources or craftsmanship regarded as mastery in flintknapping and is therefore recommended ineligible for listing on the CRHR under Criterion 3. Testing of the site was limited to the discovery of subsurface lithic materials found during excavation of shovel test pits on the north shoulder of WRESC-ZEV-HIST-SITE-2 which prompted resurvey of the area and led to the discovery of WRESC-ZEV-PRE-SITE-3. However, due to the presence of associated subsurface lithic materials in the adjacent test pits, WRESC-ZEV-PRE-SITE-3 is recommended eligible for listing on the CRHR under Criterion 4.

WRESC-P1-PRE-SITE-1 (P1-Staging Area) Originally recorded as two separate sites, resurvey of the area during phase II evaluations confirmed a link between the two sites and WSP combined them into one larger site. Site WRESC-P1-PRE-SITE-1 was originally recorded as a small, sparse flake scatter containing a total of 16 rhyolite flakes, one of which appears to be bifacially worked. The site measured 15.0 meters by 4.5 meters and appears to be a lithic reduction site. The flakes originated from more than one source core. Three flakes are purple with red banding, two are purple with intense white banding, and the remaining eleven are of a mottled type of rhyolite with less distinctive coloring. WRESC-P1-PRE-SITE-2 was recorded as a small, sparse flake scatter consisting of five flakes of mixed materials. The scatter includes one rhyolite flake, one cryptocrystalline silicate flake, one chalcedony flake, one obsidian flake, and one flake of pelona schist. Soil in the area is primarily alluvial sand overlaid by coarse quartz sand.

WRESC-P1-PRE-SITE-1 lacks temporally or culturally diagnostic materials. Because it cannot be associated with a particular period or individuals in the past, it is not recommended eligible under criteria 1 or 2. The lithic scatters also lack any defining or distinguishing features and do not appear to be eligible under Criterion 3. Phase II excavations recovered additional subsurface artifacts indicating that the potential for significant subsurface resources still exists, therefore the site is recommended eligible for the CRHR under Criterion 4 and is considered a historical resource under CEQA.

WRESC-PREF-HIST-SITE-1 (Preferred Gen-Tie) Site WRESC-PREF-HIST-SITE-1 is a historic-period mining prospect with associated tailings and can scatter. The prospect pit is approximately 10 feet in diameter and 5 feet deep, with a tailings pile to the south. The can scatter contains a minimum of 10 pieces, spans an area of 200 feet by 180 feet, and is south of the Preferred Gen-Tie Route. The site is immediately east of a dirt road that appears on the 1973 USGS Soledad Mountain 7.5-minute quadrangle. It is at the southern boundary of the Preferred Gen-Tie Route. It does not appear to be

associated with any other known mining features in the region and the age as well as owner of the site could not be determined.

WRESC-PREF-HIST-SITE-1 is not associated with any important individuals or events significant to the history of the region. Therefore, it is recommended ineligible for inclusion on the CRHR under criteria 1 and 2. The site is not unique or significant in the context of mining history in the local area and is therefore not considered eligible for listing under Criterion 3. The site is not likely to retain any significant information regarding this history of the region. Therefore, it is recommended ineligible for listing under Criterion 4. WRESC-PREF-HIST-SITE-1 is recommended not eligible for the CRHR. Additionally, WRESC-PREF-HIST-SITE-1 lacks the ability to answer important scientific research questions, does not exhibit any special qualities (i.e. oldest, best example), and is not directly associated with a historic event or person, as such it does not qualify as a unique archaeological resource under CEQA and no further consideration under CEQA is required.

WRESC-PREF-HIST-SITE-2 (Preferred Gen-Tie) Site WRESC-PREF-HIST-SITE-2 is a historic-period can and bottle glass scatter. The scatter contains a knife-opened sanitary can, a church key-opened beverage can, and glass from at least one Dr. Pepper bottle and one Coca Cola bottle dating to the 1960s. The scatter measures 75 feet by 42 feet and is on the surface of an aeolian deposit, between several creosote bushes.

WRESC-PREF-HIST-SITE-2 is not associated with any important individuals or significant events in the history of the region. Therefore, it is recommended ineligible for inclusion on the CRHR under criteria 1 and 2. The constituents of the site are not considered to be unique or significant under CEQA and the site is recommended ineligible under Criteria 3. Based on the available information it is unlikely that the site would yield important information regarding the region's history or answer important research questions about the past. Therefore, it is recommended ineligible for inclusion on the CRHR under Criterion 4. Additionally, the resource lacks the ability to answer important scientific research questions, does not exhibit any special qualities (i.e. oldest, best example), and is not directly associated with a historic event or person, as such it does not qualify as a unique archaeological resource and no further consideration under CEQA is required.

WRESC-PREF-HIST-SITE-3 (Preferred Gen-Tie) Site WRESC-PREF-HIST-SITE-3 is the remnant of a historic-period farm complex. It contains the structure pads associated with a home and four additional structures. The property first appears on the 1959 historic aerial survey and is noted on the 1965 USGS Little Buttes 7.5-minute quadrangle. The original driveway for the property is still extant and intersects the survey corridor. Several trees lining the property entrance are visible on the 1959 historic aerial survey.

Preliminary research of WRESC-PREF-HIST-SITE-3 could not associate it with any important individuals or events significant to regional history. The site is in ruins and

retains no integrity of style or craftsmanship. There is potential for buried features or deposits associated with the complex, however intact deposits would likely be outside of the Gen-Tie ROW and would not be impacted by construction. Because the potential for buried deposits remains, the site is assumed eligible and will be treated as a historical resource for this project only and will be protected by the Conditions of Certification (COCs).

P-15-003359/CA-KER-3359 (Preferred Gen-Tie) This site was recorded as a lithic scatter in 1992, consisting of 32 rhyolite flakes, a rhyolite scraper, and a chalcedony bifacial point. This portion of the Preferred Gen-Tie Route was not surveyed due to lack of landowner permission. The site is assumed eligible for the CRHR for this project only and if there are any impacts anticipated to this site additional work will need to be conducted.

P-15-007591 (Preferred Gen-Tie) Tropico Gold Mine was originally established as a clay mine by Dr. L. A. Crandall in 1888, then sold to Ezra M. Hamilton, who struck gold at the mine. Hamilton later sold the mine to the Tropico Mining and Milling Company, from which it gets its name. Tropico Gold Mine was the first California Point of Historical Interest registered in Kern County. It is immediately west of Mojave Tropico Road and the Preferred Gen-Tie Route.

Tropico Gold Mine is on fenced private property, owned by the Burton Bros. Corporation. The site was first encountered during the archaeological survey on July 11, 2023. It was then revisited by a WSP architectural historian and archaeologist, who photographed the property from the public right-of-way (ROW) on September 29, 2023. The fence line of the property occurs within the 50-foot survey buffer, though no structures associated with the mine exist within the buffer. Direct impacts to historic built environment features are not anticipated, but installation of overhead transmission lines may cause visual impacts. Many of the structures visible from the public ROW are in disrepair.

Gold was discovered at the Tropico Mine by Ezra M. Hamilton, a veteran of the Rogue River Wars and a two-term Los Angeles city councilman, who found gold at the mine in 1894. Hamilton used wealth attained at the mine to develop Willow Springs as a resort, which contributed to the development of the local community in the late nineteenth and early twentieth century. Therefore, the site is associated with important individuals and significant events in California history and is eligible for inclusion under CRHR criteria 1 and 2. Though the overall historic landscape retains its integrity of feeling, association, and location, many of the historic structures are in disrepair and several newer buildings and other features were added in modern times, diminishing the historical integrity of the site. Therefore, it is not eligible for inclusion under Criterion 3. Due to the presence of historic debris possibly associated with the mine in the area, and items that may still be present within the standing structures, the property has the potential to answer important research questions and provide valuable information about the early development of the communities of Rosamond and Willow Springs in the late

nineteenth and early twentieth centuries. Therefore, the property is eligible for inclusion on the CRHR under Criterion 4 and is a historical resource under CEQA.

See the Built Environment Section below for an evaluation of the resource with respect to CRHR criteria 1 to 3 regarding its built environment.

P-15-008677 (Preferred Gen-Tie) This site is recorded as a potential multi-component site, consisting of a small scatter of hole-in-cap cans along a quartz outcrop recorded in 1993. The site recorder, Richard Osborne, suggests that the lithic debris surrounding the quartz outcrop may be associated with tool manufacture, but acknowledges that this determination cannot be certain, due to the fracturing characteristics of the material. P-15-008677 has not been revisited because of lack of landowner permissions. The site is assumed eligible for this project and will be treated as a historical resource. At this time no impacts to this location are anticipated; however, if plans change and there will be any impacts to this site additional work will need to be conducted.

P-15-017221/CA-KER-9431H (Preferred Gen-Tie) This site is a large historic debris scatter dated to a period of the 1930s to 1940s. The scatter includes food and beverage bottles and cans, as well as construction debris, such as brick and vitrified clay pipe.

An attempt to revisit the site was made on July 11, 2023, but no remains of the site were relocated, and it could not be evaluated. Therefore, P-15-017221 is not considered a historical or unique archaeological resource for the purposes of CEQA.

CA-KER-3816H (Preferred Gen-Tie) CA-KER-3816H is a historic period mining prospect site, originally recorded by James Brock of Archaeological Advisory Group in 1993 during the investigation of a 240-acre parcel, ahead of proposed residential development. The site includes seven prospect pit features and a 9.5-foot-by-8.0-foot stone and cement structure. Historic debris identified during the original recording includes glass, cans and historic period ceramic dating to the 1920s and 1930s. In Brock's evaluation of the site, it was recommended as likely ineligible for listing on any historic registers on account of a lack of integrity and being similar to many other small prospect mines in the region.

Recorded features associated with the site would not be impacted by construction of the route and testing was conducted within the recorded site boundary to determine the presence or absence of associated subsurface materials that may be impacted by construction. Test excavations were negative and, therefore, no impacts or adverse effects to the site are anticipated during construction.

P-15-012725/CA-KER-7183H (All Gen-Tie Alternatives) This site is a large historic debris scatter consisting of 150 sanitary cans, ceramic pieces, amethyst glass, and other diagnostics that may be associated with the construction of the First Los Angeles Water District. The scatter is west of 170th Street West, immediately south of

the Preferred Gen-Tie Route and north of the Southern California Edison (SCE) Whirlwind Substation.

The applicant was unable to revisit this site during the resource-significance evaluations because of a lack of landowner permission. The site is outside of current project impacts, however, it is assumed eligible for the CRHR for this project and if plans change to include impacts on this site additional work will need to be performed.

P-15-012793/CA-KER-7214H (All Gen-Tie Alternatives) This site is a large historic debris scatter located to the immediate northwest of the SCE Whirlwind Substation, at the tie-in point of the gen-tie route. Pacific Legacy's evaluation and testing of the site in 2010 determined CA-KER-7214H as ineligible for listing on the National Register of Historic Places (NRHP) or CRHR.

Based on the prior work and evaluation, CEC staff concurs with Pacific Legacy's determination that the site is ineligible for inclusion on the CRHR. Additionally, the resource lacks the ability to answer important scientific research questions, does not exhibit any special qualities (i.e. oldest, best example), and is not directly associated with a historic event or person, as such it does not qualify as a unique archaeological resource under CEQA and no further consideration under CEQA is required.

P-15-014023/CA-KER-11218H (All Gen-Tie Alternatives) Mojave Tropico Road is a previously recorded two-lane road. Originally developed in 1915 as a dirt road to support the Tropico Mine, the road was paved in 1943. The Preferred Gen-Tie Route runs along Mojave Tropico Road. Due to paving, Mojave Tropico Road lacks its historic integrity of materials but maintains its alignment (integrity of location).

Mojave Tropico Road is an improved two-lane asphalt road with maintained dirt shoulders. It was surveyed on July 11, 2023. Though the road follows its original alignment, improvements and maintenance have degraded its historic integrity.

Although Mojave Tropico Road was developed to provide logistical support to the Tropico Gold Mine, it is not directly tied to the significant individuals who owned the mine or the significant events that occurred there. Therefore, it is recommended ineligible for inclusion on the CRHR under criteria 1 and 2. The road maintains its integrity of location, but the original grade and surface have been destroyed by maintenance and paving improvements. Therefore, it is not recommended for inclusion on the CRHR under Criterion 3. Due to continued maintenance and disturbances, the road is unlikely to possess data that may answer important research questions or provide valuable insight into the history of the region. Therefore, it is not recommended individually eligible for inclusion on the CRHR; however, it may be a contributing element to the Tropico Gold Mining District (see built environment below). Impacts to the road for this project would not affect the eligibility of the gold mine or affect the road's integrity as a contributing element.

P-15-014896 (All Gen-Tie Alternatives) Originally recorded in 2010 as a historic bunkhouse and farm complex along Fisher Avenue and 140th Street West. The tamarisk windrows associated with the property extended to Rosamond Boulevard.

Areas associated with the site were revisited on July 12, 2023. The site has been destroyed, and a large solar field exists in its place. Though the tamarisk windrows are no longer extant, two young tamarisk plants at the northeast corner of Rosamond Boulevard and 140th Street West may have regrown from roots associated with the historic-period windrow. Because of the development of the site, P-15-014896 is not considered a historical or unique archaeological resource for the purposes of CEQA.

P-15-014902/CA-KER-8324H (All Gen-Tie Alternatives) This site is the remnant of a stone house, likely constructed in the 1920s or 1930s. The site is north of Rosamond Boulevard and west of 155th Street West.

The site was revisited on September 25, 2023, by a WSP architectural historian and archaeologists. The site is in ruins, with fewer extant features than previously reported in the original site recording.

Site P-15-014902 was also evaluated as a built environment resource (see Erwin House, below). There is no evidence of association with important individuals or significant events in the region's history. Therefore, it is recommended ineligible for inclusion on the CRHR under criteria 1 and 2. The property is evident of a specific style of homesteader self-development using mortared local rock as a primary construction material, but the site no longer retains structural integrity or integrity of feeling or association. Therefore, it is recommended ineligible for inclusion on the CRHR under Criterion 3. The site was revisited during Phase II evaluations and determined that recorded features associated with the site would not be impacted by construction of the route. Subsurface testing was not conducted on account of the distance from the extant features to the transmission route and the low likelihood of encountering intact deposits due to development of a previous transmission route and the presence of a considerable pile of overburden from ground disturbance associated with the widening of Rosamond Boulevard. No impacts or adverse effects to the property are anticipated from construction. Because the recorded site boundary intersects construction activity the site is assumed eligible for inclusion on the CRHR under Criterion 4 and will be treated as a historical resource for this project only and will be protected by the proposed COCs.

P-15-014903/CA-KER-8325H (All Gen-Tie Alternatives) This resource is a large concrete agricultural standpipe at the northeast corner of Rosamond Boulevard and145th Street West. The pipe is spray painted with the number "145" as an indicator of 145th Street West.

The structure was relocated on July 12, 2023, during the archaeological survey of the transmission route. The pipe is still extant, with the street number "145" spray painted on its side.

P-15-014903 could not be associated with important individuals or significant events in the region's history. Therefore, it is recommended ineligible for inclusion on the CRHR under criteria 1 and 2. The style of pipe is not considered unique or significant; therefore, the resource is recommended ineligible for inclusion on the CRHR under Criterion 3. Phase II excavations were conducted in the areas around the standpipe and did not identify any features or archaeological deposits. The resource cannot yield important information regarding the region's history or answer important research questions about the past. Therefore, it is recommended ineligible for inclusion on the CRHR under Criterion 4. Additionally, the resource lacks the ability to answer important scientific research questions, does not exhibit any special qualities (i.e. oldest, best example), and is not directly associated with a historic event or person, as such it does not qualify as a unique archaeological resource under CEQA and no further consideration under CEQA is required.

P-15-014906/CA-KER-8328H (All Gen-Tie Alternatives) This site is a historic period tamarisk windbreak, fronting the south side of Rosamond Boulevard, from 135th Street West to 140th Street West. The site was recorded in 2011 by Scott M. Hudlow of Hudlow Cultural Resource Associates. Hudlow's recording of the site states that the windbreak is L-shaped, beginning at 135th Street West, west across Rosamond Boulevard to 140th Street West, and south to Astoria Avenue. The alignment of the windbreak is, however, U-shaped, following the alignment defined by Hudlow, as well as 135th Street West to Astoria Avenue. The windbreak surrounded a farm complex first visible in 1959 historic aerial imagery and was extant until 2018. Hudlow's 2011 recording includes the windbreak as an archaeological site and does not include the rest of the associated historic built environment.

The site was revisited on July 12, 2023. No tamarisks associated with the windrow were observed, but an earthen berm that may be associated was observed. Outlines of the berm resembled historic photos of the site from previous records. On February 6, 2025, CA-KER-8328H was again revisited. During this resurvey, it was determined that the berm associated with the windrow was significantly disturbed along the south facing slope, where the proposed gen-tie route would be constructed and was heavily overgrown by invasive grasses. The tamarisk trees associated with the windrow appeared to have been recently cut and the berm height was lower than observed during the July 2023 rerecording. The structures were demolished for the development of the North Rosamond Solar Project and are no longer visible by the 2020 historic aerial survey and are no longer extant on site.

The site appears to have been severely impacted by recent road maintenance, tree trimming and grading associated with the North Rosamond Solar Project. This has left the site with little integrity. As a farm complex, in association with the structures that previously stood, no associations can be made between the property and events or individuals important to state or national history. The extant windrow is not unique in style or method of construction, and it is unlikely that it will yield additional data important to understanding history. Therefore, the site is not recommended eligible for

the CRHR under any criterion. Additionally, the resource lacks the ability to answer important scientific research questions, does not exhibit any special qualities (i.e. oldest, best example), and is not directly associated with a historic event or person, as such it does not qualify as a unique archaeological resource and no further consideration under CEQA is required.

P-15-018681/CA-KER-10204H (All Gen-Tie Alternatives) This structure is the Los Angeles Department of Water and Power (LADWP) Owens Gorge 230 kV transmission line. The line was built between 1950 and 1952 to link LADWP power plants in the Owens River Gorge to Receiving Station E in Toluca Lake.

The site was revisited on July 13, 2023, at the intersection of the LADWP easement and Rosamond Boulevard. The line is extant, with recent solar development to its west.

Site CA-KER-10204H is not associated with important individuals or significant events in Southern California history. Therefore, it is recommended ineligible for listing on the CRHR under criteria 1 and 2. The line alignment maintains its integrity of location but is built on standard steel suspension towers and is not indicative of a particular style or mode of craftsmanship, nor does it evidence any engineering innovations or achievements. Therefore, it is not recommended eligible for inclusion on the CRHR under Criterion 3. The alignment is not expected to answer important questions about the regional past or provide valuable information regarding regional history. Therefore, it is not recommended eligible for inclusion on the CRHR under Criterion 4 (see "Built Environment Resources" below).

P-15-020596 (All Gen-Tie Alternatives) This site is a historic access road to the SCE Big Creek Hydroelectric System Vincent 220 kV Transmission Line. The road has paved and unpaved sections and was likely built contemporaneously with the SCE Big Creek Hydroelectric System Vincent 220 kV Transmission Line, between 1925 and 1928. It was evaluated by Wendy L. Tinsley Becker of Urbana Preservation & Planning, LLC, in January 2020, who recommended it ineligible for listing on the CRHR or NRHP. The Preferred Gen-Tie Route and all alternatives run along P-15-020596 and intersect it, west of 170th Street West, roughly continuing the alignment of Rosamond Boulevard.

The unimproved access road was relocated north of the SCE Whirlwind Substation on July 12, 2023. P-15-020596 does not contain temporally diagnostic materials and it cannot be directly associated with significant events or individuals important to history. Therefore, it is not recommended eligible under criteria 1 or 2. The site does not contain artifacts or objects defined as unique or significant under CEQA. Therefore, it is not recommended eligible for inclusion on the CRHR under Criterion 3. Though subsurface items are possible, because of the recent age, the site is unlikely to yield much in terms of data that would answer significant research questions about the history of the region or provide insight into the past. Therefore, it is recommended ineligible for listing on the CRHR under Criterion 4. CEC staff agrees with both previous determinations that the resource is not eligible for the CRHR under any criteria. Additionally, the resource lacks the ability to answer important scientific research

questions, does not exhibit any special qualities (i.e. oldest, best example), and is not directly associated with a historic event or person, as such it does not qualify as a unique archaeological resource under CEQA and no further consideration under CEQA is required.

P-15-000756/CA-KER-756 (Alt-A) This site is a 200-meter-by-400-meter sparse lithic scatter of chalcedony and agate flakes with three rock ring features, first recorded in 1974 by A. V. Eggers. URS archaeologist Ben Elliot attempted to relocate the site in 2011 but was unable to find any evidence of it. In 2018, Far Western Anthropological Research Group attempted to relocate the site again but were also unsuccessful. Far Western determined that the site may not have been plotted properly by the Southern San Joaquin Valley Information Center and proposed a redefined site boundary based on Eggers' sketch map.

In 2023, WSP archaeologists attempted to relocate the site at the remapped location proposed by Far Western but did not find it. For the purposes of this project, P-15-000756 is not a historical, unique archaeological, or tribal cultural resource as defined in CEQA.

P-15-002314/CA-KER-2314 (Alt-A) This site is a sparse flake scatter originally recorded by the Cultural Resources Facility, California State University, Bakersfield in 1988. Surface recovery and analysis determined the site to be a small lithic workshop. The original recording noted that subsurface testing was not necessary. In 1995, Ann Samuelson of William Self Associates re-recorded the site during a survey of the Santa Fe Pacific Pipeline and extended the site boundary and considered the potential for subsurface material to be strong.

A portion of Samuelson's expanded site boundary, bordering Sierra Highway, was revisited by a WSP archaeologist on September 29, 2023, and no lithic materials associated with the site were identified. It appears that the site does not extend into the project area; however, if Alternative A becomes viable again, extended phase I test excavation would be necessary to confirm this.

P-15-002487/CA-KER-2487/H (Alt-B) The Santiago Spring Site, recorded by R. H. Norwood in 1989, consists of a lithic scatter with two pieces of amethyst glass, with an area of darkened soil. The spring is noted on USGS quadrangles, though no surface water was present at the time of recording. The site was never excavated or formally evaluated.

The site was revisited by WSP archaeologists on September 28, 2023. No associated flakes, glass, or darkened soil originally noted by Norwood were relocated. If plans change to use this alternative, an extended phase I test excavation would be needed to confirm the site is not in the PAA.

P-15-002572/CA-KER-2572 (Alt-B) CA-KER-2572 is a burial site consisting of a minimum of one individual with associated lithic material and projectile points. The

burial was exhumed accidentally during trenching by a resident for an addition to their home. In 1995, the site boundary was extended to the west side of State Route 14, as rhyolite flakes found on the west side of the road indicated that the site may have been impacted by construction of the highway. Testing at the site was conducted in 1997 and all surface flakes associated with the western locus were collected.

The western locus of the site was revisited by WSP archaeologists on September 28, 2023. No flakes associated with the western locus were relocated. This portion of the frontage road is paved, and a wide shoulder is graded. Though no surface remnants were found at the surveyed location, subsurface remnants may exist and due to the previously discovered burial the site is assumed to be eligible for the CRHR. If Alternative-B becomes a viable alternative more archaeological work will need to be conducted to avoid or minimize any impacts on the site.

P-15-004783/CA-KER-4424 (Alt-B) This site is a lithic scatter consisting of 18 flakes of mixed materials and a rhyolite hand drill. Testing at the site was conducted in 1997, finding no subsurface deposits. At that time all associated flakes on the surface were collected (Schmidt 2011, p. 3).

The site location was revisited by WSP archaeologists on September 28, 2023. No remnants of the site were relocated. The entire area has been graded and is used as truck parking, north of a Jack-in-the-Box restaurant. The absence of subsurface artifacts at CA-KER-4424 in 1997 and any surface evidence of the archaeological site in 2023 indicates that CA-KER-4424 is not a historical or unique archaeological resource for the purposes of CEQA.

P-15-004784/CA-KER-4425 (Alt-B) CA-KER-4425 is a small scatter of three rhyolite flakes which were collected during testing in 1997. Testing at the site found no subsurface deposit (Getchell and Atwood 1997, p. 26)

The site location was revisited by WSP archaeologists on September 28, 2023. No lithic materials associated with the site could be relocated. The area is now a wide, graded shoulder of the frontage road. The absence of subsurface artifacts at CA-KER-4425 in 1997 and any surface evidence of the archaeological site in 2023 indicates that CA-KER-4425 is not a historical or unique archaeological resource for the purposes of CEQA.

P-15-004785/CA-KER-4426H (Alt-B) This site is a large historic debris scatter consisting of beverage cans, bottle glass, cut nails, and fragments of amethyst glass. Diagnostic artifacts, including bottle bases and stamped cans, date the site to the early to mid-twentieth century. Testing at the site was conducted in 1997, did not find an intact archaeological deposit and determining the site ineligible for listing on the CRHR (Getchell and Atwood 1997, pp. 26–27).

The site was revisited and relocated by WSP archaeologists on September 28, 2023. Cans and bottle glass associated with the site begin immediately west of the graded frontage road shoulder and overlap both flat terrain and an ephemeral drainage. A

minimum of 75 historic period cans were observed, including pull tab beverage cans and matchstick filler cans, as well as three dozen pieces of historic bottle glass. Diagnostic materials, including bottle bases and Old Dutch Cleanser can lids, place the site period of use as a dump site between the 1930s and 1960s. Testing and the site record indicate that the site dates to as early as the 1910s. These earlier constituents may have been collected during extensive site testing in 1997. The site overlaps a portion of the Alternative B route.

The site is not associated with any important individuals or significant events to the history of the region and is recommended ineligible for inclusion on the CRHR under criteria 1 and 2. The constituents of the site are not considered to be unique or significant under CEQA and the site is, therefore, recommended ineligible under Criterion 3. Further testing of the site is unlikely to yield data that would answer significant research questions about the history of the region or provide insight into the past. Therefore, it is recommended ineligible for listing on the CRHR under Criterion 4. The CEC staff agrees with both the 1997 results and the current evaluation that the site is not eligible for listing on the CRHR. Additionally, the resource lacks the ability to answer important scientific research questions, does not exhibit any special qualities (i.e. oldest, best example), and is not directly associated with a historic event or person, as such it does not qualify as a unique archaeological resource under CEQA and no further consideration under CEQA is required.

P-15-018655/CA-KER-10180H (Alt-B) This site is a historic open pit mining operation containing several prospect pits, concrete footings, a slag heap, and a large refuse scatter. A license plate found within the refuse scatter dates to 1937, though other artifacts indicate that the location was the site of continuous dumping through several periods, rather than a single discrete event.

The site was revisited by WSP archaeologists on September 29, 2023. It was relocated, and areas of the slag pile appear to have been recently used for BMX biking and off-highway vehicle recreation. The site extends beyond the dirt frontage road that creates its western boundary as originally recorded and appears to have been impacted by the development of the dirt frontage road.

Without additional research and test excavation it is unknown if CA-KER-10180H contains information that would contribute to the site's eligibility. Therefore, it is assumed to be CRHR-eligible for the project and if Alternative B becomes viable, additional work will need to be conducted to properly evaluate the site.

WRESC-ALTB-HIST-SITE-1 (Alt-B) This site is a very large can scatter measuring 840 feet by 133 feet and is characterized by more than a dozen small groupings of cans scattered throughout the site, with a high-concentration locus at the center, where a minimum of 300 cans, mostly knife-opened Quaker State and Texaco oil cans dating to the 1930s, were identified with additional glass fragments and other historic-period artifacts. In addition to these archaeological deposits, a cave was observed in an exposed fanglomerate deposit to the immediate south of the site, off the Preferred Gen-

Tie Route. Modern trash was observed within the cave from a distance, but the cave was not inspected, due to safety concerns. Additional research by CEC staff determined that the cave is a mineshaft and maybe associated with the can scatter.

Because of the mounded nature of the cans and potential for subsurface constituents, if Alternative-B becomes a viable alternative, surface collection and subsurface testing will be necessary to adequately evaluate the site's eligibility for inclusion on the CRHR. For the purposes of the proposed project, the CEC staff assumes that archaeological site WRESC-ALTB-HIST-SITE-1 is a historical resource for the purposes of CEQA.

P-15-012160 (Alt-A & B) This site is originally recorded by Hudlow in 2006 as an historic-period metal barn with sliding doors and possible oil and propane tanks. Hudlow stated that the barn merits inclusion in the CRHR.

The site was revisited by WSP archaeologists on July 13, 2023. The barn is no longer extant. The possibility of encountering buried deposits during construction is possible and if Alternative A or B are selected additional work will need to be conducted before construction.

P-15-012542 (Alt-A & B) In 2007, P-15-012542 was recorded as a historic-period, single-story, gable-roofed farmhouse, built in or around the 1930s. Unique to farmhouses of this age in Antelope Valley, P-15-012542 had a full basement beneath the house. The location was revisited by WSP archaeologists on July 13, 2023. Although the house is no longer extant, the possibility of encountering buried deposits during construction is high. For the purposes of this project, the CEC staff assumes that P-15-012542 is a historical resource, as defined in CEQA. If Alternatives A or B are selected, additional archaeological work will need to be conducted before construction to determine if there are intact deposits.

P-15-012653 (Alt-A & B) In 2007, this site was recorded as a historic-period, single-story, gable-roofed house constructed in the early 1930s. The house was known as the Biscaichapy Ranch House. WSP archaeologists revisited P-15-012653 on July 13, 2023. The house has been demolished, but the concrete structure pad remains. The possibility of encountering buried deposits during construction is possible, and for that reason the CEC staff assumes that P-15-012542 is a historical resource, as defined in CEQA. If Alternatives A or B are selected, additional archaeological work will need to be conducted before construction to determine if there are intact deposits.

P-15-002753/CA-KER-2753H (Alt-C) CA-KER-2753H is a historic refuse scatter north of Sweetser Road and west of Mojave Tropico Road. The site consists of two discrete loci, one containing brown, clear, and green bottle glass and the other consisting of food and beverage cans.

The site location was revisited by WSP archaeologists in 2023, but none of the historic resources were relocated. Only modern trash, including several 5-gallon buckets, were found at the site location. If Alternative C is selected, extended phase I studies will

need to be conducted to determine if an intact deposit remains under the ground surface.

Built Environment Resources

Eighty-one built environment resources were found within the PAA of the project site or one or more of the proposed Gen-Tie line routes. Of the eighty-one, six of these resources are recommended eligible for the CRHR and therefore historical resources for the purposes of CEQA. These six are the Willow Springs International Raceway, the Rosamond Palms Motel, the Chuck Yeager house within the Prudential Mobile Home Park, the Tropico Gold Mine Historic District, and a segment of the Vincent 220 kV Transmission Line/Big Creek Hydroelectric Historic District.

Castro/Guadalupe House (Map ID 1) The Castro/Guadalupe House is a vernacular residence at 3381 168th Street, built in 1940. It is a single-story, rectangular plan residence built in a vernacular ranch style. The building has a side-gable roof with asphalt shingles and two wing additions (the northeastern wing was under construction in September 2023). The full façade front porch has a flat roof and vegetation heavily obscures both the porch and the front of the building. The supports consist of square concrete block columns. The stucco-clad exterior features replacement one-over-one vinyl sash windows (some paired) and two-part sliding vinyl windows. The southwestern wing addition has a gable roof clad in asphalt shingles with a stucco exterior.

Evaluation of Castro/Guadalupe House. According to Kern County Assessor records, the dwelling was built in 1940, just prior to World War II in the rural Rosamond vicinity. The property does not date to a significant period of local history, and it does not appear to be a distinct example of a property associated with the regional development of the Antelope Valley. Although it could represent broad patterns of residential development in rural Kern County, it is not in an area that has a cohesive pattern of history that would be considered significant. It lacks a clear connection to the development of the local communities and therefore is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. As an unadorned example of the ranch style, the property does not embody sufficient distinctive characteristics of the style, such as large picture windows, attached garages, recessed entries, and differing wall claddings. Additionally, it appears significantly altered, including modern window replacements and porch supports. Research at the Kern County Assessor's Office and online archival documentation did not reveal a record of a builder or architect for the property. Therefore, it is recommended as not eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that

furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Erwin House and Stone Ruins (Map ID 2) The Erwin House and Stone Ruins is at the northeast corner of Rosamond Boulevard and 155th Street West in Rosamond, California. It is a property consisting of a modern house and outbuildings with one stone ruin. The stone ruin is on the southwest corner of the rectangular property. It is roughly rectangular in shape with one rounded corner wall. The walls are stacked rubble stone secured with a light gray mortar. Remnants of a chimney appear on the interior eastern wall. The ruins were previously evaluated as an archaeological resource (P-15-014902).

Evaluation of Erwin House and Stone Ruins. WSP archaeologists and an architectural historian visited the recorded location of P-15-014902 on September 25, 2023, during an intensive pedestrian survey in support of the Phase I cultural resources study of the proposed WRESC. The resource was originally recorded in 2010 by Scott M. Hudlow from Hudlow Cultural Resource Associates. The site description indicated remnants of stone house, likely constructed in the 1920s or 1920s, north of Rosamond Boulevard, west of 155th Street West. During the revisit of WSP staff, the site was found with fewer extant features than previously reported in the original site recording. No evidence of association with important individuals or significant events in the region's history and is unlikely to address important research questions or provide valuable information pertaining to the development of the region. Although the property is evident of a specific style of homesteader self-sufficiency using mortared local rock as a primary construction material, the site no longer retains structural integrity or integrity of feeling or association. It is therefore recommended ineligible under all criteria for inclusion on the CRHR.

Wealand House (Map ID 3) The Wealand House is vernacular residence with a collapsed roof at 2951 127th Street West. It is a single-story, square plan, vernacular ranch style residence. The collapsed front-gable roof has asphalt shingles but is largely destroyed. The building has a concrete foundation, a stucco exterior, an offset single-leaf entry door. A curved brick stair provides access to the main entry. This dwelling was built in 1939, according to Kern County property records. Aside of from the removal of windows and loss of exterior building materials, no other alterations are evident.

Evaluation of Wealand House. According to Kern County Assessor records, the dwelling was built in 1939, just prior to the United States' entry into World War II, in the rural Rosamond vicinity. The property does not date to a significant period of local history and it does not appear to be a distinct example of a property associated with the regional development of the Antelope Valley. Although it could represent broad patterns of residential development in rural Kern County, it is not in an area that has a cohesive pattern of history that would be considered significant. It lacks a clear connection to the development of the local communities and therefore is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be

eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. This property and its ancillary buildings are constructed in a vernacular ranch style using common materials and methods seen throughout desert regions of California. As an unadorned example of the ranch style, the property does not embody sufficient distinctive characteristics of the style, such as large picture windows, attached garages, recessed entries, and differing wall claddings. Additionally, it appears significantly altered to the point that it no longer conveys its period of construction. Research at the Kern County Assessor's Office and online archival documentation, did not reveal a record of a builder or architect for the property. Therefore, it is recommended as not eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Roy House (Map ID 4) The Roy House is a modest contemporary style residential building at 3022 100th Street West in Rosamond, California. The building has a low-pitched front-gable roof clad in metal and vertical profile siding of an unknown material (possibly wood board and batten or metal). The entry door is offset to the north of a set of narrow one-over-vinyl sash windows and a three-part vinyl picture window. Two-part vinyl sliding windows appear on the north side of the building. Aerial imagery shows an extension on the south side of the building, possibly a porch, and an attached gable garage on the north. There is also one detached garage, and a small shed to the north and northwest of the residence. Trees on the property encircle the residence. This dwelling was built in 1974 according to Kern County property records. No alterations are evident.

Evaluation of Roy House. According to Kern County Assessor records, the dwelling was built in 1974, during a period of suburban development in the Rosamond vicinity. Although the property dates to a period of significance for the residential growth of the Rosamond area after World War II, it does not appear to be a distinct example of a property associated with that developmental theme. Although it does represent broad patterns of residential development in rural Kern County, it is not in an area that has a cohesive pattern of history that would be considered significant. It lacks a clear connection to the development of the local communities and therefore is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. This property and its ancillary buildings are constructed in a vernacular contemporary style using common materials and methods seen throughout desert regions of California. Aside from its low-pitched,

broad gabled roof and broad uninterrupted wall surfaces typical of the contemporary style, the property does not embody sufficient distinctive characteristics of the style, such widely overhanging eaves, windows int eh gable ends, and recessed entry. Research at the Kern County Assessor's Office and online archival documentation did not reveal a record of a builder or architect for the property. Therefore, it is recommended as not eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

2860 100th Street West (Map ID 5) The subject property (2860 100th Street West) is comprised of a one-story vernacular California ranch single-family residence on a 2.41-acre parcel. The 960 square-foot residence was built in 1940, and the property is accessible from the west via West 100th Street. Landscaping consists of naturally occurring grasses and shrubs with a planting of trees along the east of the residential structure as well as along another windbreak planting of trees along the western border of the parcel. The residence features a rectangular plan, a side-gable asphalt shingle roof with rectangular attic vents beneath each gable, a shed-pent roof extension covered entry porch with simple support columns, one-by-one vinyl sliding windows and faux divided-lite vinyl sliding windows, and stucco exterior walls. The primary entrance is a single entry-door on the north façade accessed via the covered entry porch and concrete steps leading to the door. The entrance is flanked by two windows on each side. The south façade features a single secondary entrance door with concrete steps and five windows. The west façade is not visible from the right of way. A gazebo with an asphalt shingle pyramidal roof is immediately south of the main residence and an ancillary building is southeast of the main residence. Southeast of the gazebo is a freestanding flat-roofed shelter and an accessory dwelling unit it near the northeast corner of the property. The main residence was constructed in 1940. There are no public building permits that indicate major alterations; however, upon visual inspection, the original windows have been replaced with vinyl. The concrete slab entry porch also appears to have been recently replaced.

Evaluation of 2860 100th Street West. Under Criterion 1, the subject property was evaluated for an association with significant historical events or broad patterns of history at the local, regional, state, or national level. The property lies within an unincorporated area of the Antelope Valley, a region of the Mojave Desert that has a rich history of American exploration, migration, and settlement unique to California and the high desert region during the nineteenth and early twentieth centuries. According to the Kern County Assessor's Office records, the residence was built circa 1940, which is well past the period for settlement at the regional (Antelope Valley), state (California), or local level. PaleoWest also considered whether 2860 100th Street West may be significant for an association with the theme of Community Development of the Antelope Valley, 1918–1975, and the sub-theme of Rural Residential Development of the valley. Although the residence may date to the period of significance for the theme and sub-theme, the subject property is not a rare, unique, or exemplary example of a

property associated with twentieth century community development and rural residential development of the Antelope Valley. It does provide a recognizable representation of broad patterns of residential development in the valley. Additionally, the property is within an unincorporated area of Kern County and the Antelope Valley that does not have a strong cohesive pattern of community history that would include the property's period of construction for which it might be considered historically significant. The property is near the communities of Willow Springs and Rosamond but lacks an immediate connection with the development of these communities. In summary, no direct associations between 2860 100th Street West and historically significant events or broad patterns of history at the local, region, state, or national level could be established. As such, the subject property is recommended not eligible under CRHR Criterion 1. Research was conducted to determine if the subject property is significant under Criterion 2 for associations with the lives of historically important persons who have made contributions to local, state, or national history. No direct connection to historically important individuals could be identified through historical and archival research of 2860 100th Street West. Individuals found to be associated with the property through archival research include Patrick Ladd, Knollwood Investment Capital LLC, John Rehlkau, Ralph De Leon, and Old Canal Financial. No information was uncovered to confirm these individuals or organizations resided at this property during its historic period and research did not suggest the identified individuals made important contributions to history. Historically important persons such as explorers Pedro Fages, Joseph Walker, and John C. Frémont are known to have traveled through the area and to have stopped at nearby Willow Springs, but these events happened well before the construction of the extant buildings on the subject property. Therefore, there is no direct correlation between known significant historical figures and the property. As 2860 100th Street West does not appear to be illustrative of the accomplishments of historically important persons within a local, state, or national historical context, the property is recommended not eligible under Criterion 2. To evaluate the subject property under Criterion 3, PaleoWest considered whether it embodies distinctive characteristics of a type, period, or method of construction and whether it represents the work of a master architect or possesses high artistic value. The residence and ancillary buildings at 2860 W. 100th Street are vernacular renditions of the California ranch stye which is very common to rural areas of Southern California. As an unadorned example of the California ranch style, the residence does not embody enough of the distinctive characteristics of this style to be considered an exemplary or unique iteration of a California ranch. While vernacular architecture can be considered historically significant, the residence at 2860 100th Street West is also not a distinctive, rare, or exemplary vernacular California ranch which is a common type and style throughout rural areas of Southern California. The utilitarian ancillary outbuildings are typical wooden utilitarian buildings that do not embody a specific style, nor are they a rare, distinct, or excellent iteration of a rural farm building warranting historical significance for its architecture. It should also be noted that there appears to be a secondary residential structure on this parcel, also a California ranch style; however, there is no record of this secondary residential on the Kern County Property Appraiser records and it is not clearly visible from the right of way for assessment. PaleoWest also considered

whether the subject property may be significant for an association with a master builder or architect; however, no record of a builder or architect was found through property and document search engines of the Kern County Tax Assessor's Office nor through archival research. In summary, the residence of the subject property is not a distinctive or rare example of a vernacular California ranch residence in rural Southern California and the ancillary outbuildings are also not a unique or rare example of a rural utilitarian or farm building. Additionally, neither building clearly represents or a specific period or method of construction, nor are they associated with a significant master architect or builder. As such, 2860 100th Street West is recommended not eligible under Criterion 3. The subject property is a common property type that is unlikely to provide vital information about history that is not readily available through historical and archival research. As such, the property is recommended not eligible under CRHR Criterion 4.

Longview Mobile Home Park (Map ID 6) This resource consists of part of the Longview Mobile Home Park. This parcel contains nine mobile home units and two permanent buildings. One permanent building was built circa 1965, all other buildings on the parcel were built after 1987. The 1965 residence is a modest single-story contemporary style building, rectangular in plan, with a low-pitched side-gable roof with a wide overhang clad in asphalt shingles. At the façade a single-leaf entry door is placed east of two one-over-one vinyl sash windows and west of a single window of the same type. At the east elevation, a large rectangular picture window is offset to the south. The historic dwelling on this parcel was built about 1965 according to Kern County property records. The vinyl windows appear to be non-original to the building.

Evaluation of Longview Mobile Home Park. According to Kern County Assessor records, the single historic dwelling on this parcel of the Longview Mobile Home Park was built about 1965, during a period of suburban development in the Rosamond vicinity. Although the property dates to a period of significance for the residential growth of the Rosamond area after World War II, it does not appear to be a distinct example of a property associated with that developmental theme. Although the mobile home park represents broad patterns of residential development in rural Kern County, it is not in an area that has a cohesive pattern of history that would be considered significant. The property lacks a clear connection to the development of the local communities and therefore is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II suburban development, including development of mobile home parks. The mobile home park was mostly

developed post-1985, which is outside of the period of significance for suburban development in Rosamond. The 1965 dwelling was constructed in a vernacular contemporary style using common materials and methods seen throughout desert regions of California and lacks an architectural connection to the mobile home park as a cohesive unit. Aside from its low-pitched broad gabled roof typical of the contemporary style, the property does not embody sufficient distinctive characteristics of the style, such widely overhanging eaves, windows in the gable ends, and recessed entry. Research at the Kern County Assessor's Office and online archival documentation did not reveal a record of a builder or architect for the property. Therefore, it is recommended as not eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Longview Mobile Home Park Multifamily Residence and Quonset Hut (Map ID 7) The property at 2655 95th Street West contains two dwellings that are part of the Longview Mobile Home Park. Both dwellings were built about 1965. One of the buildings on this parcel is a circa-1965 Quonset hut constructed of concrete block with a stucco exterior and characteristic curved steel roof. The southern façade has an offset solid entry door flanked by four-over-four wood sash windows with false muntins and wood trim. The east elevation contains three evenly spaced shed roof dormer windows, the central window of which has been replaced by a fixed multi-pane type. The Quonset hut dwelling on this parcel was built around 1965 according to aerial imagery. Two additions were constructed at the west elevation, both built between 1972 and 1974 (as seen on aerial imagery). The four-over-four wood sash windows appear to be modern replacements given the use of false muntins. A multi-pane single-sash window on the east elevation also appears to be a modern replacement.

Evaluation of Longview Mobile Home Park Multifamily Residence and Quonset Hut. According to aerial imagery, the Quonset hut dwelling on this parcel of the Longview Mobile Home Park was built about 1965, a period of suburban development in the Rosamond vicinity. Although the property dates to a period of significance for the residential growth of the Rosamond area after World War II, it does not appear to be a distinct example of a property associated with that developmental theme. The mobile home park as a whole represents broad patterns of residential development in rural Kern County, but it is not in an area that has a cohesive pattern of history that would be considered significant. The property lacks a clear connection to the development of the local communities and therefore is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents

the work of a master architect/builder or possesses high artistic value. The Quonset hut as an individual resource is an example of a Quonset Hut type dwelling constructed in in the rural vicinity of Rosamond. As a type, Quonset huts can be significant if they were developed by the military for the war effort or private manufacturers following World War II, and which retain the essential physical features from the type, including its semi-cylindrical shape and corrugated metal cladding. A period of significance has been established for 1941–1965 in the Los Angeles area. Although this example exhibits the distinctive characteristics of a Quonset hut-type dwelling, it was constructed at the end of the period of significance for its type and therefore is not a good example of its type. It is not clear why it was constructed in this location or if it was adaptively reused for residential purposes. Research at the Kern County Assessor's Office and online archival documentation, did not reveal a history of its construction or a record of a builder or architect for the property. Additionally, owing to window and door replacements, its material and workmanship integrity has been diminished. Therefore, it is recommended as not eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

2973 95th Street – Beatty House (Map ID 8) The subject property (2973 95th Street) is a 1.94-acre parcel featuring a one-story 1,020 square-foot vernacular California Bungalow built in 1942. The property is accessible from Rosamond Boulevard to the south and from the west via 95th Street. Landscaping consists of a predominantly cleared lawn with varieties of planted grasses, trees along the western façade of the residence, and native trees growing freely. The residence has a rectangular plan, a clay tile side-gable roof with shed extension at the south (rear), and rectangular attic vents beneath the gable peaks. There is an addition along the west façade which has a low pitch side-gable roof, faux divided-lite vinyl sliding windows, and stucco exterior walls. The primary entrance of the residence is on the north façade, recessed below a roof overhang and within a partially enclosed porch. This north façade is partially obscured from the right-of-way by vegetation, vehicles, and debris but appears to feature at least four windows. The west façade features an addition with a single window. An adjacent structure is adjoined to the main residence by a roof extension from the western addition. The east façade includes one window and a set of glass vinyl-framed sliding doors. A detached two-door garage lies northeast of the main residence and features a composite shingle front-gable roof, concrete block exterior walls, a horizontal-sliding vinyl window, and exposed rafter tails.

Evaluation of 2973 95th Street – Beatty House. Under Criterion 1, the subject property was evaluated for an association with significant historical events or broad patterns of history at the local, regional, state, or national level. The property lies in an unincorporated area of the Antelope Valley, a region of the Mojave Desert that has a rich history of American exploration, migration, and settlement unique to California and the high desert region during the nineteenth and early twentieth centuries. According to the Kern County Assessor's Office records, the residence was built about 1942, which is

well past the period for settlement at the regional (Antelope Valley), state (California), or local level. PaleoWest also considered whether 2973 95th Street may be significant for an association with the theme of Community Development of the Antelope Valley, 1918–1975, and the sub-theme of Rural Residential Development of the valley. Although the residence may date to the period of significance for the theme and sub-theme, the subject property is not a rare, unique, or exemplary example of a property associated with twentieth century community development and rural residential development of the Antelope Valley. It does provide a recognizable representation of broad patterns of residential development in the valley. Additionally, the property is within an unincorporated area of Kern County and the Antelope Valley that does not have a strong cohesive pattern of community history that would include the property's period of construction for which it might be considered historically significant. The property is near the communities of Willow Springs and Rosamond but lacks an immediate connection with the development of these communities. In summary, no direct associations between 2973 95th Street and historically significant events or broad patterns of history at the local, region, state, or national level could be established. As such, the subject property is recommended not eligible under CRHR Criterion 1. Research was conducted to determine if the subject property is significant under Criterion 2 for associations with the lives of historically important persons who have made contributions to local, state, or national history. No direct connection to historically important individuals could be identified through historical and archival research of 2973 95th Street. Individuals found to be associated with the property through archival research include Ronald Smillie, Gilberto Navarez, Vicky Gale Carrer, Dixie Noel, and Douglas Arnold Middleton. No information was uncovered to confirm these individuals resided at 2973 95th Street during its historic period and research did not suggest the identified individuals made important contributions to history. Historically important persons such as explorers Pedro Fages, Joseph Walker, and John C. Frémont are known to have traveled through the area and to have stopped at nearby Willow Springs, but these events happened well before the construction of the extant buildings on the subject property. Therefore, there is no direct correlation between known significant historical figures and the property. As 2973 95th Street does not appear to be illustrative of the accomplishments of historically important persons within a local, state, or national historical context, the property is recommended not eligible under Criterion 2. To evaluate the subject property under Criterion 3, PaleoWest considered whether it embodies distinctive characteristics of a type, period, or method of construction and whether it represents the work of a master architect or possesses high artistic value. The residence and detached garage building at 2973 95th Street is a vernacular rendition of the California ranch stye which is very common to rural areas of Southern California. As an unadorned example of the California ranch style, the property residence does not embody enough of the distinctive characteristics of this style to be considered an exemplary or unique iteration of a California ranch. While vernacular architecture can be considered historically significant, the residence at 2973 95th Street is also not a distinctive, rare, or exemplary vernacular California ranch which is a common type and style throughout rural areas of Southern California. The detached garage and utilitarian outbuilding are typical wooden utilitarian buildings that

do not embody a specific style, nor are they a rare, distinct, or excellent iteration of a rural farm building warranting historical significance for its architecture. PaleoWest also considered whether the subject property may be significant for an association with a master builder or architect; however, no record of a builder or architect was found through property and document search engines of the Kern County Tax Assessor's Office nor through archival research. In summary, the residence of the subject property is not a distinctive or rare example of a vernacular California ranch residence in rural Southern California and the ancillary barn is also not a unique or rare example of a rural utilitarian barn or farm building. Additionally, neither building clearly represents or a specific period or method of construction, nor are they associated with a significant master architect or builder. As such, 2973 95th Street is recommended not eligible under Criterion 3. The subject property is a common property type that is unlikely to provide vital information about history that is not readily available through historical and archival research. As such, the property is recommended not eligible under CRHR Criterion 4.

9714 Rosamond Boulevard – Noel House (Map ID 9) The subject property (9714 Rosamond Boulevard) is a one-story vernacular California ranch single-family residence of 828 square feet. The residence was built in 1919 and is on a 2.26-acre parcel. The property is accessible from the south via Rosamond Boulevard and east from an unnamed adjacent dirt road. Landscaping consists of native trees, shrubs, and grasses growing freely across the property. The residence has a rectangular plan that is oriented north-south with a front-gable composite shingle roof, rectangular attic vents beneath the gables, horizontal sliding vinyl windows covered with exterior screens, and tan stucco exterior walls. The entryway is on the south façade and consists of a single fiberglass entry-door behind an exterior screen door. The entrance is accessed via concrete steps and a ramp. The west façade features two windows and a side-entry door covered by an additional exterior screen door. The east façade features two windows. The residence also has a rear addition with shed pent roof extension. Windows have been updated to vinyl and cladding is updated post-World War II replacement stucco.

Evaluation of 9714 Rosamond Boulevard – Noel House. Under Criterion 1, the subject property was evaluated for an association with significant historical events or broad patterns of history at the local, regional, state, or national level. The property lies within an unincorporated area of the Antelope Valley, a region of the Mojave Desert that has a rich history of American exploration, migration, and settlement unique to California and the high desert region during the nineteenth and early twentieth centuries. According to the Kern County Property Appraiser records 9714 Rosamond Boulevard was built in 1919, which suggests the residence may be significant for an association with the theme of Community Development of the Antelope Valley, 1918–1975, and the sub-theme of Rural Residential Development of the valley. Although the residence and outbuilding may date to the period of significance for the theme and sub-theme, the subject property is not a rare, unique, or exemplary example of a property associated with twentieth century community development and rural residential

development of the Antelope Valley. It does not provide a recognizable representation of broad patterns of residential development in the valley. Additionally, the property is within an unincorporated area of Kern County and the Antelope Valley that does not have a strong cohesive pattern of community history that would include the property's period of construction for which it might be considered historically significant. The property is near the communities of Willow Springs and Rosamond but lacks an immediate connection with the development of these communities. In summary, no direct associations between 9714 Rosamond Boulevard and historically significant events or broad patterns of history at the local, region, state, or national level could be established. As such, the subject property is recommended not eligible under CRHR Criterion 1. Research was conducted to determine if the subject property is significant under Criterion 2 for associations with the lives of historically important persons who have made contributions to local, state, or national history. No direct connection to historically important individuals could be identified through historical and archival research of 9714 Rosamond Boulevard. Individuals found to be associated with the property through archival research include Dixie Lee Noel and Roy Leo Noel. No information was uncovered to confirm these individuals resided at 9714 Rosamond Boulevard during its historic period and research did not suggest the identified individuals made important contributions to history. Historically important persons such as explorers Pedro Fages, Joseph Walker, and John C. Frémont are known to have traveled through the area and to have stopped at nearby Willow Springs, but these events happened well before the construction of the extant buildings on the subject property. Therefore, there is no direct correlation between known significant historical figures and the property. As 9714 Rosamond Boulevard does not appear to be illustrative of the accomplishments of historically important persons within a local, state, or national historical context, the property is recommended not eligible under Criterion 2. To evaluate the subject property under Criterion 3, PaleoWest considered whether it embodies distinctive characteristics of a type, period, or method of construction and whether it represents the work of a master architect or possesses high artistic value. The residence, not including the modern utilitarian shed type outbuilding, at 9714 Rosamond Boulevard is a vernacular rendition of the California ranch type which is very common to rural areas of Southern California. As an unadorned example of the California ranch type, the property residence does not embody enough of the distinctive characteristics of this style to be considered an exemplary or unique iteration of a California ranch. While vernacular architecture can be considered historically significant, the residence at 9714 Rosamond Boulevard is also not a distinctive, rare, or exemplary vernacular California ranch which is a common type and style throughout rural areas of Southern California. The ancillary barn is a typical wooden utilitarian barn that does not embody a specific style, nor is it a rare, distinct, or excellent iteration of a rural farm building warranting historical significance for its architecture. PaleoWest also considered whether the subject property may be significant for an association with a master builder or architect; however, no record of a builder or architect was found through property and document search engines of the Kern County Tax Assessor's Office nor through archival research. In summary, the residence of the subject property is not a distinctive or rare example of a vernacular California ranch residence in rural Southern California

and the ancillary modern shed is also not a unique or rare example of a rural utilitarian farm building. Additionally, neither building clearly represents or a specific period or method of construction, nor are they associated with a significant master architect or builder. As such, 9714 Rosamond Boulevard is recommended not eligible under Criterion 3. The subject property is a common property type that is unlikely to provide vital information about history that is not readily available through historical and archival research. As such, the property is recommended not eligible under CRHR Criterion 4.

9668 Rosamond Boulevard – Henshall House (Map ID 10) The subject property (9668 Rosamond Boulevard) is a one-story vernacular California bungalow of 744 square feet. The single-family residence was built in 1921 and sits on a 0.49-acre parcel. The property is accessible from the south via Rosamond Boulevard. Landscaping is informal and consists of native trees, shrubs, and grasses growing freely throughout the property. The residence has a rectangular plan and front gable roof with a small rear addition and enclosed entry porch addition. The rear addition has a shed roof, and the enclosed porch has a hipped roof. Other features include a composite shingle roofing, rectangular attic vents, one-by-one vinyl horizontal sliding windows of varying size, and exterior walls which are clad in stucco and modular metal. The primary entrance is on the north façade and consists of a single vinyl entry door with concrete steps. The west and east façades each have two windows. There are multiple ancillary buildings south of the main residence. At least three ancillary buildings in varying states of disrepair are visible from the right-of-way. No public record of building permits was located, but replacement vinyl windows have been installed, and the original cladding has been replaced with post-World War II concrete-based stucco. Based on the region and building type, it is likely the original cladding was also stucco.

Evaluation of 9668 Rosamond Boulevard – Henshall House. Under Criterion 1, the subject property was evaluated for an association with significant historical events or broad patterns of history at the local, regional, state, or national level. The property lies within an unincorporated area of the Antelope Valley, a region of the Mojave Desert that has a rich history of American exploration, migration, and settlement unique to California and the high desert region during the nineteenth and early twentieth centuries. According to the Kern County Assessor's Office records, the residence was built in 1921, which is past the period for settlement at the regional (Antelope Valley), state (California), or local level. PaleoWest also considered whether 9668 Rosamond Boulevard may be significant for an association with the theme of Community Development of the Antelope Valley, 1918–1975, and the sub-theme of Rural Residential Development of the valley. Although the residence may date to the period of significance for the theme and sub-theme, the subject property is not a rare, unique, or exemplary example of a property associated with twentieth century community development and rural residential development of the Antelope Valley. It does provide a recognizable representation of broad patterns of residential development in the valley. Additionally, the property is within an unincorporated area of Kern County and the Antelope Valley that does not have a strong cohesive pattern of community history that

would include the property's period of construction for which it might be considered historically significant. The property is near the communities of Willow Springs and Rosamond but lacks an immediate connection with the development of these communities. In summary, no direct associations between 9668 Rosamond Boulevard and historically significant events or broad patterns of history at the local, region, state, or national level could be established. As such, the subject property is recommended not eligible under CRHR Criterion 1. Research was conducted to determine if the subject property is significant under Criterion 2 for associations with the lives of historically important persons who have made contributions to local, state, or national history. No direct connection to historically important individuals could be identified through historical and archival research of 9668 Rosamond Boulevard. Individuals found to be associated with the property through archival research include Ronald Smillie, Gilberto Navarez, Vicky Gale Carrer, Dixie Noel, and Douglas Arnold Middleton. No information was uncovered to confirm these individuals resided at 9668 Rosamond Boulevard during its historic period and research did not suggest the identified individuals made important contributions to history. Historically important persons such as explorers Pedro Fages, Joseph Walker, and John C. Frémont are known to have traveled through the area and to have stopped at nearby Willow Springs, but these events happened well before the construction of the extant buildings on the subject property. Therefore, there is no direct correlation between known significant historical figures and the property. As 9668 Rosamond Boulevard does not appear to be illustrative of the accomplishments of historically important persons within a local, state, or national historical context, the property is recommended not eligible under Criterion 2. To evaluate the subject property under Criterion 3, PaleoWest considered whether it embodies distinctive characteristics of a type, period, or method of construction and whether it represents the work of a master architect or possesses high artistic value. The residence at 9668 Rosamond Boulevard is a vernacular rendition of the California Bungalow stye which is very common to rural areas of Southern California. As an unadorned example of the California Bungalow style, the property residence does not embody enough of the distinctive characteristics of this style to be considered an exemplary or unique iteration of a California Bungalow. While vernacular architecture can be considered historically significant, the residence at 9668 Rosamond Boulevard is also not a distinctive, rare, or exemplary vernacular California Bungalow which is a common type and style throughout rural areas of Southern California. The utilitarian outbuildings are typical wooden utilitarian buildings that do not embody a specific style, nor are they a rare, distinct, or excellent iteration of a rural farm building warranting historical significance for its architecture. PaleoWest also considered whether the subject property may be significant for an association with a master builder or architect; however, no record of a builder or architect was found through property and document search engines of the Kern County Tax Assessor's Office nor through archival research. In summary, the residence of the subject property is not a distinctive or rare example of a vernacular California Bungalow residence in rural Southern California and the ancillary barn is also not a unique or rare example of a rural utilitarian barn or farm building. Additionally, neither building clearly represents or a specific period or method of construction, nor are they associated with a significant master architect or builder. As such, 9668

Rosamond Boulevard is recommended not eligible under Criterion 3. The subject property is a common property type that is unlikely to provide vital information about history that is not readily available through historical and archival research. As such, the property is recommended not eligible under CRHR Criterion 4.

9650 W. Rosamond Boulevard – Holton House (Map ID 11) The subject property (9650 W. Rosamond Boulevard) is a one-story vernacular California ranch of 1,176 square feet on a 1.47-acre parcel. The single-family residence was built in 1952. The property is accessible from the south via W. Rosamond Boulevard. Landscaping consists of a planted row of shrubs along the chain-link fence facing W. Rosamond Boulevard along with a large oak tree within the front yard near the northern property boundary. Other smaller trees and shrubs grow freely across the property. The residence has a rectangular plan, a composite shingle jerkinhead roof with rectangular attic vents below the eaves on the east and west façades, faux-divided lite vinyl sliding windows, a small metal chimney stack extending from the central peak of the roof, and exterior stucco walls. The primary entrance is on the north façade and consists of a single entry-door beneath a roof overhang, concrete steps, and a metal exterior security door. The north façade features five windows and rectangular foundation vents. The east façade features two windows, and the west façade features a window and a single secondary entry door with concrete steps.

Evaluation of 9650 W. Rosamond Boulevard – Holton House. Under Criterion 1, the subject property was evaluated for an association with significant historical events or broad patterns of history at the local, regional, state, or national level. The property lies within an unincorporated area of the Antelope Valley, a region of the Mojave Desert that has a rich history of American exploration, migration, and settlement unique to California and the high desert region during the nineteenth and early twentieth centuries. According to the Kern County Assessor's Office records, the residence was built in 1952, which is well past the period for settlement at the regional (Antelope Valley), state (California), or local level. PaleoWest also considered whether 9650 W. Rosamond Boulevard may be significant for an association with the theme of Community Development of the Antelope Valley, 1918–1975, and the sub-theme of Rural Residential Development of the valley. Although the residence may date to the period of significance for the theme and sub-theme, the subject property is not a rare, unique, or exemplary example of a property associated with twentieth century community development and rural residential development of the Antelope Valley. It does provide a recognizable representation of broad patterns of residential development in the valley. Additionally, the property is in an unincorporated area of Kern County and the Antelope Valley that does not have a strong cohesive pattern of community history that would include the property's period of construction for which it might be considered historically significant. The property is near the communities of Willow Springs and Rosamond but lacks an immediate connection with the development of these communities. In summary, no direct associations between 9650 W. Rosamond Boulevard and historically significant events or broad patterns of history at the local, region, state, or national level could be established. As such, the subject property is

recommended not eligible under CRHR Criterion 1. Research was conducted to determine if the subject property is significant under Criterion 2 for associations with the lives of historically important persons who have made contributions to local, state, or national history. No direct connection to historically important individuals could be identified through historical and archival research of 9650 W. Rosamond Boulevard. Individuals found to be associated with the property through archival research include Dominga Moreno, Lydia Holton, and Michael Moreno. No information was uncovered to confirm these individuals resided at 9650 W. Rosamond Boulevard during its historic period and research did not suggest the identified individuals made important contributions to history. Historically important persons such as explorers Pedro Fages, Joseph Walker, and John C. Frémont are known to have traveled through the area and to have stopped at nearby Willow Springs, but these events happened well before the construction of the extant buildings on the subject property. Therefore, there is no direct correlation between known significant historical figures and the property. As 9650 Rosamond Boulevard does not appear to be illustrative of the accomplishments of historically important persons within a local, state, or national historical context, the property is recommended not eligible under Criterion 2. To evaluate the subject property under Criterion 3, PaleoWest considered whether it embodies distinctive characteristics of a type, period, or method of construction and whether it represents the work of a master architect or possesses high artistic value. The residence at 9650 W. Rosamond Boulevard is a vernacular rendition of the California ranch style which is very common to rural areas of Southern California. As an unadorned example of the California ranch style, the property residence does not embody enough of the distinctive characteristics of this style to be considered an exemplary or unique iteration of a California ranch. While vernacular architecture can be considered historically significant, the residence at 9650 W. Rosamond Boulevard is also not a distinctive, rare, or exemplary vernacular California ranch which is a common type and style throughout rural areas of Southern California. PaleoWest also considered whether the subject property may be significant for an association with a master builder or architect; however, no record of a builder or architect was found through property and document search engines of the Kern County Tax Assessor's Office nor through archival research. In summary, the residence of the subject property is not a distinctive or rare example of a vernacular California ranch residence in rural Southern California and the ancillary barn is also not a unique or rare example of a rural utilitarian barn or farm building. Additionally, neither building clearly represents or a specific period or method of construction, nor is it associated with a significant master architect or builder. As such, 9650 W. Rosamond Boulevard is recommended not eligible under Criterion 3. The subject property is a common property type that is unlikely to provide vital information about history that is not readily available through historical and archival research. As such, the property is recommended not eligible under CRHR Criterion 4.

9580 W. Rosamond Boulevard – De La Rosa House (Map ID 12) The subject property (9580 W. Rosamond Boulevard) comprises 1.94 acres and features a one-story vernacular Minimal Traditional style single-family residence built in 1955. The property is accessible from W. Rosamond Boulevard to the south. Landscaping is minimal. Much

of the landscape is open loose sandy soil with an area of hardscaping and intermittent grasses. There are small trees planted adjacent to the residence on each side. The residence has a rectangular plan, a composite shingle hipped roof, a carport with a flat roof extension on the east façade, a tall metal chimney pipe extending from the north-facing roof slope, windows of an unknown type covered in dark screen, and exterior stucco walls. The parcel is surrounded by tall privacy fencing with intermittent plastic paneling to obscure the property from view from the right-of-way, making documentation and assessment difficult. There is a wooden lattice projection which obscures much of the north façade.

Evaluation of 9580 W. Rosamond Boulevard – De La Rosa House. Under Criterion 1, the subject property was evaluated for an association with significant historical events or broad patterns of history at the local, regional, state, or national level. The property lies within an unincorporated area of the Antelope Valley, a region of the Mojave Desert that has a rich history of American exploration, migration, and settlement unique to California and the high desert region during the nineteenth and early twentieth centuries. According to the Kern County Assessor's Office records, the residence was built in 1955, which is well past the period for settlement at the regional (Antelope Valley), state (California), or local level. PaleoWest also considered whether 9580 W. Rosamond Boulevard may be significant for an association with the theme of Community Development of the Antelope Valley, 1918–1975, and the sub-theme of Rural Residential Development of the valley. Although the residence may date to the period of significance for the theme and sub-theme, the subject property is not a rare, unique, or exemplary example of a property associated with twentieth century community development and rural residential development of the Antelope Valley. It does provide a recognizable representation of broad patterns of residential development in the valley. Additionally, the property is in an unincorporated area of Kern County and the Antelope Valley that does not have a strong cohesive pattern of community history that would include the property's period of construction for which it might be considered historically significant. The property is near the communities of Willow Springs and Rosamond but lacks an immediate connection with the development of these communities. In summary, no direct associations between 9580 W. Rosamond Boulevard and historically significant events or broad patterns of history at the local, region, state, or national level could be established. As such, the subject property is recommended not eligible under CRHR Criterion 1. Research was conducted to determine if the subject property is significant under Criterion 2 for associations with the lives of historically important persons who have made contributions to local, state, or national history. No direct connection to historically important individuals could be identified through historical and archival research of 9580 W. Rosamond Boulevard. Individuals found to be associated with the property through archival research includes Reinaldo De La Rosa. No information was uncovered to confirm this individual resided at 9580 W. Rosamond Boulevard during its historic period and research did not suggest the identified individuals made important contributions to history. Historically important persons such as explorers Pedro Fages, Joseph Walker, and John C. Frémont are known to have traveled through the area and to have stopped at nearby Willow Springs, but

these events happened well before the construction of the extant buildings on the subject property. Therefore, there is no direct correlation between known significant historical figures and the property. As 9580 W. Rosamond Boulevard does not appear to be illustrative of the accomplishments of historically important persons within a local, state, or national historical context, the property is recommended not eligible under Criterion 2. To evaluate the subject property under Criterion 3, PaleoWest considered whether it embodies distinctive characteristics of a type, period, or method of construction and whether it represents the work of a master architect or possesses high artistic value. The residence at 9580 W. Rosamond Boulevard is a vernacular rendition of a California ranch residence. As an unadorned example of a vernacular California ranch, the property's residence does not embody enough of the distinctive characteristics of this style to be considered an exemplary or unique iteration of a vernacular California ranch. While vernacular architecture can be considered historically significant, the residence at 9580 W. Rosamond Boulevard is also not a distinctive, rare, or exemplary vernacular California ranch which is a common type and style throughout rural areas of Southern California. The utilitarian outbuildings are typical wooden utilitarian buildings that do not embody a specific style, nor are they a rare, distinct, or excellent iteration of a rural farm building warranting historical significance for its architecture. PaleoWest also considered whether the subject property may be significant for an association with a master builder or architect; however, no record of a builder or architect was found through property and document search engines of the Kern County Tax Assessor's Office nor through archival research. In summary, the residence of the subject property is not a distinctive or rare example of a vernacular California ranch residence in rural Southern California and the ancillary barn is also not a unique or rare example of a rural utilitarian barn or farm building. Additionally, neither building clearly represents or a specific period or method of construction, nor are they associated with a significant master architect or builder. As such, 9580 W. Rosamond Boulevard is recommended not eligible under Criterion 3. The subject property is a common property type that is unlikely to provide vital information about history that is not readily available through historical and archival research. As such, the property is recommended not eligible under CRHR Criterion 4.

9009 W. Rosamond Boulevard – Tabitha's Place (Map ID 13) The subject property comprises a 9.02-acre parcel featuring a one-story vernacular ranch type single-family residence (first residence) built in 1959, two concrete block ancillary buildings of unknown use, a one-story commercial building that is not in use, and a second residence built about 2005. The property is accessible from W. Rosamond Boulevard to the south and 90th Avenue West to the east. Landscaping consists of native trees, shrubs, and grasses growing freely across the property with windbreak plantings of trees along the southern property border and to the east of the residence. The 1,237 square-foot main residence has an L-shaped plan, a cross-gable composite shingle roof, an exterior masonry chimney on the west façade, faux divided-lite vinyl sliding windows with decorative wood shutters, and yellow-painted concrete block exterior walls. The south façade features the main entrance and an open porch with vinyl-clad support columns. There are two ancillary concrete block outbuildings with

low-pitch side-gable metal roofs near the main residence. A rectangular plan one-story commercial building, that once operated as a gas station, is at the southeast corner of the parcel. The gas station has stucco and brick veneer cladding, metal security screen covered doors and windows, and an irregular form roof of gray asphalt shingle and wood plank. An asphalt parking lot surrounds the gas station.

Evaluation of 9009 W. Rosamond Boulevard. Under Criterion 1, the subject property was evaluated for an association with significant historical events or broad patterns of history at the local, regional, state, or national level. The property lies within an unincorporated area of the Antelope Valley, a region of the Mojave Desert that has a rich history of American exploration, migration, and settlement unique to California and the high desert region during the nineteenth and early twentieth centuries. According to the Kern County Assessor's Office records, the residence was built in 1959, which is well past the period for settlement at the regional (Antelope Valley), state (California), or local level. PaleoWest also considered whether 9009 W. Rosamond Boulevard may be significant for an association with the theme of Community Development of the Antelope Valley, 1918–1975, and the sub-theme of Rural Residential Development of the valley. Although the residence may date to the period of significance for the theme and sub-theme, the subject property is not a rare, unique, or exemplary example of a property associated with twentieth century community development and rural residential development of the Antelope Valley. It does provide a recognizable representation of broad patterns of residential development in the valley. Additionally, the property is in an unincorporated area of Kern County and the Antelope Valley that does not have a strong cohesive pattern of community history that would include the property's period of construction for which it might be considered historically significant. The property is near the communities of Willow Springs and Rosamond but lacks an immediate connection with the development of these communities. In summary, no direct associations between 9009 W. Rosamond Boulevard and historically significant events or broad patterns of history at the local, region, state, or national level could be established. As such, the subject property is recommended not eligible under CRHR Criterion 1. Research was conducted to determine if the subject property is significant under Criterion 2 for associations with the lives of historically important persons who have made contributions to local, state, or national history. No direct connection to historically important individuals could be identified through historical and archival research of 909 W. Rosamond Boulevard. Individuals found to be associated with the property through archival research include Ronald Smillie, Gilberto Navarez, Vicky Gale Carrer, Dixie Noel, and Douglas Arnold Middleton. No information was uncovered to confirm these individuals resided at 9009 W. Rosamond Boulevard during its historic period and research did not suggest the identified individuals made important contributions to history. Historically important persons such as explorers Pedro Fages, Joseph Walker, and John C. Frémont are known to have traveled through the area and to have stopped at nearby Willow Springs, but these events happened well before the construction of the extant buildings on the subject property. Therefore, there is no direct correlation between known significant historical figures and the property. As 9009 W. Rosamond Boulevard does not appear to be illustrative of the accomplishments of

historically important persons within a local, state, or national historical context, the property is recommended not eligible under Criterion 2. To evaluate the subject property under Criterion 3, PaleoWest considered whether it embodies distinctive characteristics of a type, period, or method of construction and whether it represents the work of a master architect or possesses high artistic value. The residence at 9009 W. Rosamond Boulevard is a vernacular rendition of the California ranch style which is very common to rural areas of Southern California. As an unadorned example of the California ranch style, the property residence does not embody enough of the distinctive characteristics of this style to be considered an exemplary or unique iteration of a California ranch. While vernacular architecture can be considered historically significant, the residence at 9009 W. Rosamond Boulevard is also not a distinctive, rare, or exemplary vernacular California ranch which is a common type and style throughout rural areas of Southern California. The utilitarian outbuildings are typical wooden utilitarian buildings that do not embody a specific style, nor are they a rare, distinct, or excellent iteration of a rural farm building warranting historical significance for its architecture. PaleoWest also considered whether the subject property may be significant for an association with a master builder or architect; however, no record of a builder or architect was found through property and document search engines of the Kern County Tax Assessor's Office nor through archival research. In summary, the residence of the subject property is not a distinctive or rare example of a vernacular California ranch residence in rural Southern California and the modern commercial building (gas station) on the property is not an exemplary sample of commercial design or construction. It should also be noted that there are two additional age eligible utilitarian outbuildings on the property which are of a vernacular masonry design which are not exemplary samples of vernacular ancillary building design. Additionally, none of the buildings clearly represents or a specific period or method of construction, nor are they associated with a significant master architect or builder. As such, 9009 W. Rosamond Boulevard is recommended not eligible under Criterion 3. The subject property is a common property type that is unlikely to provide vital information about history that is not readily available through historical and archival research. As such, the property is recommended not eligible under CRHR Criterion 4.

3045 90th Street West – High Desert Cellars (Map ID 14) The subject property (3045 90th Street West) is a one-story vernacular Spanish Revival commercial building on a 9.68-acre parcel accessible from the east via 90th Street West. The building was built in 1956, is 3,050 square feet, and features an asphalt parking lot to the east and south. Other landscape features include a grass fenced-in lawn area north and west of the building partially lined with trees. Grasses, trees, and shrubs grow freely throughout the parcel, which is surrounded by separate chain-link fencing, excluding the eastern commercially developed portion of the property. The subject building has a rectangular plan, a flat built-up roof, stucco cladding, and a wall of steel-framed fixed windows and two steel-frame glass entrance doors on the east (primary) façade. A narrow flat-roofed blind arcade projection extends from the east façade, giving the window wall and glass doors a recessed appearance. The windows and doors of the east façade are barred with steel exterior security bars. The south and north façades lack windows and

secondary entry doors. Aerial photos from 2020 show at least two small ancillary buildings along the north property boundary and set back approximately 800 feet from 90th Street West. The use of the ancillary buildings is unclear, but they appear to be small rectangular stucco structures.

Evaluation of 3045 90th Street West – High Desert Cellars. Under Criterion 1, the subject property was evaluated for an association with significant historical events or broad patterns of history at the local, regional, state, or national level. The property lies just outside of Willow Springs a former resort community in Southern California. PaleoWest also considered whether 3045 90th Street West may be significant for an association with the theme of Community Development. Although this commercial property may date to the period of significance for the theme, the subject property is not a rare, unique, or exemplary example of a property associated with twentieth century community development. The property is near the communities of Willow Springs and Rosamond but lacks an immediate connection with the development of these communities. Thus, there is no direct association between 3045 90th Street West and historically significant events or broad patterns of history at the local, region, state, or national level could be established. As such, the subject property is recommended not eligible under CRHR Criterion 1. Under Criterion 2, the subject property was evaluated for associations with the lives of historically important persons who have made contributions to local, state, or national history. No direct connection to historically important individuals could be identified. Therefore, there is no direct correlation between any known significant historical figures and the property. 3045 90th Street West is recommended not eligible under Criterion 2. To evaluate the subject property under Criterion 3, PaleoWest considered whether it embodies distinctive characteristics of a type, period, or method of construction and whether it represents the work of a master architect or possesses high artistic value. The building at 3045 90th Street West is a one-story vernacular Spanish Revival commercial building, which is very common to Southern California. As an unadorned example of the Spanish Revival style, this commercial property does not embody enough of the distinctive characteristics of this style to be considered exemplary or unique. While vernacular architecture can be considered historically significant, the commercial building at 3045 90th Street West is not a distinctive, rare, or exemplary vernacular Spanish Revival. The building does not clearly represent a specific period or method of construction, nor is it associated with a significant master architect or builder. As such, 3045 90th Street West is recommended not eligible under Criterion 3. The subject property at 3045 90th Street West is a common property type that is unlikely to provide vital information about history that is not readily available through historical and archival research. As such, the property is recommended not eligible under CRHR Criterion 4.

Mullings House (Map ID 15) The Mullings House is a one-story, wood frame ranch style residential building. It has a cross-gable roof clad in asphalt shingles and a metal chimney pipe. The building has stucco siding and horizontal sliding vinyl windows and picture windows made of vinyl. There is also a small, one-story residence with a shallow gable roof, horizontal sliders, and an integrated carport, and a long, rectilinear machine

shop clad in stucco. This dwelling was built in 1944, according to Kern County property records. Except for the removal of windows and loss of exterior building materials, no other alterations are evident. Alterations include replacement of all windows with modern vinyl sliding types at an unknown date. The condition of the exterior stucco finish also appears to have been recently completed. It is unknown what the original cladding was. The secondary dwelling appears to be of modern construction based on its construction materials and form. The machine shop appears less altered than the primary dwelling, although most windows have been replaced as well as exterior doors. Two multi-pane metal windows appear to remain intact on the north elevation.

Evaluation of Mullings House. According to Kern County Assessor records, the dwelling was constructed in 1944, just after World War II in the rural Rosamond vicinity. Although the property dates to a significant period of history locally, it does not appear to be a distinct example of a property associated with the regional development of the Antelope Valley following World War II. Although it represents broad patterns of residential development in rural Kern County, it is not in an area that has a cohesive pattern of history that would be considered significant. It lacks a clear connection to the development of the local communities and therefore is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II suburban development. This property and its ancillary buildings are constructed in a vernacular ranch style using common materials and methods seen throughout desert regions of California. As an unadorned example of the ranch style, the property does not embody sufficient distinctive characteristics of the style, such as large picture windows, attached garages, recessed entries, and differing wall claddings. Additionally, it appears altered to the point that it no longer conveys its period of construction. Research at the Kern County Assessor's Office and online archival documentation, did not reveal a record of a builder or architect for the property. Therefore, it is recommended as not eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Willow Springs International Raceway (Map ID 16) Willow Springs International Raceway is a 600-acre facility consisting of a 2.5-mile, nine-turn racing circuit. The complex includes seven facilities: The Willow Springs Raceway; Streets of Willow Springs Walt James Stadium, Willow Springs Speedway Willow Springs Kart Track, The

Balcony, Horse Thief Mile, and roughly 160 acres of off-road mountainous terrain. No alterations are known to have been made to the 1953 raceway. All buildings and structures on the property are modern and were constructed after approximately 1980.

Evaluation of Willow Springs International Raceway. The raceway was built in 1953, during a period of local residential and commercial development following World War II. Historic research revealed that the development of the raceway motivated infrastructure development in its immediate surroundings intended to support a growing population. Although the new developed land did not fill with residents, the raceway became a mainstay in the community. In addition to its associations with the development of the Willow Springs community in the early 1950s, the property was also the first road racing track constructed and used in the United States. It was developed as a long, winding track with varied topography rather than a graded oval as had been using to this point for car racing. As other road raceways disappeared, the Willow Springs Raceway remained. Therefore, the property is recommended as eligible under CRHR Criterion 1 for its significant associations with the development of Willow Springs in the early 1950s and its pioneering design. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research revealed two property owners between 1953 and the 1990s: Harold Mathewson and Bill Huth. Although both owners were critical to the development of the raceway, their contributions associated with the history of the Willow Springs Raceway do not rise to a level of importance that warrants listing in the CRHR. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The raceway holds potential significance as a representation of a distinctive design, the first of its kind in the U.S. and patterned after European racing traditions; however, no documentary evidence could be found on the intent or specifics of the design and therefore its significance could not be evaluated. Additionally, research at the Kern County Assessor's Office and online archival documentation, did not reveal a record of a builder or architect for the property. Therefore, it is recommended as not eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is recommended as not eligible under CRHR Criterion 4.

Huth House (Map ID 17) The Huth House is a single-family ranch-style house at 3468 80th Street in Rosamond, California. It is a single-story building with a rectangular plan, a side-gable roof clad in asphalt shingles, and a long roof ridge running parallel to the road. The partial-width shed roof porch is supported by narrow wood posts and covers a single-leaf main entry door flanked by two large, partial picture windows. A third window south of the entry could not be identified. This dwelling was built about 1975 based on aerial imagery review. Apparent alterations include the installation of a second façade entry door and possible window replacements at an unknown date.

Evaluation of Huth House. Based on review of aerial imagery, the dwelling was built about 1975, during a period of suburban development in the Rosamond vicinity. Although the property dates to a period of significance for the residential growth of the Rosamond area after World War II, it does not appear to be a distinct example of a property associated with that developmental theme. Although it represents broad patterns of residential development in rural Kern County, it is not in an area that has a cohesive pattern of history that would be considered significant. It lacks a clear connection to the development of the local communities and therefore is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Given the current property owner (Huth) and proximity to the Willow Springs Raceway, this property may be associated with a historic owner of the adjacent Willow Springs International Raceway, Bill Huth. Bill Huth owned and operated the raceway beginning in 1962 until his passing in 2023. The raceway remains under the ownership of the Huth family. During his ownership, the raceway grew to popularity and was recognized a California Point of Historical Interest in 1996 as the first road raceway in the county. Huth's contributions to racing, however, are exemplified at the Willow Springs Raceway, not a private residence. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II suburban development. This property and its ancillary buildings are constructed in a vernacular ranch style using common materials and methods seen throughout desert regions of California. It does not appear to be associated with ranching, mining, or agricultural activity in rural Willow Springs. Aside from its long, low-pitched broad gabled roof and picture window typical of the ranch style, the property does not embody sufficient distinctive characteristics of the style, such widely overhanging eaves, attached garage, multiple wall surfaces, and recessed entry. Research at the Kern County Assessor's Office and online archival documentation, did not reveal a record of a builder or architect for the property. Therefore, it is recommended as not eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Mercado House (Map ID 18) The property at 3259 46th Street West was built in 1970 and is a one-story, rectilinear plan, wood frame ranch residence. The property is covered by a metal gable with exposed eave rafters and rests on a cinderblock foundation. The exterior is comprised of composite siding and vinyl replacement fenestration predominately consisting of horizontal sliders with a bay window on the east elevation. The south elevation features a full-length, shallow, overhanging roof on wood king posts and a masonry deck with wood rails. The property is on a rectangular parcel ringed by a metal fence with gated access, shrubs, and trees. Two small sheds

are sited west of the property. Apparent alterations include the replacement vinyl windows installed at an unknown date.

Evaluation of Mercado House. Based on review of aerial imagery, the dwelling was built in 1970, during a period of suburban development in the Rosamond vicinity. Although the property dates to a period of significance for the residential growth of the Rosamond area after World War II, it does not appear to be a distinct example of a property associated with that developmental theme. Although it represents broad patterns of residential development in rural Kern County, it is not in an area that has a cohesive pattern of history that would be considered significant. It lacks a clear connection to the development of the local communities and therefore is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II suburban development. This property and its ancillary buildings are constructed in a vernacular ranch style using common materials and methods seen throughout desert regions of California. As an unadorned example of the ranch style, the property does not embody sufficient distinctive characteristics of the style, such as large picture windows, attached garages, recessed entries, and differing wall claddings. Additionally, it appears altered to the point that it no longer conveys its period of construction. Research at the Kern County Assessor's Office and online archival documentation, did not reveal a record of a builder or architect for the property. Therefore, it is recommended as not eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Rodriguez House (Map ID 19) The Rodriguez House is a single-family vernacular house at 3303 46th Street West in Rosamond, California. It is a single-story, square plan, wood frame building with no discernable style. The building has a pyramidal asphalt shingle roof. The stucco-clad exterior features vinyl replacement horizontal sliders over various sizes. A front-gable appendage with a central internal chimney extends from the southeast corner. The property is on a rectangular parcel ringed by a rusticated concrete block and wood post fence and shrubs with scattered trees. A small gabled residence is immediately south of the appendage. This dwelling was built in 1954 according, to Kern County property records. Apparent alterations include the replacement vinyl windows installed at an unknown date.

Evaluation of Rodriguez House. According to Kern County property records, the dwelling was built in 1954, at the beginning of a period of residential suburban development in the Rosamond vicinity. This property is on the outskirts of the suburban development that emerged west of Rosamond and does not appear to be a distinct example of a property associated with that developmental theme. Although it represents broad patterns of residential development in rural Kern County, it is not in an area that has a cohesive pattern of history that would be considered significant. It lacks a clear connection to the development of the local communities and therefore is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II suburban development. This property and its ancillary buildings are constructed in a vernacular style using common materials and methods seen throughout desert regions of California and is not associated with a grouping or individually with post-war suburban homes of the area or of ranching or farming property types in the area. The property does not embody sufficient distinctive characteristics of any architectural style. It features a distinct pyramidal roof, however, no other characteristics stand out as significant architectural features. Additionally, it appears altered to the point that it no longer conveys its period of construction, particularly by way of replacement windows. Research at the Kern County Assessor's Office and online archival documentation, did not reveal a record of a builder or architect for the property. Therefore, it is recommended as not eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Folck Duplexes (Map ID 20) The Folck Duplexes consists of two residential buildings on the same rectangular parcel. Both buildings are one-story, ranch style buildings with asphalt shingle gable roofs and projecting eaves, and metal semi-circular air vents. Both buildings have stucco exteriors, aluminum horizontal sliders which appear to be original, and a variety of replacement doors. The eastern building sited closest to Airway Lane has two projecting gable front appendages on the end bays. The dwellings were built in 1954, based on aerial imagery and Kern County property records. Extensive exterior building material alterations include replacement of portions of stucco siding with prefabricated materials, window replacements, and door replacements at unknown dates.

Evaluation of Folck Duplexes. According to Kern County Assessor records, the duplexes were built in 1954, after World War II, during a period of residential suburban growth in Rosamond. Although the property dates to a significant period of history locally, it does not appear to be a distinct example of a property associated with the regional development of the Antelope Valley or Rosamond locally following World War II. Although it represents broad patterns of residential development in rural Kern County, it is not in an area that has a cohesive pattern of history that would be considered significant. It is not clearly connected to any intended residential development or for a specific purpose that would warrant listing in the CRHR. Therefore, it is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II suburban development. These duplexes are constructed in a vernacular ranch style using common materials and methods seen throughout desert regions of California. Although relatively unadorned examples of the style, the properties appear to embody some distinctive architectural characteristics of their type and style, including the projecting gable ends and symmetrical design of fenestration indicating their uses as duplexes. Constructed in a suburban area west of Rosamond, these duplexes are representative of 1950s multi-family dwelling architecture, potentially significant at the local level. Research at the Kern County Assessor's Office and online archival documentation, did not reveal a record of a builder or architect for the property. Despite its potential significance as a distinct example locally of multi-family dwellings, the buildings lack sufficient integrity to convey that historic significance owing to significant exterior material alterations. These alterations include replacement windows and doors and sporadic replacement siding which have affected their integrity of design, materials, workmanship, feeling, and association as early 1950s multi-family dwellings. Therefore, the property is recommended as not eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Four Residences at 3207 W. Rosamond Boulevard (Map ID 21) According to Kern County property records, the property at 3207 W. Rosamond Boulevard contains four residences. The buildings date to 1936, 1940, 1948, and 1958, according to Kern County property records. However, based on aerial imagery, only the front-gable dwelling placed centrally among the four residences was built before 1948. The remaining dwellings are present in the next available aerial from 1959.

The circa-1936 front-gable dwelling is a one-story, three-bay, rectangular plan vernacular ranch style residence. The exterior is covered in adobe and features brick wainscot at the façade. A section of adobe has been replaced with plywood paneling at the east side surrounding the window. Fenestration consists of replacement vinyl sash and sliding windows and a central, multi-pane glazed wood door. The rear half of the roof bumps slightly above the front and a partial width, shed roof carport extends from the east elevation.

The western building along Rosamond Boulevard is a one-story, four-bay, rectangular plan vernacular ranch style building with an asphalt shingle gable roof with overhanging eaves and exposed rafters. The exterior walls are covered with stucco. The building has a multilight door, and both replacement vinyl sash windows, and potentially original aluminum horizontal double hung windows. The roof slightly overhangs the porch and is supported by simple posts. There is also a simple overhanging carport with a gabled roof attached to the west side of the house.

The eastern building along the road is a one-story, rectilinear plan, three-bay ranch with Spanish Colonial Revival elements. It has an asphalt shingle gable roof with a brick chimney. The exterior walls are covered in stucco. One-over-one windows and replaced vinyl six-over-six windows and paired, fixed, six and eight-pane windows adorn the exterior. The entrance is covered by a rounded arch colonnade capped by a pent roof. There is an addition in the rear with an irregular plan and a flat roof as well as a rectangular detached garage in the rear.

The building furthest from the road is a one-story, three-bay square ranch plan. It has a truncated, asphalt shingle roof with exposed rafters topped by a pent roof monitor. The exterior is clad in stucco and has replacement vinyl horizontal sliders.

Evaluation of Four Residences. According to Kern County Assessor records and review of aerial imagery, one residence at this property was built in 1936 and the remaining three were built between 1948 and 1959. The dwelling built prior to World War II was constructed during a period of slow residential growth in the Rosamond vicinity and does not date to a period of particular significance in Rosamond history. Those built after World War II were constructed during a period of residential suburban growth in Rosamond and date to a significant period of local history; however, they do not appear to be distinct examples of properties that clearly represent that developmental theme. Although they represent broad patterns of residential development in rural Kern County, they are not in an area that has a cohesive pattern of history that would be considered significant. They are not clearly connected to any intended residential development or for a specific purpose associated with suburban growth in Rosamond that would warrant listing in the CRHR. Therefore, the residences are recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property

is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II suburban development. These residences are constructed in vernacular styles using common materials and methods seen throughout desert regions of California. They are unadorned examples of their styles, and do not embody distinctive architectural characteristics that distinguish them beyond typical residential treatments. They lack architectural merit as individual resources and are not in an intended grouping of buildings that would warrant designation of a historic district, in which significance might be achieved as a cohesive development indicating representing suburban growth in Rosamond. Research at the Kern County Assessor's Office and online archival documentation, did not reveal a record of a builder or architect for the property. Therefore, the property is recommended as not eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Rosamond High School (Map ID 22) The Rosamond High School is made up of four original buildings dating to about 1950 and later modern additions. The original four school buildings consist of two long rectangular classroom buildings, and two auxiliary gymnasiums, and a small outbuilding near the football field. All four buildings presently have red, low-pitched metal gable roofs and stucco exteriors. Except for the curved-top gymnasium building and a small outbuilding near the football field, none of the more recently erected buildings on the property have red roofs, distinguishing them as modern facilities. Rosamond High School was established about 1950 with four school buildings along Rosamond Boulevard. About 1970, the high school added a gymnasium building, a football field, tennis courts, and a new complex of concrete classroom buildings to the northwest of the original four buildings. The 1970s buildings consist of flat-roof, L-shaped buildings placed together asymmetrically forming a polygonal shape. An outdoor courtyard separates the 1970s buildings from the original buildings. A handful of additional outbuildings were built around 1970. A third construction program at the high school about 1990 brought additional playfields and auxiliary buildings to the property.

Evaluation of Rosamond High School. According to Kern County Assessor records the original high school buildings were built about 1950; they appear to be associated with a significant period of development in the Rosamond area, constructed to accommodate a growing population in the community after World War II. However, owing to significant additions and enlargement of the complex, the property no longer conveys that period of historic development. Therefore, is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions

to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II suburban development. The original Rosamond High School buildings appear to embody distinctive architectural characteristics indicative of their type and style, including low-pitched, metal-clad gable roofs with long roof ridges running parallel to each other, stucco exteriors with ribbon windows containing horizontal panes and transoms, and landscaped courtyards separating each of the four original buildings. Research at the Kern County Assessor's Office and online archival documentation, did not reveal a record of a builder or architect for the property. The four original school buildings also appear to have potential significance under CRHR Criterion 3 for their architectural merit. However, owing to major additions to the property in the 1970s and 1990s, the integrity of design, materials, workmanship, and feeling have been lost. Therefore, this property is recommended as not eligible for listing in the CRHR. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Fosters Freeze (Map ID 24) The Fosters Freeze building is a one-story, oblong box-shaped former gas station building with international style elements. The property is covered by a shallow, slightly overhanging pent roof with an exterior comprised of multipaned, aluminum frame glass walls, a metal frieze, and simulated masonry. A short, flat roof addition with a large window ribbon extends from the west elevation. In front of the building a freestanding flat roof canopy on four metal poles sits above metal picnic tables. This former service station was built in 1969, according to Kern County property records. Significant alterations are evident including the replacement of exterior cladding materials, possible reconstruction of the roof line, refurbished storefront windows, and removal of fuel stations underneath the canopy.

Evaluation of Fosters Freeze. According to Kern County Assessor records, this property was built in 1969, during a period of residential and commercial development in the Rosamond following the construction of State Route 14 through town. Although the property dates to a period of significance for the residential growth of the Rosamond area after 1968, it does not appear to be a distinct example of a property associated with that developmental theme. Although it represents broad patterns of residential development in Rosamond, it is not in an area of downtown that is significantly associated with commercial development in the town or that exhibits a cohesive collection of commercial buildings that would be considered significant. Therefore, it is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically

significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II suburban residential development and urban commercial development. This property was constructed in a vernacular International style with features such as a flat roof and expansive windows. However, it does not embody sufficiently distinctive characteristics of the style and appears to have been significantly altered with modern exterior building materials. Research at the Kern County Assessor's Office and online archival documentation did not reveal a record of a builder or architect for the property. Therefore, it is recommended as not eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Rosamond Elementary School (Map ID 25) The Rosamond Elementary School consists of seven single-story rectangular contemporary style school buildings. Six of the seven are arranged in parallel rows. The buildings have metal gable roofs with ridgeline HVAC units, a stucco exterior, ribbons of aluminum pictures windows, metal horizontal sliders, and tall, thin, metal doors. Second-story ribbon windows appear to be painted over. The three connected buildings nearer to Rosamond Boulevard have overhanging roofs supported by thin metal poles on their south elevations. The adjacent buildings have freestanding overhanging roofs on their north elevations. The northernmost building does not have these features, and has thin, tripartite floor-to-ceiling windows. A one-story, flat roof addition extends northwesterly from the rear elevation. The property is on a paved, rectangular parcel at the northwest corner or Desert Street and Rosamond Boulevard. A chain link fence encircles the parcel, which contains trees and grassy areas. Rosamond Elementary School was established about 1950 along Rosamond Boulevard near the Sierra Highway. In 1983, a new elementary school opened adjacent to the 1950s school. The 1983 buildings were remodeled in 1997.

Evaluation of Rosamond Elementary School. According to Kern County Assessor records, the original elementary school buildings were built circa 1950; they appear to be associated with a significant period of development in the Rosamond area, constructed to accommodate a growing population in the community after World War II. However, that connection is not clearly conveyed by the existing building owing to the loss of feeling, association, and setting due to modern infiltration and development in the immediate surroundings. Therefore, the property is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an

association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II suburban development. The original Rosamond Elementary School buildings appear to embody typical architectural characteristics indicative of its type and contemporary style, including low-pitched, metal-clad gable roofs with long roof ridges, stucco exteriors with narrow ribbon windows, and expansive wall surfaces; they do not appear to rise to a level of significance that merits listing in the CRHR. Research at the Kern County Assessor's Office and online archival documentation, did not reveal a record of a builder or architect for the property. Therefore, this property is recommended as not eligible for listing in the CRHR. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Caltrans Construction Office (Map ID 26) The Caltrans Construction Office is a one-story, side-gabled building with no discernable style. It is covered in stucco and with a false front portion of the façade with a slight overhanging roof and a pair of gable dormers. The building has replacement dual pane aluminum and single pane windows. It features a central metal and glass door accessed by a concrete ramp with metal railings. Asphalt shingles cover the roof. This commercial office building dates to 1951, according to Kern County property records. Apparent alterations include replacement windows and doors at an unknown date.

Evaluation of Caltrans Construction Office. According to Kern County Assessor records, this property was built in 1951, during a period of residential and commercial development in the Rosamond following the World War II. Although the property dates to a period of significance in the Rosamond area, it does not appear to be a distinct example of a property associated with that developmental theme. Although it does represent broad patterns of commercial development in Rosamond, it is not in an area of downtown that is significantly associated with commercial development in the town or that exhibits a cohesive collection of commercial buildings that would be considered significant. Therefore, it is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a

type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II suburban residential development and urban commercial development. This property was constructed in a vernacular commercial style; however, most of its potentially distinct features are either hidden or removed, including two gable dormers and original windows and doors. The building has been modernized and does not embody sufficient distinctive characteristics of its type, style or period of construction. Research at the Kern County Assessor's Office and online archival documentation, did not reveal a record of a builder or architect for the property. Therefore, it is recommended as not eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Garage (Map ID 27) This resource is a small one-story, square industrial garage without a discernable architectural style at 1840 Rosamond Avenue. It was built in 1955, exhibiting an asphalt shingle gable roof and a wraparound false front on the façade, west, and south sides of the building. The three doors on the eastern side of the building from north to south are a composite wood panel door, a metal roll up door, and a full glass metal door. The building is on the south side of a trapezoidal parcel with a paved lot with a wood frame carport. Modern alterations are apparent, including a roll-up metal garage door and aluminum roof coping.

Evaluation of Garage. According to Kern County Assessor records, this property was built in 1955, during a period of residential and commercial development in Rosamond following the World War II. Although the property dates to a period of significance in the Rosamond area, it does not appear to be a distinct example of a property associated with that developmental theme. Although it represents broad patterns of commercial development in Rosamond, it is not in an area of downtown that is significantly associated with commercial development in the town or that exhibits a cohesive collection of commercial buildings that would be considered significant. Therefore, it is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II suburban residential development and urban commercial development. This garage was constructed in a

vernacular commercial style does not embody sufficient distinctive characteristics of any style or period of construction. It is a common building type that lacks architectural significance. Research at the Kern County Assessor's Office and online archival documentation, did not reveal a record of a builder or architect for the property. Therefore, it is recommended as not eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Service Station (Map ID 28) This resource is a former service station built circa 1950 on a corner parcel at 3000 Sierra Highway. The building has a rectangular plan, a one-bay-wide projection, and a small, detached canopy. The service station has a flat roof with a wide overhang and a wide plain wood frieze. Wood paneling clads the exterior walls while plywood covers the windows. Purple spraypainted graffiti is written across both surfaces. The canopy consists of a metal frame flat roof with two round metal post supports. A large empty metal frame sign structure spans over both the building and the canopy with two metal post supports. Apparent alterations include possible removal of windows, doors, and some exterior cladding at an unknown date. In 1975, this service station operated under the name Western Station. No other information could be found on its history.

Evaluation of Service Station. According to Kern County Assessor records and aerial imagery review, this property was built circa 1950, during a period of residential and commercial development in the Rosamond following World War II. Although the property dates to a period of significance in the Rosamond area, it does not appear to be a distinct example of a property associated with that developmental theme. Although it represents broad patterns of commercial development in Rosamond, it is not in an area of downtown that is significantly associated with commercial development in the town or that exhibits a cohesive collection of commercial buildings that would be considered significant. Therefore, it is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II suburban residential development and urban commercial development. This property was constructed in a vernacular commercial style; however, most of its potentially distinct features are either hidden or removed, including original windows and doors. Although the building does appear to represent an example of its type: a rectangular box service station with small canopy from the 1950s, however owing to apparent

alterations its integrity of design, material, workmanship, feeling, and association have been lost. Research at the Kern County Assessor's Office and online archival documentation, did not reveal a record of a builder or architect for the property. Therefore, it is recommended as not eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Thai Garden Restaurant and Multiple Family Properties (Map ID 29) The Thai Garden Restaurant and Residence is a resource consisting of one commercial building and two multi-family residential buildings sharing a parcel. All three buildings appear to have been built about 1951, based on aerial imagery and Kern County property records. The commercial building is a single-story, rectangular plan, stucco-clad one-part commercial block. The building features a flat roof with wide stucco overhang that forms a gable shape on the side elevations. A shallow metal pent roof overhang on the facade shelters the offset double door entry, which is flanked by large replacement vinyl multi-paned fixed windows. A 12-light fixed window is placed in the far northern bay separated from the others by a square pilaster. Matching corner pilasters complete the facade detailing. Each side elevation contains a single leaf solid metal door. Additional structures associated with the commercial building include a fork and spoon metal sculpture placed near the road. Aerial imagery indicates it was installed in the 1990s. A side-gabled multi-family residence stands east of the commercial block and has a long rectangular plan, asphalt roof shingles, stucco exterior, and asymmetrical fenestration. Doors consist of vinyl paneled single-leaf openings and windows consist of two-part sliding and six-over-six vinyl sash. The second multi-family residence is north of the commercial block and appears to have been converted from a commercial building constructed in the Spanish Colonial Revival style. Given its storefront-like façade facing Sierra Highway and pent roof porch, it likely originally had a commercial function. Today, it has a rectangular plan, flat roof with corner towers and terra cotta coping, recessed shed roof overhangs with terra cotta shingles, a full-width shed roof front porch, and stucco exterior. The porch roof is clad in asphalt shingles and shelters a central entry door placed north of a two-part vinyl sliding window and south of a vinyl sash window. The porch roof is supported by two turned posts.

Evaluation of Thai Garden and Multiple Family Properties. According to Kern County Assessor records and aerial imagery review, the buildings at this property were built around 1951, during a period of residential and commercial development in the Rosamond following World War II. No specific information on the history of the property could be found during background research. Although the property dates to a period of significance in the Rosamond area, the resources do not appear to be distinct examples that are clearly connected to that developmental theme. Although the property represents broad patterns of commercial and residential development in Rosamond, it is not in an area of downtown that is significantly associated with commercial development in the town or that exhibits a cohesive collection of commercial buildings that would be considered significant. Therefore, it is

recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II suburban residential development and urban commercial development. The commercial building, which currently operates as a restaurant lacks architectural details that clearly indicate representation of a specific architectural style. It features cut-out gable ends within the wide banded roof overhang and stucco exterior, which typical of the region. The alterations to its façade have greatly diminished the design, material, and workmanship integrity of the building to the point that it no longer conveys its historic period of construction or any clear function or style. The easternmost residential building shares commonalities architecturally with motels, specifically through the patterned placement of fenestration clearly identifying the unit spaces, with entrance doors opening directly to the parking area. It has a long roof ridge running parallel to the road, also indicative of multi-family property types or motels. These characteristics, however, do not place the building's architectural representations in a level of significance that merits listing in the CRHR. It lacks distinction and significance. The northernmost residential building appears to have originally functioned as a commercial property given its architectural characteristics, such as its flat roof, storefront-like façade with a central entry flanked by windows, and pent roof porch. It also features elements of the Spanish Colonial Revival style, including its stucco exterior and tile roofing elements. However, the building is common and lacks distinction architecturally to the point that it no longer conveys its historic associations. Research at the Kern County Assessor's Office and online archival documentation, did not reveal a record of a builder or architect for the property. Therefore, it is recommended as not eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Realtors Building (Map ID 30) The Realtors Building is at 3052 Sierra Highway and is a small, one-story, square plan, stucco-clad commercial building. It has a low-pitched side-gable metal-clad roof with an extended front slope and a full facade front porch supported by four square posts. A large, faded sign displaying the word "REALTORS" sit on the roof above the porch facing the highway. The facade features an offset single-leaf, paneled vinyl entry door placed north of a two-part aluminum sliding window covering multi-pane wood sashes. These windows repeat in varied sizes at the secondary elevations. The property is on a small irregular parcel with a small, asphalt parking lot in front of the building. The commercial building was built about 1950,

based on aerial imagery review. Apparent alterations include replacement of the front door with a vinyl paneled style. The wood windows behind the aluminum storm shutters are potentially retained from the original construction. No significant information could be gleaned from research, including Kern County property records and online newspapers, on the history of this building aside from its apparent use as a realtor's office dates as early as 1965. The outbuilding seen in the aerial sketch map below is no longer extant.

Evaluation of Realtors Building. Based on aerial imagery review, this property was built circa 1950, during a period of residential and commercial development in the Rosamond following World War II. No information on the history of the property could be found during research aside from its use a realtor's office as early as 1965 (Bakersfield Californian 1965). Although the property dates to a period of significance in the Rosamond area, the resource does not appear to be a distinct example associated with that developmental theme. Although the property represents broad patterns of commercial development in Rosamond, it is not in an area of downtown that is significantly associated with commercial development in the town or that exhibits a cohesive collection of commercial buildings that would be considered significant. Therefore, it is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II suburban residential development and urban commercial development. This commercial building lacks architectural details that clearly indicate representation of a specific architectural style or type. It features stucco exterior, square posts, and multi-pane wood windows, which are all typical materials seen in the region. The alterations to its fenestration have somewhat diminished the design, material, and workmanship integrity of the building. Research at the Kern County Assessor's Office and online archival documentation, did not reveal a record of a builder or architect for the property. Therefore, it is recommended as not eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Rosamond Palms Motel (Map ID 31) The Rosamond Palms Motel is a Spanish colonial style revival consisting of three separate buildings housing blocks of rooms arranged in a line perpendicular to the road, a laundry outbuilding, and a shed. The eastern and central buildings date to 1955, and the western building was added circa

1970. The laundry and shed outbuildings appear to have been constructed contemporaneously with the original motel blocks. Apparent alterations include replacement windows in the easternmost motel block with vinyl sash types and door replacements. The central block retains some original wood sash windows with most having been replaced with two-part sliding vinyl types. Although doors and windows have been replaced the original fenestration patterns appear intact.

Evaluation of Rosamond Palms Motel. Based on aerial imagery review, this motel was built about 1955, during a period of residential and commercial development in the Rosamond following World War II. No information on the construction or operation of the motel could be found during research. Although the property dates to a period of significance in the Rosamond area, the resource does not appear to be a distinct example associated with that developmental theme. Although the property represents broad patterns of commercial development in Rosamond, it is not in an area of downtown that is significantly associated with commercial development in the town or that exhibits a cohesive collection of commercial buildings that would be considered significant. Therefore, it is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II suburban residential development and urban commercial development. These motel buildings are representative of the Spanish Colonial Revival style and exhibit distinctive features including stucco exteriors, flat roofs with terra cotta tile coping, arcaded facades, and raised stucco frieze and architrave. They are distinct on the landscape and retain good integrity of location, design, materials, workmanship, feeling and association as a circa 1950s motel in Rosamond. The buildings are representative of their type (motel), with distinctive features including unit entries facing and directly accessible from the parking lot. Therefore, the motel is recommended as eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4. Since the Rosamond Palms Motel satisfies CRHR Criterion 3, the CEC staff concludes that the property is a historical resource, as defined in CEQA.

Martin Smith House (Map ID 32) The Martin Smith House is a single-story modest Spanish Revival style residential building with an irregular plan and stucco-clad exterior walls. The building has cross-gable roof sections set in a square plan with a wider mass on the northern and eastern sections. While the majority of roof is clad in terra cotta

tiles, the placement of each section creates a dropped flat, central section of metal roof. This building dates to 1967, according to Kern County property records. Alterations to the building include the construction of a garage addition. Research did not reveal any information on the history of the property.

Evaluation of Martin Smith House. According to Kern County property records, the dwelling was built in 1967, during a period of residential suburban development in the Rosamond vicinity. This property is on the outskirts of Rosamond and does not appear to be a distinct example of a property associated with the suburban developmental theme locally. Although it represents broad patterns of residential development in rural Kern County, it is not in an area that has a cohesive pattern of history that would be considered significant. It lacks a clear connection to the development of the local communities and therefore is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II suburban development. This property is constructed in a vernacular Spanish Revival style using common materials and methods seen throughout desert regions of California, such as stucco and tile roofing. The property does embody distinctive characteristics of its architectural style but lacks a level of significance that merits listing in the CRHR as an individual resource. It is not associated with a grouping of suburban homes of the area or of ranching or farming property types in the area, that would garner significance given the developmental history of Rosamond. Research at the Kern County Assessor's Office and online archival documentation, did not reveal a record of a builder or architect for the property. Therefore, it is recommended as not eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Abrego House (Map ID 33) The Abrego House is a single-story, L-shaped, stucco-clad, ranch style residence. The building has a side gable roof with asphalt shingles, and a cross gabled addition on the east parallel to the road. The main entrance is set within the corner of a recessed partial width porch along with two multipaned metal frame windows. Atop the attached garage sits a second story airplane addition with a projecting gable end and balcony. This building dates to 1966, according to Kern County property records. Research did not reveal any information on the history of the property.

Evaluation of Abrego House. According to Kern County property records, the dwelling was built in 1966, during a period of residential suburban development in the Rosamond vicinity. This property is on the outskirts of Rosamond and does not appear to be a distinct example of a property associated with the suburban developmental theme locally. Although it represents broad patterns of residential development in rural Kern County, it is not in an area that has a cohesive pattern of history that would be considered significant. It lacks a clear connection to the development of the local communities and therefore is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II suburban development. This property is constructed in the ranch style and features distinctive characteristics of that style, including its side-gable form, recessed entry porch, multi-pane picture window and attached carport. Given its stylistic features, it does appear to embody a good representation of it style in the Rosamond vicinity; however, owing to the garage addition and second story airplane addition, its integrity of design and workmanship has been diminished. Additionally, it is not associated with a grouping of suburban homes of the area or of ranching or farming property types in the area, that would garner significance as a type given the developmental history of Rosamond. Research at the Kern County Assessor's Office and online archival documentation, did not reveal a record of a builder or architect for the property. Therefore, it is recommended as not eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Neuburger House (Map ID 34) The Neuburger House is a single-story, square plan, single-family home with in a vernacular contemporary style. The dwelling has a front-gable roof with projecting cross-gable at its south side elevation all clad in asphalt shingles. The east facade features a small shed-roof entry porch centered on the elevation. The stucco-clad exterior features wood sash windows at the façade, metal frame picture windows and two-part sliding windows at the side elevation. A large secondary residence or outbuilding stands immediately west of the dwelling with matching exterior materials and features. A concrete block wall surrounds the house and three sheds are aligned along the northern wall. This building dates to 1966 according to Kern County property records. Research did not reveal any information on the history of the property.

Evaluation of Neuburger House. According to Kern County property records, the dwelling was built in 1966, during a period of residential suburban development in the Rosamond vicinity. This property is on the outskirts of Rosamond and does not appear to be a distinct example of a property associated with the suburban developmental theme locally. Although it represents broad patterns of residential development in rural Kern County, it is not in an area that has a cohesive pattern of history that would be considered significant. It lacks a clear connection to the development of the local communities and therefore is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II suburban development. This property and its ancillary buildings are constructed in the vernacular contemporary style using common materials and methods seen throughout desert regions of California. As an unadorned example of the contemporary style, it lacks sufficient distinctive characteristics such as gable peak windows and an asymmetrical design. Additionally, it is not associated with a grouping of suburban homes of the area or an example of a ranching or farming property type found in the area, that would garner significance as a type given the developmental history of Rosamond. Research at the Kern County Assessor's Office and online archival documentation did not reveal a record of a builder or architect for the property. Therefore, it is recommended as not eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Morales House (Map ID 55) The Morales House was built in 1958 and is a single-story, rectangular plan, residence constructed in no discernible style. The dwelling has a side-gable roof clad in asphalt shingles with a rear full-width extension and west end shed roof addition. The stucco-clad exterior features replacement two-part sliding windows (material unknown). A single-leaf entry door is offset on the façade. A large wood-frame monitor barn stands south of the dwelling and features vertical plank siding and metal sheet roofing. It is accompanied by a modern metal grain silo at its southwest corner. Aerial imagery shows several scattered prefabricated shipping containers and fencing throughout the property. The property is on a long rectangular parcel with scattered shrubs and trees. Alterations are not readily apparent. Research did not reveal information on the developmental history of this property.

Evaluation of Morales House. According to Kern County Assessor records, the dwelling was built in 1958 in the rural Rosamond vicinity, during a period suburban residential growth and commercial growth; rural development at this time does not emerge as particularly significant developmental theme in the region. The property does not date to a significant period of local history and does not appear to be a distinct example of a property associated with the regional development of the Antelope Valley. It contains a large barn that indicates agricultural activity; however, its lacks a cohesive representation as an agricultural property. Although it could represent broad patterns of agricultural development in rural Kern County, it is not in an area that has a cohesive pattern of history that would be considered significant. It lacks a clear connection to the development of the local communities and therefore is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II suburban development. This property was constructed using common materials and methods seen in the region such a stucco exterior cladding and side gable form. However, it lacks distinctive characteristics of any style and does not convey its historic period of construction. Research at the Kern County Assessor's Office and online archival documentation did not reveal a record of a builder or architect for the property. Therefore, it is recommended as not eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Shults House (Map ID 56) The Shults House was built in 1950 and is a single-story, square plan residence constructed in the ranch style. The dwelling has a side-gable roof with a wide overhang clad in asphalt shingles and side elevation shed roof porches supported by bracketed wood posts. The façade is obstructed from view from the right-of-way, although the east side elevation suggests stucco exterior on all elevations. No windows or doors are clearly visible from the right-of-way. Apparent alterations include window replacements.

Evaluation of Shults House. According to Kern County Assessor records, the dwelling was built in 1950 in the rural Rosamond vicinity, during a period suburban residential growth and commercial growth; rural development at this time does not emerge as particularly significant developmental theme in the region. The property does not date to a significant period of local history and does not appear to be a distinct example of a property associated with the regional development of the Antelope Valley. Although it

represents broad patterns of residential development in rural Kern County, it is not in an area that has a cohesive pattern of history that would be considered significant. It lacks a clear connection to the development of the local communities and therefore is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II suburban development. This property was constructed in the ranch style using common materials and methods seen in the region and featuring a low-pitch side gable roof and integrate wrap around porch indicative of the style. However, it does not embody sufficient distinctive characteristics of the style such as varied wall cladding, attached garage, and multi-pane picture windows. Research at the Kern County Assessor's Office and online archival documentation did not reveal a record of a builder or architect for the property. Therefore, it is recommended as not eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Baber House (Map ID 57) The Baber House was built in 1960 and is a single-story, rectangular plan residence constructed in the ranch style. The dwelling has a broad front-gable roof clad in asphalt shingles with a full-width shed roof front porch clad in metal sheet roofing. The exterior is clad with cement board shingles with vertical plank siding in the front gable end. Details include corner boards and small louvered vents in the gable ends. The porch roof is supported by bracketed wood posts and shelters a single-leaf main entry door offset from single-pane square windows with wood trim. A multi-part picture window is visible on the east elevation. Apparent alterations include window replacements.

Evaluation of Baber House. According to Kern County Assessor records, the dwelling was built in 1960 in the rural Rosamond vicinity, during a period of suburban residential growth and commercial growth; rural development at this time does not emerge as particularly significant developmental theme in the region. The property does not date to a significant period of local history and does not appear to be a distinct example of a property associated with the regional development of the Antelope Valley. Although it represents broad patterns of residential development in rural Kern County, it is not in an area that has a cohesive pattern of history that would be considered significant. It lacks a clear connection to the development of the local communities and therefore is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a

property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II suburban development. This property was constructed in the ranch style using common materials and methods seen in the region and featuring a low-pitch front gable roof and integrated wrap around porch indicative of the style in the region. However, it does not embody sufficient distinctive characteristics of the style such as varied wall cladding, attached garage, and multi-pane picture windows. Research at the Kern County Assessor's Office and online archival documentation did not reveal a record of a builder or architect for the property. Therefore, it is recommended as not eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Beuchel House (Map ID 58) The Beuchel House was built in 1960 and is a single-story, rectangular plan vernacular Minimal Traditional residence. The dwelling has a front-gable roof clad in asphalt shingles with an extended rear addition dropped slightly from the original roof ridge line, and a full-width shed roof front porch supported by metal poles. Windows visible from the right-of-way include two-part sliding (material unknown). Aerial imagery shows a small gabled shed west of the dwelling and five prefabricated shipping containers to the east. The property is on a rectangular parcel with scattered shrubs and trees. Apparent alterations include window replacements.

Evaluation of Beuchel House. According to Kern County Assessor records, the dwelling was built in 1960 in the rural Rosamond vicinity, during a period suburban residential growth and commercial growth; rural development at this time does not emerge as particularly significant developmental theme in the region. The property does not date to a significant period of local history and does not appear to be a distinct example of a property associated with the regional development of the Antelope Valley. Although it represents broad patterns of residential development in rural Kern County, it is not in an area that has a cohesive pattern of history that would be considered significant. It lacks a clear connection to the development of the local communities and therefore is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a

property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II suburban development. This property was constructed in the vernacular minimal Traditional style using common materials and methods seen in the region, featuring a low-pitch front gable roof with no overhang and minimal front porch. However, it does not embody sufficient distinctive characteristics of the style such as gable and wing form and varied wall cladding. The dwelling is a common example of its type and style and lacks significance. Research at the Kern County Assessor's Office and online archival documentation did not reveal a record of a builder or architect for the property. Therefore, it is recommended as not eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Landsgaard Trust House No. 1 (Map ID 59) The property at 3622 Dawn Road was built in 1967 and is a single-story, rectangular plan residence constructed in the vernacular ranch style. The dwelling has a broad front-gable roof clad in asphalt shingles, a full-width shed roof front porch supported by round metal poles, and a brick exterior chimney at the east elevation. The stucco-clad exterior features a variety of window types, including large one-over-one sash windows at the façade flanking a recessed entry bay, and two-part sliding windows at the side elevations. Aerial imagery shows two outbuildings; one small, shed roof building west of the dwelling and one large rectangular plan building with a metal roof to the south. The rectangular parcel also has scattered shrubs and trees, prefabricated storage units throughout.

Evaluation of Landsgaard Trust House No. 1. According to Kern County Assessor records, the dwelling was built in 1960 in the rural Rosamond vicinity, during a period suburban residential growth and commercial growth; rural development at this time does not emerge as particularly significant developmental theme in the region. The property does not date to a significant period of local history and does not appear to be a distinct example of a property associated with the regional development of the Antelope Valley. Although it represents broad patterns of residential development in rural Kern County, it is not in an area that has a cohesive pattern of history that would be considered significant. It lacks a clear connection to the development of the local communities and therefore is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master

architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II suburban development. This property was constructed in the vernacular ranch style using common materials and methods seen in the region, featuring a low-pitch front gable roof with wide overhang and larger windows. However, it does not embody sufficient distinctive characteristics of the style such as varied wall cladding, recessed entry and attached garage. The dwelling is a common example of its type and style and lacks significance. Research at the Kern County Assessor's Office and online archival documentation did not reveal a record of a builder or architect for the property. Therefore, it is recommended as not eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Landsgaard Trust House No. 2 (Map ID 60) The property at 5856 Werner Avenue was built in 1969 and is a single-wide mobile home unit with a flat roof and two partial shed roof side porches. The metal clad exterior features two-part aluminum sliding windows asymmetrically placed. The façade is obstructed from view. A large gabled garage stands immediately north of the dwelling and features asphalt roof shingles and stucco exterior.

Evaluation of Landsgaard Trust House No. 2. According to Kern County Assessor records, the dwelling was built in 1969 in the rural Rosamond vicinity, during a period suburban residential growth and commercial growth in Rosamond; rural development at this time does not emerge as particularly significant developmental theme in the region. The property does not date to a significant period of local history and does not appear to be a distinct example of a property associated with the regional development of the Antelope Valley. Although it represents broad patterns of residential development in rural Kern County, it is not in an area that has a cohesive pattern of history that would be considered significant. It lacks a clear connection to the development of the local communities and therefore is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II suburban development. This property is a 1969 modular mobile home unit sited at a permanent location. It likely was originally sited here and has not been moved. It is not part of a mobile home park, which can hold significance with associations with suburban development or

architecturally as a district. Without such a setting, this home does not have a clear developmental history, nor does it exhibit significant characteristics of its type or period of construction. It is a common example that individually does not hold significance. Research at the Kern County Assessor's Office and online archival documentation did not reveal a record of a builder or architect for the property. Therefore, it is recommended as not eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Thayer House (Map ID 61) The property at 3847 Gillman (Beaudette) Avenue was built in 1954 and is a single-story, rectilinear ranch house with a flat roof and a flat roof side porch. The stucco exterior has asymmetrically placed aluminum sliding windows. The property is lined with a barbed wire fence and contains a small open shed on the western boundary.

Evaluation of Thayer House. According to Kern County Assessor records, the dwelling was built in 1954 in the rural Rosamond vicinity, during a period suburban residential growth and commercial growth; rural development at this time does not emerge as particularly significant developmental theme in the region. The property does not date to a significant period of local history and does not appear to be a distinct example of a property associated with the regional development of the Antelope Valley. Although it does represent broad patterns of residential development in rural Kern County, it is not in an area that has a cohesive pattern of history that would be considered significant. It lacks a clear connection to the development of the local communities and therefore is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II suburban development. This property was constructed in the vernacular ranch style using common materials and methods seen in the region, featuring a flat roof and stucco exterior. However, it does not embody sufficient distinctive characteristics of the style such as varied wall cladding, attached garage, and multi-pane picture windows. Research at the Kern County Assessor's Office and online archival documentation did not reveal a record of a builder or architect for the property. Therefore, it is recommended as not eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of

the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Fisher House (Map ID 62) The property at 3847 Werner Avenue and Gillman (Beaudette) Avenue was built in 1954 and is a single-story ranch house with a side gabled roof and with an attached rear shed roof garage. The exterior is clad in stucco. The windows visible from the right-of-way (ROW) are modern vinyl sliding windows. The property contains two small sheds, one stucco and one wood in the northwest corner per aerial imagery.

Evaluation of Fisher House. According to Kern County Assessor records, the dwelling was built in 1954 in the rural Rosamond vicinity, during a period of suburban residential growth and commercial growth. Although the property dates to a significant period of local history, it does not appear to be a distinct example of a property associated with that developmental theme. It does represent broad patterns of residential development in rural Kern County, but it is not in an area that has a cohesive pattern of history that would be considered significant. It lacks a clear connection to the development of the local communities and therefore is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II suburban development. This property was constructed in the vernacular ranch style using common materials and methods seen in the region, featuring a cross-gable roof and stucco exterior. However, it does not embody sufficient distinctive characteristics of the style such as varied wall cladding, attached garage, and multi-pane picture windows. Research at the Kern County Assessor's Office and online archival documentation did not reveal a record of a builder or architect for the property. Therefore, it is recommended as not eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Landsgaard Trust House No. 4 (Map ID 63) The property at 5671 Werner Avenue was built in 1956 and is a single-story ranch house with a gabled roof and a hipped roof addition on the east elevation; the rooves are covered in asphalt shingles. The exterior is clad in siding of unknown materials lit by paired aluminum windows. The west-facing façade is not visible from the public ROW as the parcel is bounded on north, west, and south sides by private property and trees. A mobile home with exterior fabric and

features matching the primary residence sits on the parcel's northern edge. The property is lined with a chain link fence and contains a shed, trees, and scrubby vegetation. Alterations include window replacements with modern vinyl two-part types.

Evaluation of Landsgaard Trust House No. 4. According to Kern County Assessor records, the dwelling was built in 1956 in the rural Rosamond vicinity, during a period of suburban residential growth and commercial growth. Although the property dates to a significant period of local history, it does not appear to be a distinct example of a property associated with that developmental theme. It does represent broad patterns of residential development in rural Kern County, but it is not in an area that has a cohesive pattern of history that would be considered significant. It lacks a clear connection to the development of the local communities and therefore is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II suburban development. This property was constructed in the vernacular ranch style using common materials and methods seen in the region, featuring a gable on hip roof and stucco exterior. However, it does not embody sufficient distinctive characteristics of the style such as varied wall cladding, attached garage, and multi-pane picture windows. Research at the Kern County Assessor's Office and online archival documentation did not reveal a record of a builder or architect for the property. Therefore, it is recommended as not eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Olivares House (Map ID 64) The property at 5550 Werner Avenue is a one-and-a-half-story, front-gable house built in 1952 in a vernacular Craftsman style. The dwelling is covered by a standing seam metal roof and has a stucco exterior with modern vinyl multipaned sash windows. The modern replacement door is protected by an open gabled porch with spindled railings which wraps around to the south elevation. The latter portion has a flat metal roof. Aerial imagery shows a large north elevation addition with a metal roof connecting to a one-and-a-half-story gabled outbuilding. The parcel is lined with a chain link fence and contains a large open shed capped by a standing seam metal pent roof, trees, and ornamental vegetation. Alterations include window replacements with large, modern vinyl windows.

Evaluation of Olivares House. According to Kern County Assessor records, the dwelling was built in 1952 in the rural Rosamond vicinity, during a period of suburban residential growth and commercial growth. Although the property dates to a significant period of local history, it does not appear to be a distinct example of a property associated with the that developmental theme. It does represent broad patterns of residential development in rural Kern County, but it is not in an area that has a cohesive pattern of history that would be considered significant. It lacks a clear connection to the development of the local communities and therefore is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II suburban development. This property was constructed in the vernacular Craftsman style using common materials and methods seen in the region, featuring a wide front gable roof with lower gable and stucco exterior. However, it does not embody sufficient distinctive characteristics of the style such as a compact massing, multi-pane sash windows, bracketing, and wide porch columns. Research at the Kern County Assessor's Office and online archival documentation did not reveal a record of a builder or architect for the property. Therefore, it is recommended as not eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Landsgaard Trust House No. 3 (Map ID 65) The property at Werner and Quartz avenues is a single-story, L-plan ranch dwelling built in 1952. The house has an asphalt shingle roof and a stucco exterior. Windows visible from the ROW are modern vinyl horizonal sliders. An overhanging porch runs along the lateral elevation beginning at the junction with the projecting gable. The dwelling is largely obscured by fencing and trees. Aerial imagery shows that the parcel contains two small sheds. Alterations include window replacements with large modern vinyl windows and siding replacement.

Evaluation of Landsgaard Trust House No. 3. According to Kern County Assessor records, the dwelling was built in 1952 in the rural Rosamond vicinity, during a period of suburban residential growth and commercial growth. Although the property dates to a significant period of local history, it does not appear to be a distinct example of a property associated with the that developmental theme. It does represent broad patterns of residential development in rural Kern County, but it is not in an area that has a cohesive pattern of history that would be considered significant. It lacks a clear

connection to the development of the local communities and therefore is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II suburban development. This property was constructed in the vernacular ranch style using common materials and methods seen in the region, featuring a long roof ridge with integrated front porch and projecting front gable. However, it does not embody sufficient distinctive characteristics of the style such as varied wall cladding, attached garage, and large multi-pane picture windows. Research at the Kern County Assessor's Office and online archival documentation did not reveal a record of a builder or architect for the property. Therefore, it is recommended as not eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Pauley House (Map ID 66) The property at 5200 Mojave Tropico Road was built in 1965 and is a one-story, rectangular plan, wood-frame residence constructed in a modest ranch style. The dwelling has a side-gable roof with a long roof ridge running parallel to the road, is clad in asphalt shingles, has exposed rafter ends under the eaves, and is pierced with a brick ridge chimney. The stucco-clad exterior features a central recessed entry bay placed south of two 2-part vinyl replacement sliding windows and north of a three-part picture window and two-car garage door. It appears the wood window trim has been removed from the facade windows and is retained on the side elevation windows of the same type. Two cross-gable extensions to the rear of the dwelling are constructed in the same style as the primary block. The property is on a polygonal corner parcel with scattered shrubs and trees and contains a round metal silo and several prefabricated storage containers. Alterations include window replacements with modern vinyl windows.

Evaluation of Pauley House. According to Kern County Assessor records, the dwelling was built in 1965 in the rural Rosamond vicinity, during a period of suburban residential growth and commercial growth. Although the property dates to a significant period of local history, it does not appear to be a distinct example of a property associated with the that developmental theme. It does represent broad patterns of residential development in rural Kern County, but it is not in an area that has a cohesive pattern of history that would be considered significant. It lacks a clear connection to the development of the local communities and therefore is recommended as not eligible

under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II suburban development. This property was constructed in the vernacular ranch style using common materials and methods seen in the region, featuring a long roof ridge with recessed entry and attached garage. However, it does not embody sufficient distinctive characteristics of the style such as varied wall cladding and large multi-pane picture windows to be eligible. Research at the Kern County Assessor's Office and online archival documentation did not reveal a record of a builder or architect for the property. Therefore, it is recommended as not eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Black House (Map ID 67) The property at 4653 Ace Avenue was built in 1961 and is a one-story, L-plan, wood-frame residence with no discernible style. Elements of its construction indicate influence from the Craftsman style given its cross-gable form with low-pitched roof; however, no distinct features of the style remain. The roof is clad in asphalt shingles and is pierced by a modern HVAC unit at its eastern slope. The exterior comprises stucco cladding, aluminum siding in the gable ends, and vinyl replacement windows consisting of two and three-part sliders. A brick exterior chimney is placed on the rear (north) elevation of the east wing. The property is on a rectangular parcel with scattered shrubs and contains two prefabricated metal sheds and multiple storage containers.

Evaluation of Black House. According to Kern County Assessor records, the dwelling was built in 1961 in the rural Rosamond vicinity, during a period of suburban residential growth and commercial growth. Although the property dates to a significant period of local history, it does not appear to be a distinct example of a property associated with the that developmental theme. It represents broad patterns of residential development in rural Kern County but is not in an area that has a cohesive pattern of history that would be considered significant. It lacks a clear connection to the development of the local communities and therefore is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under

CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II suburban development. This property was constructed in a vernacular Craftsman style using common materials and methods seen in the region, featuring a front-gable roof with side ell and compact massing. However, it does not embody sufficient distinctive characteristics of the style such as nested gables, multi-pane wood sash windows, and bracketing to be eligible. Research at the Kern County Assessor's Office and online archival documentation did not reveal a record of a builder or architect for the property. Therefore, it is recommended as not eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Ranch/Farmstead (Map ID 68) The property at 4555 Ace Avenue is an agricultural property containing a single-story ranch dwelling built in 1948. The original L-plan footprint has an asphalt shingle gable roof, a stucco exterior, and aluminum horizontal windows in plain relief surrounds. The façade is not visible from the ROW except for a portion of an open porch covered by a flat roof on posts. Aerial imagery indicates the porch wraps around to the lateral elevation of the house, terminating at a gable addition extending northward from the east gable end. Furthermore, imagery indicates a side porch or lean-to on the addition, and a large front-gabled barn immediately northeast of the dwelling. The parcel contains a barn, many long open-sided, single slope roof shed cattle sheds, and small storage sheds.

Evaluation of Ranch/Farmstead. According to Kern County Assessor records, the farmhouse at this agricultural property was built in 1948 in the rural Rosamond vicinity, during a period of suburban residential growth and commercial growth after World War II. Although the property dates to a significant period of local history, it does not appear to be a distinct example of a property associated with the that developmental theme. It represents broad patterns of agricultural development in rural Kern County but is not in an area that has a cohesive pattern of history that would be considered significant. It lacks a clear connection to the development of the local communities and therefore is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and

ranching activities as well as post-World War II suburban development. This farmhouse was constructed in a vernacular ranch style using common materials and methods seen in the region, featuring a cross-gable roof, stucco exterior, and front porch. However, it does not embody sufficient distinctive characteristics of the style such as long roof ridge, varied wall cladding, and attached garage. Original agricultural outbuildings are limited to the circa-1948 barn, while the remainder of the complex grew post-1970. The complex is not representative of an intact 1948 ranch/farmstead. Research at the Kern County Assessor's Office and online archival documentation did not reveal a record of a builder or architect for the property. Therefore, it is recommended as not eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Hamman House (Map ID 69) The property at 4601 Sweetser Road was built in 1964 and is a one-story, rectangular plan, wood-frame vernacular ranch residence. It features elements of the ranch style featuring a side gable roof with a long roof ridge running parallel to the road and attached garage. The roof features a wide overhang and is clad in asphalt shingles. The stucco-clad exterior features two replacement two-part sliding vinyl windows west of the main entry and a large three-part picture window to the east of the entry door. A short brick garden wall runs the length of the facade. The property is on a long rectangular parcel with scattered shrubs and trees. Outbuildings include a large metal garage east of the dwelling. Alterations include window replacements with modern aluminum windows.

Evaluation of Hamman House. According to Kern County Assessor records, the dwelling was built in 1964 in the rural Rosamond vicinity, during a period of suburban residential growth and commercial growth. Although the property dates to a significant period of local history, it does not appear to be a distinct example of a property associated with the that developmental theme. It represents broad patterns of residential development in rural Kern County but is not in an area that has a cohesive pattern of history that would be considered significant. It lacks a clear connection to the development of the local communities and therefore is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II suburban development. This property was constructed in the vernacular ranch style using common materials and methods seen in the region, featuring a long roof ridge

with wide overhang and attached garage. However, as an unadorned example it does not embody sufficient distinctive characteristics of the style such as varied wall cladding and large multi-pane picture windows. Research at the Kern County Assessor's Office and online archival documentation did not reveal a record of a builder or architect for the property. Therefore, it is recommended as not eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

4850 Irone Avenue (Map ID 70) The agricultural property at 4850 Irone Avenue contains a single-story rectilinear vernacular ranch residence built circa 1970. The front-gable house has an asphalt shingle gable roof, a stucco exterior, and wide aluminum horizontal windows including a picture configuration on the façade. The roof is dotted by several short metal stove pipes. The off-center entrance is a modern replacement multipaned door accessed via three tread concrete steps. The five bay east elevation is sheltered by a full-length shed roof porch on metal poles. The two doors are fitted like the façade entry. The parcel is an extensive agricultural property per aerial imagery containing two frame side-gabled barns with service bay entrances, cattle houses topped with corrugated metal roofs, a cattle pen, and numerous miscellaneous outbuildings. The property is lined with a chain link fence and features grassy areas with a few trees.

Evaluation of 4850 Irone Avenue. Based on aerial imagery review, the farmhouse at this agricultural property was built about 1970 in the rural Rosamond vicinity, during a period of suburban residential growth and commercial growth. Although the property dates to a significant period of local history, it does not appear to be a distinct example of a property associated with the that developmental theme as it is a rural agricultural property that developed separately from the suburban growth closer to Rosamond. It represents broad patterns of residential development in rural Kern County but is not in an area that has a cohesive pattern of history that would be considered significant. It lacks a clear connection to the development of the local communities and therefore is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II suburban development. This property was built in the vernacular ranch style using common materials and methods seen in the region, featuring a long roof ridge with wide overhang. However, as an unadorned example it does not embody sufficient distinctive characteristics of the style such as

varied wall cladding and large multi-pane picture windows. Research at the Kern County Assessor's Office and online archival documentation did not reveal a record of a builder or architect for the property. Therefore, it is recommended as not eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Williams House (Map ID 71) The property at 3812 50th Street West is a single-story massed-plan dwelling built in 1922. The vernacular house has a steeply pitched hipped roof covered in asphalt shingles, a stucco exterior, and large single pane windows in wood surrounds with molded sills. The primary entry and general façade are not visible from the ROW due to obstructing shrubs and wood fencing. A gabled addition with roofing and exterior materials mimicking the primary unit extends from the dwelling's northeast corner and has a modern French patio door and glass block window. Alterations include window and door replacements, porch support replacements, and a gabled addition.

Evaluation of Williams House. According to Kern County Assessor records, the dwelling was built in 1922, during a period of early homesteading in rural Rosamond. The property dates to a significant period of local history but does not appear to be a distinct example of a property associated with that local development. Documentation of its development history is lacking and there is no evidence of a significance beyond having been constructed during a period of homestead development in the area. It lacks a clear connection to the development of the local communities and therefore is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II suburban development. This property was built in a vernacular style using common materials and methods seen throughout desert regions of California, featuring a hipped roof with full façade porch, and stucco exterior. As an unadorned dwelling the property does not embody sufficient distinctive characteristics of any style. Additionally, it appears significantly altered to the point that it no longer conveys its period of construction. Research at the Kern County Assessor's Office and online archival documentation did not reveal a record of a builder or architect for the property. Therefore, it is recommended as not eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the

community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Kim House (Map ID 72) The property at 3701 50th Street West is a single-story, side-gabled ranch dwelling built in 1950. The rectilinear house has an asphalt shingle roof and a stucco exterior. The south gable end eaves are interrupted by a masonry chimney. The only visible window from the ROW is a 2/2 sash on the south elevation as the façade is obscured by a wood fence. The façade is sheltered by a full width shed roof porch on wood posts extending from the eaves. A secondary entrance on the south elevation is protected by a shed roof canopy on posts. Aerial imagery shows a full-width rear addition, likely an open porch. The four outbuildings on the property consist of a modern frame garage immediately adjacent to the north elevation, a woodshed, frame and plywood lean-to, and a wood outhouse. The parcel is lined with chicken wire fencing and contains grasses and scrubby vegetation.

Evaluation of Kim House. According to Kern County Assessor records, the dwelling was built in 1950 in the rural Rosamond vicinity, during a period of suburban residential growth and commercial growth. Although the property dates to a significant period of local history, it does not appear to be a distinct example of a property associated with the that developmental theme. It does represent broad patterns of residential development in rural Kern County but is not in an area that has a cohesive pattern of history that would be considered significant. It lacks a clear connection to the development of the local communities and therefore is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II suburban development. This property was built in the vernacular ranch style using common materials and methods seen in the region, featuring a long roof ridge with wide overhang, integrated porch, and stucco exterior. However, as an unadorned example it does not embody sufficient distinctive characteristics of the style such as varied wall cladding and attached garage. Research at the Kern County Assessor's Office and online archival documentation did not reveal a record of a builder or architect for the property. Therefore, it is not recommended as eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

McKee and Fordham Houses (Map IDs 73–74) The property at 3337 50th Street West (McKee House) was built in 1926. The dwelling is not visible from the ROW due to shielding trees and distance. A review of aerial imagery shows the dwelling as a single-story house with a side-gabled roof covered in asphalt shingles, a front porch, and a rear addition. The only structure visible from the ROW is a side-gabled frame basement barn sheathed in vertical wood clapboards. Corrugated metal panels cover the ground-level exterior of the south elevation, terminating just below the head jamb. The roof appears to be collapsing, as the framing is visible through missing clapboards. A shed lean-to clad in corrugated metal extends from the south elevation. The parcel contains scrubby vegetation and trees and is traversed by an east-west transmission line.

The property at 3337 50th Street West (Fordham House) is a single-story modular home built in 1978. The dwelling has a shallow side-gabled roof covered in asphalt shingles, an asbestos shingle exterior, two louvered windows, and an aluminum picture window. The modern replacement entry is sheltered by a raised open shed roof porch on wood posts with a balustrade. A large woodshed and a solar panel are north and northwest of the dwelling, respectively.

Evaluation of McKee House. Based on Kern County assessor parcel data, this dwelling was built in 1926. during a period of early homesteading in rural Rosamond. The property dates to a significant period of local history but does not appear to be a distinct example of a property associated with that local development. Documentation of its development history is lacking and there is no evidence of a significance beyond having been constructed during a period of homestead development in the area. It lacks a clear connection to the development of the local communities and therefore is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II suburban development. This property was built in a vernacular style using common materials and methods seen throughout desert regions of California. As an unadorned dwelling the property does not embody sufficient distinctive characteristics of any style. Research did not reveal a record of a builder or architect for the property. Therefore, it is not recommended eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4 (Kern County Assessor Recorder n.d.).

Evaluation of Fordham House. Based on aerial imagery, this dwelling was built in 1978, during a period suburban residential growth and commercial growth in Rosamond and its vicinity. The property dates to the end of a significant period of local history and does not appear to be a distinct example of a property associated with that suburban developmental theme. Although it represents broad patterns of residential development in rural Kern County, it is not in an area that has a cohesive pattern of history that would be considered significant. It lacks a clear connection to the development of the local communities and therefore is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II suburban development. This property is a 1978 modular mobile home unit sited at a permanent location. It likely was originally sited here and has not been moved. It is not part of a mobile home park, which as a type can hold significance with associations with suburban development and architecturally as a district. Without such a setting, this home does not have a clear developmental history, nor does it exhibit significant characteristics of its type or period of construction. It is a common example that individually does not hold significance. Research at the Kern County Assessor's Office and online archival documentation did not reveal a record of a builder or architect for the property. Therefore, it is not recommended eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Prudential Mobile Home Park/Chuck Yeager (Map ID 75) The property at 5335 Rosamond Boulevard is the Prudential Mobile Home Park (previously the Thunderbird Mobile Home Ranch). It comprises approximately 36 single-story rectilinear modular homes, an office building, laundry building, and an inground pool. The park's buildings are placed along a four-street grid. A single 1920s Spanish revival style residential building at the northeastern corner of the complex predates the rest of the mobile home park. This building has a square plan flat roof, and a Spanish revival style stucco exterior.

Evaluation of Prudential Mobile Home Park/Chuck Yeager House. According to Kern County Assessor records and aerial imagery, the mobile home park was built in the 1950s, while the Spanish revival style residential building on the property predating the mobile home park dates to 1920s. The Spanish revival style building was home to Chuck Yeager in 1947 when he became the first human to break the sound barrier. The

mobile home park was developed around this building in the 1950s. While the buildings on the property date to periods significant to residential development in local history, neither the Chuck Yeager House, nor the mobile home park are significantly associated with this development and therefore is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. The Chuck Yeager building was the home of Chuck Yeager when he became the first human to break the sound barrier in 1947. As such, this resource is recommended eligible for listing in the CRHR under Criterion 2 for its direct association with an individual important to both national and Californian history. However, no information was found associating the rest of the property, the Prudential Mobile Home Park, with any historically significant persons Under CRHR Criterion 3, this dwelling does not embody distinctive characteristics of a type, period, or method of construction; nor does it represent the work of a master architect/builder. The dwelling is an example of a vernacular 1920s Spanish Revival style residence that appears to have undergone exterior material alterations including window and door replacements that have altered its original design, workmanship, and material integrity. It no longer clearly conveys its historic period of construction or architectural style. Research at the Kern County Assessor's Office and online archival documentation did not reveal a record of a builder or architect for the property. Therefore, it is recommended as not eligible under CRHR Criterion 3. The Prudential Mobile Home Park does not appear to be associated with a significant historical event or broad patterns of history at the local, state, or national level. It does not contribute to a cohesive pattern of history in the area that would be considered significant, and it lacks a clear connection to the development of the local communities. The property is not associated with the lives of historically significant persons and does not embody distinctive characteristics of its type, period, or method of construction. It does not represent the work of a master and does not possess high artistic value. Therefore, the mobile home park, separate from the identified individual dwelling, which predates the park, is recommended as not CRHR-eligible. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Leoni House (Map ID 76) The dwelling at 2941 55th Street West is a single-story front-gable rectilinear dwelling built in 1922. The dwelling has an asphalt shingle roof, a stucco exterior, and modern replacement vinyl horizonal windows. The central primary entrance on the south gable end is a modern door lit by two fixed panes. An auxiliary residence is on the parcel's southern boundary. Alterations include modern vinyl window and door replacements, and a gabled addition. A secondary residence was built on the parcel circa 2006. The secondary residence stands two stories tall (including garage/basement level) and has an asphalt shingle front-gable roof, modern siding of unknown materials, large fixed segmental arch windows, and a single-bay façade portico supported by arched posts. The ground level is accessed by two garage doors.

Evaluation of Leoni House. According to Kern County Assessor records, the dwelling was built in 1922, during a period of early homesteading in rural Rosamond vicinity. Although the property dates to a significant period of local history, it does not appear to be a distinct example of a property associated with that local development. Documentation of its development history is lacking and there is no evidence of significance beyond having been constructed during a period of homestead development in the area. It lacks a clear connection to the development of the local communities and therefore is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II suburban development. This property was built in a vernacular style using common materials and methods seen throughout desert regions of California, featuring a side gable roof with stucco exterior. As an unadorned dwelling the property does not embody sufficient distinctive characteristics of any style. Additionally, it appears significantly altered to the point that it no longer conveys its period of construction. Research at the Kern County Assessor's Office and online archival documentation did not reveal a record of a builder or architect for the property. Therefore, it is recommended as not eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Hernandez House (Map ID 77) The dwelling at 5615 W. Rosamond Boulevard is a single-story, irregular plan ranch dwelling built in 1946. The dwelling has a hipped roof covered in asphalt shingles, a stucco exterior, and large modern fixed multipaned vinyl windows. The primary entrance is a modern door sheltered by a pent hood set into an L. Aerial imagery shows an addition on the rear ell junction, presumably a porch. The sole outbuilding on the parcel is a long side-gabled shed clad in metal with wood and composite doors. Vegetation on the property consists of mature trees and grassy areas. Alterations include modern fixed, multi-pane window replacements, modern door replacements, and a porch addition.

Evaluation of Hernandez House. According to Kern County Assessor records, the dwelling was built in 1946 in the rural Rosamond vicinity, during a period suburban residential growth and commercial growth. Although the property dates to this significant period of local history, it does not appear to be a distinct example of a property associated with developmental theme. It lacks a clear connection to the

development of the local communities and therefore is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II suburban development. This property was constructed in the vernacular ranch style using common materials and methods seen in the region, featuring a cross-hipped roof and stucco exterior. However, it does not embody sufficient distinctive characteristics of the style such as varied wall cladding, attached garage, and multi-pane picture windows. Significant exterior alterations have also diminished its integrity of design, material, workmanship, feeling and association to the potin that it no longer conveys its historic period of construction or style. Research at the Kern County Assessor's Office and online archival documentation did not reveal a record of a builder or architect for the property. Therefore, it is recommended as not eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Holzer House (Map ID 78) The dwelling at 5570 W. Rosamond Boulevard is a single-story rectilinear ranch dwelling built in 1952. The dwelling has a side-gabled asphalt single roof, an exterior clad in vertical siding of unknown materials, and modern vinyl horizontal sliding windows of various sizes. A masonry chimney topped with a pot interrupts the west elevation eaves. The chimney is subsumed by a short one-bay gabled addition. The small narrow windows on the third and fourth bays of the primary unit are covered by metal awnings. The wood front door is protected by a partial width open porch with a metal awning roof and posts. A two-bay garage tertiary addition extends westward from the earlier expansion. Aerial imagery shows an awning on the rear addition indicative of a secondary lawn entrance and two small sheds. Alterations include window replacements.

Evaluation of Holzer House. According to Kern County Assessor records, the dwelling was built in 1952 in the rural Rosamond vicinity, during a period of suburban residential growth and commercial growth. Although the property does date to a significant period of history locally, it does not appear to be a distinct example of a property associated with the that developmental theme. It represents broad patterns of residential development in rural Kern County but is not in an area that has a cohesive pattern of history that would be considered significant. It lacks a clear connection to the development of the local communities and therefore is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an

association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II suburban development. This property was constructed in the vernacular ranch style using common materials and methods seen in the region, featuring a long roof ridge with wide overhang, integrated porch, and attached garage. However, as an unadorned example it does not embody sufficient distinctive characteristics of the style such as varied wall cladding and large multi-pane picture windows. Research at the Kern County Assessor's Office and online archival documentation did not reveal a record of a builder or architect for the property. Therefore, it is recommended as not eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Butler House (Map ID 79) The dwelling at 5657 W. Rosamond Boulevard is a one-and-a-half-story Minimal Traditional dwelling built in 1930. The dwelling has a cross–gabled asphalt single roof with a low pitch shed dormer bracketed eaves, and large metal pipe vent next to the shed dormer. The triangular brackets and the dwelling's construction date suggest a Craftsman influence. The exterior features aluminum siding and modern vinyl horizontal sliding windows. Alterations include modern vinyl sliding window replacements, potential aluminum siding replacement, and door replacements. The two modern front doors are tucked into the wall junctions and are sheltered by an open gabled vestibule. The additions include single-story gabled and shed roof frames on the northwest corner and east elevation, respectively. The latter addition has a large floor-to-ceiling sliding door which opens to a small patio. The parcel contains numerous small sheds.

Evaluation of Butler House. According to Kern County Assessor records, the dwelling was built in 1930 in the rural Rosamond vicinity, prior to a period of residential suburban growth following World War II. The property does not date to a significant period of local history, and it does not appear to be a distinct example of a property associated with the regional development of the Antelope Valley. Its lacks a documented history identifying it as being associated with significant events. Although it could represent broad patterns of residential development in rural Kern County, it is not in an area that has a cohesive pattern of history that would be considered significant. It lacks a clear connection to the development of the local communities and therefore is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant

persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II suburban development. This property was constructed in the vernacular Minimal Traditional style, with Craftsman influence, using common materials and methods seen in the region, featuring a gable and wing form with nested entrance gable and eave bracketing. Significant exterior alterations, namely window replacements of incompatible size have diminished its integrity of design, material, workmanship, feeling and association to the point that it no longer conveys its historic period of construction. Research at the Kern County Assessor's Office and online archival documentation did not reveal a record of a builder or architect for the property. Therefore, it is recommended as not eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Muradian House (Map ID 80) The dwelling at 5767 W. Rosamond Boulevard is a single-story rectilinear dwelling of no discernable style built in 1935. The dwelling has a front-gabled roof covered in asphalt singles, modern vinyl horizontal windows, and an exterior clad in unknown siding. The eaves end fenestration is not visible from the right-of-way (ROW). The extended roof on the east elevation forms an open porch supported by metal posts. The west elevation has a low pitch shed roof frame addition. Aerial imagery shows a long slightly zigzagging tertiary addition running from the former's south elevation. The sole outbuilding is a frame lean-to sheathed in thin vertical siding immediately northwest of the dwelling.

Evaluation of Muradian House. According to Kern County Assessor records, the dwelling was built in 1935 in the rural Rosamond vicinity, prior to a period of residential suburban growth following World War II. The property does not date to a significant period of history locally and it does not appear to be a distinct example of a property associated with the regional development of the Antelope Valley. Its lacks a documented history identifying it as being associated with significant events. Although it could represent broad patterns of residential development in rural Kern County, it is not in an area that has a cohesive pattern of history that would be considered significant. It lacks a clear connection to the development of the local communities and therefore is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No

information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II suburban development. This property was constructed in a vernacular style, using common materials and methods seen in the region. As an unadorned, altered dwelling, it does not embody distinctive characteristics of any style or period of construction. Significant exterior alterations, namely window replacements of incompatible size have diminished its integrity of design, material, workmanship, feeling and association to the point that it no longer conveys its historic period of construction. Research at the Kern County Assessor's Office and online archival documentation did not reveal a record of a builder or architect for the property. Therefore, it is recommended as not eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Smith House No. 1 (Map ID 81) The dwelling at 5760 W. Rosamond Boulevard is a single-story three-bay double-pile dwelling of no discernable style built in 1950. The house has a side-gabled roof with extended eaves covered in asphalt singles, a stucco exterior, and asymmetrically spaced modern vinyl horizontal windows and an off-center wood door. A wide chimney stepped at the base interrupts the east end eaves. An overhanging roof extends over the façade to form an open porch supported by wood posts. The rear elevation has shed roof frame addition sheathed in composite vertical siding. The grassy parcel is lined with a chain link fence. Alterations include modern vinyl sliding window replacements and door replacements.

Evaluation of Smith House No. 1. According to Kern County Assessor records, the dwelling was built in 1950 in the rural Rosamond vicinity, during a period suburban residential growth and commercial growth. Although the property dates to this significant period of history locally, it does not appear to be a distinct example of a property associated with developmental theme. It lacks a clear connection to the development of the local communities and therefore is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II

suburban development. This property was constructed in a vernacular style, using common materials and methods seen in the region, such as stucco exterior and wood frame porch. As an unadorned, altered dwelling, it does not embody distinctive characteristics of any style or period of construction. Significant exterior alterations, namely window replacements of incompatible size have diminished its integrity of design, material, workmanship, feeling and association to the point that it no longer conveys its historic period of construction. Research at the Kern County Assessor's Office and online archival documentation did not reveal a record of a builder or architect for the property. Therefore, it is recommended as not eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Williamson House (Map ID 82) The dwelling at 2729 60th Street West is a single-story, four-bay, double-pile ranch dwelling built in 1957. The house has a side-gabled roof covered in asphalt singles with a short brick chimney. The stucco exterior has asymmetrically spaced modern vinyl horizontal windows, and an off-center modern replacement door. The fourth bay window is a modern vinyl multipaned sash. The porch comprises an overhanging roof supported by wood posts. A south gable end shed roof carport rests on a series of wood posts atop brick piers. The parcel's only outbuilding is a large, two-bay frame, front-gabled garage. The property is lined by a cinderblock wall articulated with breeze block coping.

Evaluation of Williamson House. According to Kern County Assessor records, the dwelling was built in 1957 in the rural Rosamond vicinity, during a period of suburban residential growth and commercial growth. Although the property dates to a significant period of local history, it does not appear to be a distinct example of a property associated with the that developmental theme. It does represent broad patterns of residential development in rural Kern County but is not in an area that has a cohesive pattern of history that would be considered significant. It lacks a clear connection to the development of the local communities and therefore is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II suburban development. This property was constructed in the vernacular ranch style using common materials and methods seen in the region, featuring a long side gable roof with integrated porch and wide overhang, integrated porch. However, as an

unadorned example it does not embody sufficient distinctive characteristics of the style such as varied wall cladding and large multi-pane picture windows. Alterations have significantly diminished its integrity of design, materials, workmanship, feeling and association to the point that it no longer conveys its historic period of construction or style. Research at the Kern County Assessor's Office and online archival documentation did not reveal a record of a builder or architect for the property. Therefore, it is recommended as not eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Day House (Map ID 83) The dwelling at 6275 Astoria Avenue is a one-and-a-half-story side-gabled house of no discernible style built in 1940. The house has a roof covered in asphalt shingles, a stucco exterior, and modern vinyl horizontal windows of various sizes covered by wrought iron security gates. Two gabled single-story wings flank the central primary unit. The two entrances are wood doors on the central unit and at the wall junction with the north wing. The junction entrance is sheltered by a pent roof porch on a single post. The parcel contains two sheds and is lined by a cinderblock wall with sections of breeze block coping.

Evaluation of Day House. According to Kern County Assessor records, the dwelling was built in 1940 in the rural Rosamond vicinity, prior to a period of residential suburban growth following World War II. The property does not date to a significant period of history locally and does not appear to be a distinct example of a property associated with the regional development of the Antelope Valley. Its lacks a documented history identifying it as being associated with significant events. Although it could represent broad patterns of residential development in rural Kern County, it is not in an area that has a cohesive pattern of history that would be considered significant. It lacks a clear connection to the development of the local communities and therefore is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II suburban development. This property was constructed in the vernacular style, with Craftsman and Minimal Traditional influence, using common materials and methods seen in the region, featuring a cross-gable roof and stucco exterior. Significant exterior alterations, namely window replacements of incompatible size and style have diminished its integrity of design, material, workmanship, feeling and association to the point that it no longer conveys its

historic period of construction. Research at the Kern County Assessor's Office and online archival documentation did not reveal a record of a builder or architect for the property. Therefore, it is recommended as not eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Ramirez House (Map ID 84) The dwelling at 6313 Astoria Avenue is a single-story rectilinear dwelling of no discernable style built in 1916. The house has a side-gabled asphalt shingle roof. The east end eaves are punctured by an external chimney. The stucco exterior features modern replacement 6/6 sash windows. The façade is obscured from the ROW of vegetation and fencing, however, based on the visible windows, it is presumed that the fenestration pattern is uniform throughout the exterior. The rear shed roof addition is covered in stucco flush with the primary unit and aluminum horizontal windows. Alterations include modern vinyl window and door replacements, new roof coping, and façade addition. The footprint of the addition has a slight L-plan due to rectangular section projecting northeast corner. Aerial imagery shows that the addition is wrapped around the south end gable. The grassy parcel is lined with a chain link fence and contains a pole barn clad in standing seam metal, scrubby vegetation, and trees.

Evaluation of Ramirez House. According to Kern County Assessor records, the dwelling was built in 1916, during a period of early homesteading in rural Rosamond vicinity. The property dates to a significant period of local history, but it does not appear to be a distinct example of a property associated with that local development. Documentation of its development history is lacking and there is no evidence of a significance beyond having been constructed during a period of homestead development in the area. It lacks a clear connection to the development of the local communities and therefore is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II suburban development. This property was constructed in a vernacular style using common materials and methods seen throughout desert regions of California, such as stucco exterior and side-gable form. Although an unadorned example of an early twentieth century Rosamond vicinity dwelling, it holds some significance as an early homestead location. However, a large addition to full width of the façade has entirely altered the original design, workmanship, feeling, and association of the dwelling to the point that it no longer

conveys its historic period of construction or style. Research at the Kern County Assessor's Office and online archival documentation did not reveal a record of a builder or architect for the property. Therefore, it is recommended as not eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Rueben/Soliz House (Map ID 85) The dwelling at 6382 Gobi Avenue is a single-story rectilinear ranch dwelling built in 1956. The rectilinear, side-gabled house has an asphalt shingle roof punctured by a stucco-covered chimney and a row of three modern skylights. The exterior is clad in stucco and has modern tripartite windows in molded composite surrounds. The south-facing façade is obscured from the ROW, but the fenestration presumably matches the visible windows. A modern glass siding doors on the east gable end are sheltered by a porch with a pergola-like roof on wood posts. Per aerial imagery, a roof extension on the façade is likely part of an open porch. Aerial imagery shows multiple sheds throughout the property.

Evaluation of Rueben/Soliz House. According to Kern County Assessor records, the dwelling was built in 1956 in the rural Rosamond vicinity, during a period of suburban residential growth and commercial growth. Although the property dates to a significant period of local history, it does not appear to be a distinct example of a property associated with the that developmental theme. It does represent broad patterns of residential development in rural Kern County but is not in an area that has a cohesive pattern of history that would be considered significant. It lacks a clear connection to the development of the local communities and therefore is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II suburban development. This property was constructed in the vernacular ranch style using common materials and methods seen in the region, featuring a long side gable roof with wide overhang. However, as an unadorned example it does not embody sufficient distinctive characteristics of the style such as varied wall cladding, large multi-pane picture windows, and attached garage. Research at the Kern County Assessor's Office and online archival documentation did not reveal a record of a builder or architect for the property. Therefore, it is recommended as not eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the

community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Erwing House (Map ID 86) The dwelling at 5511 W. Rosamond Boulevard is a single-story side-gabled ranch dwelling built in 1954. The rectilinear double-pile dwelling has an asphalt shingle roof punctured by a stucco-covered chimney and a row of three modern skylights. The exterior is sheathed in unknown vertical siding and has large aluminum horizontal sliding windows. The off-center primary entrance is a modern paneled door sheltered by a partially enclosed shed roof porch on a single post. The enclosed portion is left of the entrance and has modern synthetic siding and large modern fixed single pane windows. The west gable end has a small gabled utility addition. The parcel is lined with a chain link fence and contains a single bay shed roof garage, a large open car port, and a small shed.

Evaluation of Erwing House. According to Kern County Assessor records, the dwelling was built in 1954 in the rural Rosamond vicinity, during a period of suburban residential growth and commercial growth. Although the property dates to a significant period of local history, it does not appear to be a distinct example of a property associated with the that developmental theme. It represents broad patterns of residential development in rural Kern County but is not in an area that has a cohesive pattern of history that would be considered significant. It lacks a clear connection to the development of the local communities and therefore is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II suburban development. This property was constructed in the vernacular ranch style using common materials and methods seen in the region, featuring a long side gable roof with wide overhang. However, as an unadorned example it does not embody sufficient distinctive characteristics of the style such as varied wall cladding, large multi-pane picture windows, and attached garage. Research at the Kern County Assessor's Office and online archival documentation did not reveal a record of a builder or architect for the property. Therefore, it is recommended as not eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Joseph Williams House (Map ID 87) The dwelling at 3123 Mojave Tropico Road is a single-story S-plan ranch house built in 1946. The dwelling has a cross-hipped asphalt shingle roof, a vinyl siding exterior, and modern replacement 6/6 windows. The primary entrance is sheltered by an enclosed porch on the southeast corner. The porch has a continuous glazing of tall narrow fixed multilight windows surmounted by rectangular wood spandrels. The two auxiliary buildings include a small front-gabled garage with exposed rafters and asbestos shingle siding, and a frame shed lean-to, also with exposed rafters covered in plywood. The parcel contains scrubby vegetation and some ornamental shrubs. Alterations include window additions on the side elevation, replacement siding, and replacement vinyl windows and doors.

Evaluation of Joseph Williams House. According to Kern County Assessor records, the dwelling was built in 1946 in the rural Rosamond vicinity, during a period of suburban residential growth and commercial growth following World War II. Although the property dates to a significant period of local history, it does not appear to be a distinct example of a property associated with the that developmental theme. It represents broad patterns of residential development in rural Kern County but is not in an area that has a cohesive pattern of history that would be considered significant. It lacks a clear connection to the development of the local communities and therefore is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II suburban development. This property was constructed in the vernacular ranch style using common materials and methods seen in the region, featuring a cross-hipped roof with wide overhang. However, as an unadorned example it does not embody sufficient distinctive characteristics of the style such as varied wall cladding, large multi-pane picture windows, and attached garage. Research at the Kern County Assessor's Office and online archival documentation did not reveal a record of a builder or architect for the property. Therefore, it is recommended as not eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Tropico Middle School (Map ID 88) This property contains the Tropico Middle School, which dates to circa 1950 with the construction of the three original buildings. These buildings have red metal roofs, long gabled roof ridges running parallel to the road, concrete block construction, and frieze band windows. The entire property is

fenced with chain-link and has grown drastically in size and number of buildings since its original construction. Additional buildings include classroom units, a large gymnasium, and a newer school building consisting of a series of flat roof blocks with varied roof heights and stucco exterior. Between 1987 and 1990, five new buildings were added to the complex. In 1994, the new school building was constructed and in 2010 the gymnasium buildings were constructed.

Evaluation of Tropico Middle School. According to Kern County Assessor records the three original middle school buildings were built about 1950; they appear to be associated with a significant period of development in the Rosamond area, constructed to accommodate a growing population in the community after World War II. However, owing to significant additions and enlargement of the complex, the property no longer conveys that period of historic development. Therefore, it is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II suburban development. The original Tropico Middle School buildings embody typical architectural characteristics indicative of their type and style, such as low-pitched, metal-clad gable roofs with long roof ridges running parallel to each other; however, the buildings lack distinction and no longer convey the historic period of development. Research at the Kern County Assessor's Office and online archival documentation did not reveal a record of a builder or architect for the property. Therefore, this property is recommended as not eligible for listing in the CRHR. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Sanchez House No. 2 (Map ID 89) The property at 3201 Mojave Tropico Road is a single-story T-plan ranch house built in 1954. The dwelling has a side-gabled asphalt shingle roof, a stucco exterior, and fixed multilith windows of various configurations. A large portion of the façade is obscured from the ROW by fencing and vegetation and it is presumed that the fenestration pattern throughout the exterior reflects the visible windows. The roof is covered in asphalt shingles and the primary entry is not visible from the ROW due to the abovementioned obstructions. Aerial imagery shows a rear gabled ell with a flat or shed-roofed appendage. The property's sole outbuilding is a large frame barn immediately north of the dwelling. The frame barn capped with a tile

gable roof and is clad in plywood. The parcel is lined with wood picket and metal wire fencing, ornamental vegetation, and mature trees.

Evaluation of Sanchez House No. 2. According to Kern County Assessor records, the dwelling was built in 1954 in the rural Rosamond vicinity, during a period of suburban residential growth and commercial growth following World War II. Although the property dates to a significant period of local history, it does not appear to be a distinct example of a property associated with the that developmental theme. It does represent broad patterns of residential development in rural Kern County but is not in an area that has a cohesive pattern of history that would be considered significant. It lacks a clear connection to the development of the local communities and therefore is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II suburban development. This property was constructed in the vernacular ranch style using common materials and methods seen in the region, featuring gabled roof with long roof ridge running parallel to the road, a wide overhang, and multi-pane picture windows. However, as an unadorned example it does not embody sufficient distinctive characteristics of the style such as varied wall cladding and attached garage. Research at the Kern County Assessor's Office and online archival documentation did not reveal a record of a builder or architect for the property. Therefore, it is recommended as not eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Sanchez House No. 1 (Map ID 90) The property at 1645 Mojave Tropico Road is a dwelling built in 1935. The dwelling is somewhat obscured from the ROW by trees. Visible features include a side-gabled building clad in corrugated metal. Aerial imagery shows the dwelling one story tall and rectilinear in plan. The neighboring outbuilding to the immediate south has a cross-gabled roof and exterior covered in corrugated metal. Per aerial imagery, the outbuilding is a T-plan with appendages on the west gable and northwest corner of the ell. The grassy parcel is lined with barbed wire and contains rows of trees.

Evaluation of Sanchez House No. 1. According to Kern County Assessor records, the dwelling was built in 1935 in the rural Rosamond vicinity, prior a period of suburban

residential growth and commercial growth following World War II. The property does not date to a significant period of local history, and it does not appear to be a distinct example of a property associated with the regional development of the Antelope Valley. Although it does represent broad patterns of residential development in rural Kern County, it is not in an area that has a cohesive pattern of history that would be considered significant. It lacks a clear connection to the development of the local communities and therefore, is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II suburban development. This property was constructed without specific architectural style using common materials and methods seen in the region, featuring gabled roof and metal corrugated materials. Research at the Kern County Assessor's Office and online archival documentation did not reveal a record of a builder or architect for the property. Therefore, it is recommended as not eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Tropico Gold Mine (Map ID 91-96) This property contains the circa-1880, now abandoned, Tropic-Lida Gold Mine. The complex occupies a hillside and consists of one mine shaft marked by a steel headframe and numerous structures primarily concentrated on the south side of Burton Road. These include single and multistory utilitarian wood frame hoist, cap, fuse, and transmission houses, warehouses, various offices and shop, along with steel boardwalks and boilers. Aerial images show a circulation system of vehicular runways connecting the abovementioned concentration with outlying structures in the southeastern portion of the property, and main roads. Although the structures are on private land a substantial distance from the ROW, it can be presumed that the property contains the remains of a pond and associated dams, ditches, and mills.

Evaluation of Tropico Gold Mine. The Tropico Gold Mine (P-15-007591) was previously evaluated as an archaeological site for the National Register of Historic Places (NRHP) in 1980 and 2008 as part of planning efforts for the Bureau of Land Management and the Los Angeles Public Works Department, respectively. The site was recommended eligible as a good representation of a gold mine and for its associations with the statewide mining industry, the Great Depression, and later, tourism. Prior to these evaluations, owing to clay deposits found on the hill, the resource was designated

a California Point of Historical Interest in 1968. No formal evaluation of the built environment resources associated with this property appears to have been conducted. Based on observations during the built environment survey for the project and in-depth archival research following the survey, WSP considered the significance of the Tropico Gold Mine and associated resources as a potential historic district containing the mine (Assessor's Parcel Number [APN] 25210017), as well as five additional parcels containing dwellings used as workers' housing for the mining company (Map IDs 91–95). The potential district was evaluated with respect to CRHR criteria 1–3. This resource was also evaluated as an archaeological resource under Criterion 4 in the Archaeological Resources section and was found eligible under that criterion (see P-15-007591). The Tropico Gold Mine is a historical resource, as defined in CEQA.

2600 Sweetser Road (Map ID 97) The property at 2600 Sweetser Road was built in 1944 and is a one-story, T-plan, wood-frame ranch style residence with a centered cross-gable roof. The dwelling features a recessed front porch under the central gable supported by four square posts and styled with large eave bracketing. Wood lap siding clads the front gable end. The stucco-clad exterior features two types of windows: three-part rounded arch vinyl replacement windows and the side elevations and flanking the central gable and original two-part sliding metal windows underneath the porch roof with metal guards. The rounded arch windows appear to be set in original openings and retain original wood trim surrounds. A single-story shed roof addition extends from the rear elevation. The property is on a long rectangular parcel with chain link fencing, shrubs, and scattered trees. Numerous shipping containers and non-permanent prefabricated storage structures are scattered on the parcel.

Evaluation of 2600 Sweetser Road. According to Kern County Assessor records, the dwelling was built in 1944 in the rural Rosamond vicinity, during a period of suburban residential growth and commercial growth following World War II. Although the property dates to a significant period of local history, it does not appear to be a distinct example of a property associated with the that developmental theme. It does represent broad patterns of residential development in rural Kern County but is not in an area that has a cohesive pattern of history that would be considered significant. It lacks a clear connection to the development of the local communities and therefore is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II suburban development. This property was constructed in the vernacular ranch style using common materials and methods

seen in the region, featuring cross-gabled roof and multi-pane picture windows. However, as an unadorned example it does not embody sufficient distinctive characteristics of the style such as varied wall cladding, attached garage, and a wide overhang with recessed entry. Research at the Kern County Assessor's Office and online archival documentation did not reveal a record of a builder or architect for the property. Therefore, it is recommended as not eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Segment of LADWP Owens Gorge 230kV Transmission Line (P-15-018681/ CA-KER-10204H/Map ID 101) PaleoWest surveyed approximately 2.16 miles of the Los Angeles Department of Water and Power (LADWP) Owens Gorge Transmission Line that lies between W. Rosamond Boulevard and Hamilton Road in Rosamond, California (segment). The segment resembles previously recorded portions of the line, consisting of utilitarian dead-end type towers. The Owens Gorge 230kV Transmission Line, otherwise known as OG-RIN and most recently known as BAR-RIN, was built between 1950 and 1952. This transmission line originally connected three LADWP powerplants in the Owens River Gorge. These powerplants were northwest of Bishop, California, and were connected to Receiving Station E (at Whitnall Highway and Cahuenga Boulevard in North Hollywood). Some modifications were made to the line during the mid-1950s and 1960s to accommodate the increase in suburban development (Dice 2014).

Evaluation of Segment of LADWP Owens Gorge 230kV Transmission Line. Under Criterion 1, a resource must constitute an association with significant events in history. Despite the proximity of Willow Springs to the resource, the Owens Gorge 230kV Transmission Line is not associated with a significant event in history. Paleowest recommends the transmission line segment not eligible for listing in the CRHR under Criterion 1. Under Criterion 2, a resource must have association with a significant historical figure. The Owens Gorge 230kV Transmission Line is not associated with a significant historical figure. The transmission line segment is not recommended eligible for listing in the CRHR under Criterion 2. Under Criterion 3, a resource must embody distinctive characteristics of a type, period, method of construction, or represent the work of a master that possesses high artistic values, was not representative of that of a master, nor does possess high artistic value. Additionally, it is not in association with any important persons of history. Therefore, Owens Gorge 230kV Transmission Line segment is not recommended eligible for listing in the CRHR under Criterion 3. Owens Gorge 230kV Transmission Line segment is not recommended to be considered eligible for the listing in the CRHR under Criterion 4.

Segment of the Vincent 220kV Transmission Line (Map ID 103) The Vincent 220kV Transmission Line was built in 1925–1927 near present-day La Canada in Los Angeles, California. The transmission line originally included approximately 879 steel lattice transmission towers, of which 866 were extant in 2012. The transmission towers span 224 miles, and the line is larger than the earlier Big Creek No. 1 and No. 2 lines

which were installed between 1913 and 1922. Only about 0.55 mile of the Vincent transmission line runs through the built environment PAA near the Whirlwind Substation in the southwestern corner of the project area. The transmission line runs southeast to northwest through the western edge of the project area. There have been no discernable changes since it was surveyed and evaluated in 2019.

Evaluation of the Vincent 220kV Transmission Line. The transmission line is part of the Southern California Edison (SCE) Big Creek Hydroelectric System, which is a NRHP/CRHR historic district, and the line was deemed eligible as a contributor to the district. The design of the towers became known as the Vincent Type during the twentieth century. The Vincent 220kV Transmission Line is a historical resource for the purposes of CEQA.

General Petroleum Access Road (Map ID 104) PaleoWest documented a 1.56-mile-long section of the General Petroleum Access Road (CA-KER-7747H) on April 26, 2022, that ran from the SCE Whirlwind Substation southwest of W. Rosamond Boulevard northeasterly to approximately 160th Street West. Although portions of the road have been previously recorded by ICF International and SWCA Consultants, the segment that lies within Sections 13 and 23, Township 9 North, Range 15 West, had not been documented. The newly identified segment consists of an actively used and maintained graded dirt road that averages 10 feet wide. Portions of the road in the vicinity of the Whirlwind Substation have been graveled. The road is adjacent to a SCE transmission line. Roadway sediments consist of light gray-tan sandy gravely loam. No artifacts were found in association with the access road.

Evaluation of General Petroleum Access Road. Under Criterion 1, a site must constitute an association with significant events in history. Site CA-KER-7747H does not appear to be associated with any important events in history with a lack of historic artifacts and features. CA-KER-7747H is recommended to be considered not eligible for listing in the CRHR under Criterion 1. Under criteria 2 and 3, a site must have association with a significant historical figure, and embody distinctive characteristics of a type, period, method of construction, or represent the work of a master that possess high artistic values. The road segments of CA-KER-7747H do not indicate that the construction is representative of the work of a master or is in association with any important persons of history. Therefore, CA-KER-7747H is recommended to be considered not eligible for listing in the CRHR under criteria 2 or 3. Under Criterion 4, a site must yield or can subsequently yield, important information regarding the prehistory or history of the site. Site CA-KER-7747H does not contain any diagnostic artifacts or features that can warrant information of the site's history. The lack of subsurface potential does not likely yield any information as well. The CEC staff concludes that CA-KER-7747H is not eligible for listing in the CRHP under criterion 4. The General Petroleum Access Road is not a historical resource for the purposes of CEQA.

Westside Park Mobile Home and RV Park (Map ID 109) The property at 4209 W. Rosamond Boulevard is the Westside Mobile Home and RV Park, which was established

at this location circa 1950, with RV pads in the southern two-thirds of the parcel and later expanded with the mobile home units by 1972. Today, the property consists of permanent mobile home units at its north end, an administrative office, and RV concrete pads in the southern two-thirds of the parcel. The mobile home units are arranged in a distinct figure-eight shape with two full circles of homes on the interior of the circular roads and semicircular groupings of homes on the outer sides of the roads, bound by the rectilinear parcel.

Evaluation of Westside Park Mobile Home and RV Park. Based on aerial imagery, the RV park was established about 1950, and the mobile home units were added circa 1970, making the Westside Mobile Home and RV Park. The park is in the suburban Rosamond vicinity and was established during a period of suburban residential growth and commercial growth following World War II. Although the property dates to a significant period of local history, it does not appear to be a distinct example of a property associated with the that developmental theme. It was established late within the period of development and lacks a clear connection to the development of the local Rosamond community and therefore is recommended as not eligible under CRHR Criterion 1. Under CRHR Criterion 2, a property can be eligible for an association with the lives of historically significant persons who have made contributions to local, state, or national history. Research did not reveal any connections of the property to historically significant persons. No information was uncovered identifying historic property owners. Therefore, the property is recommended as not eligible under CRHR Criterion 2. Under CRHR Criterion 3, a property can be eligible if it embodies distinctive characteristics of a type, period, or method of construction or if it represents the work of a master architect/builder or possesses high artistic value. The significant architectural history of the Rosamond area is tied to late nineteenth and early twentieth century homesteading, mining, and ranching activities as well as post-World War II suburban development. This property contains typical, unadorned modular home units from the 1970s. They lack distinct architectural features as individual units and as a unit. Research at the Kern County Assessor's Office and online archival documentation did not reveal record of a builder or architect for the property. Therefore, it is not recommended eligible under CRHR Criterion 3. This property is an above-ground property that has not yielded and is not likely to yield information important that furthers our knowledge of the history of the community, state, or the nation. As such, this property is not significant under CRHR Criterion 4.

Interpretation of Results: Archaeological Resources

None of the isolates are eligible for the CRHR under any criteria and no further consideration under the California Environmental Quality Act (CEQA) is necessary. Of the 35 archaeological sites, nine were either not relocated, were confirmed to be outside the project boundary, or no longer exist. Ten archaeological sites are recommended as ineligible for listing on the CRHR and do not qualify as unique archaeological resources. Five archaeological sites are eligible for the CRHR, with another 11 being assumed eligible for this project and therefore being treated as historical resources. Alternatives A, B, C, and a portion of the original Preferred Gen-Tie

route are currently no longer being considered for development. Archaeological sites in these areas that could not be evaluated are assumed eligible for this project only and if project plans change to include any portions of these alternatives, additional cultural resources work will need to be conducted, including but not limited to additional survey, possible extended phase I, test excavations, and data recovery. A total of 16 sites are recommended or assumed eligible and have the potential to be affected by the project. Of those 16, seven (bold) are in the project's selected alternative, while the other nine would not be impacted. The historical resources include:

1. **WRESC-ZEV-MULTI-SITE-1**
2. **WRESC-ZEV-PRE-SITE-2**
3. **WRESC-ZEV-PRE-SITE-3**
4. **WRESC-P1-PRE-SITE-1**
5. **WRESC-PREF-HIST-SITE-3**
6. P-15-003359
7. **P-15-007591**
8. P-15-008677
9. P-15-012725
10. **P-15-014902**
11. P-15-002572
12. P-15-018655
13. WRESC-ALTB-HIST-SITE-1
14. P-15-012160
15. P-15-012542
16. P-15-012653

COCs, including avoidance, will be in place to prevent any significant impacts. If avoidance of eligible resources, including capping the sites, is not possible, data recovery prior to construction will be necessary to reduce impacts to those resources. These sites are considered historical resources pursuant to the Public Resources Code, section 15064.5, and potential impacts must be considered under CEQA.

As evidenced by the number of sites identified by the applicant on the surface and through the literature search the proposed Willow Rock Energy Storage Center (WRESC) has a moderate to high sensitivity for the presence of buried Native American and historic archaeological resources.

Interpretation of Results: Historic Built Environment.

Staff concurs with the applicant's recommendation that 5 of the 82 historic built environment resources in the project area of analysis (PAA) are eligible for the CRHR and should be considered historical resources under CEQA. All these eligible resources are within the PAA of the proposed preferred Gen-Tie route or within the PAA of one or more of the proposed alternative Gen-Tie routes; none is within the PAA of the project facility. Historic built environment resources that qualify as historical resources consist of:

1. Willow Springs International Raceway (MAP ID 16)
2. Rosamond Palms Motel (Map ID 31)
3. Chuck Yeager House (Map ID 75)
4. Tropico Gold Mine Historic District (Map ID 91–96)
5. Segment of the Vincent 220kV Transmission Line (Map ID 103).

A summary of impacts are as follows. The Willow Springs International Raceway is within the PAA of the preferred Gen-Tie route, and Alternative routes A, B, and C. The raceway would be approximately 0.3 mile from the nearest proposed alignment. Impacts to this resource would primarily be to the integrity of setting, however, this impact would be less than significant as it would not significantly impact the resource's ability to convey its historical significance.

The Rosamond Palms Motel is within the PAA of Alternative Routes A and B. The motel is approximately 145 feet away from the closest portion of the proposed alignment for Alternative A. This would impact both the integrity of setting and feeling for the property; however, since the property is recommended eligible because of its architectural significance and because the potential transmission line route would not drastically alter the setting or feeling of the area, the impacts from the potential transmission line route would be less than significant.

The Chuck Yeager house is within the PAA of the preferred Gen-Tie Route, and alternative routes A and B. The house is approximately 500 feet away from the nearest alignment and the transmission lines would be partially obscured by the mobile home park surrounding it. The impacts to both setting and feeling would be relatively minimal especially considering the existing impacts to these types of integrity because of the existence of the mobile home park. As such, the impacts to this resource would be less than significant.

The Tropico Gold Mine Historic District is within the PAA of the preferred Gen-Tie route. The transmission line would be built entirely within the existing roadway analysis so physical impacts to material elements of the historic district are not anticipated, however, the potential to impact the viewshed and integrity of setting and feeling of the resource, which is a character defining feature, are a concern. The applicant's

consultant proposed several mitigation measures to ensure that impacts to the historic district are less than significant. These are as follows:

1. Near this historical resource, the proposed Preferred Gen-Tie transmission line will travel along the north side of Felsite Avenue from 65th Street West east to Mojave Tropico Road. To avoid intruding on the significant setting and views of Tropico Hill from the historic workers' housing along this road, it is recommended that the gen-tie route be moved to the south side of Felsite Avenue.
2. Consult with the California OHP on a Determination of Eligibility (DOE) for the potential Tropico Gold Mine Historic District. The DPR forms to support this determination are provided in Appendix D.
3. If OHP determines the resource is eligible for listing in the CRHR, conduct a visual impact assessment of the proposed project in the vicinity of the potential Tropico Gold Mine Historic District to assess the potential visual impacts to the historical resource.
4. Complete mitigation measures in consultation with the CEC and OHP to reduce expected potential visual impacts to the historical resource based on the results of the visual impact assessment" (Amorelli et al. 2024, page 137). Staff concurs with the proposed mitigation measures and concludes that they will ensure that any impacts to the Tropico Gold Mine Historic District is reduced to less than significant.

Staff concurs with the eligibility and the need for mitigation and considered the applicant's proposed mitigation measures when drafting COC **CUL/TRI-9** and COC **CUL/TRI-10**.

A segment of the Vincent 220 kV Transmission Line is within the PAA of all proposed transmission line routes. The Vincent 22 kV Transmission Line is listed as a contributing resource for the Big Creek Hydroelectric Historic District. While the transmission line would not physically impact any material elements of the resource, there would be some impacts to the resource's integrity of setting. The viewshed would be altered, however, these impacts are relatively minimal given the 224-mile length of the historic district and the addition of a transmission line in the vicinity of a portion of this transmission line does not rise to a level of significance that could interfere with the resource's ability to convey historical significance. As such, the impacts to this resource would be less than significant.

Cumulative

A project may result in a significant adverse cumulative impact when its effects are cumulatively considerable. Cumulatively considerable means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, other current projects, and probable future projects. The geographic scope of cumulative analysis is depicted in **Appendix A, Cumulative Impacts**. A list and map of cumulative projects within the study is provided in **Appendix A, Cumulative Impacts**, **Table 1 and Figure 1**. These projects include:

- Energy Projects – 11
- Residential/Housing Projects – 12
- Commercial Projects – 12
- Mining Projects – 2

5.4.2 Environmental Impacts

CULTURAL AND TRIBAL CULTURAL RESOURCES	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Would the project cause a substantial adverse change in the significance of a historical resource pursuant to Public Resources Code, section 15064.5?	☐	☒	☐	☐
b. Would the project cause a substantial adverse change in the significance of a unique archaeological resource pursuant to Public Resources Code, section 15064.5?	☐	☒	☐	☐
c. Would the project disturb any human remains, including those interred outside of dedicated cemeteries?	☐	☒	☐	☐
d. Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code, section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
i. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code, section 5020.1(k), or	☐	☐	☐	☒
ii. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code, section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code, section 5024.1, the lead agency shall consider the significance of the	☐	☐	☐	☒

CULTURAL AND TRIBAL CULTURAL RESOURCES	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
resource to a California Native American tribe.				

Environmental checklist established by Cal. Code Regs., tit. 14, Div. 6, Ch. 3, Appendix G, cultural resources and tribal cultural resources.

5.4.2.1 Methodology and Thresholds of Significance

In addition to the above environmental checklist, staff used the following methodology and thresholds of significance to evaluate the project.

Various laws apply to the evaluation and treatment of cultural resources. CEQA requires the California Energy Commission (CEC) to evaluate resources by determining whether they meet several sets of specified criteria. These evaluations then influence the analysis of potential impacts to the resources and the mitigation that may be required to reduce any such impacts.

Methodology

Direct impacts to cultural resources are those associated with project development, construction, and operation. Construction usually entails surface and subsurface disturbance of the ground, and direct impacts to archaeological resources can result from the immediate disturbance of the deposits, whether from vegetation removal, vehicle travel over the surface, earth-moving activities, excavation, or demolition of overlying structures. Construction can have direct impacts on historic standing structures when those structures must be demolished or removed to make way for new structures or when the vibrations of construction impair the stability of historic structures nearby. New structures can have direct impacts on historic structures when the new structures are stylistically incompatible with their neighbors and the setting, feeling and association. New structures might also produce something harmful to the materials or structural integrity of the historic structures, such as emissions or vibrations.

Indirect impacts to archaeological resources are those which may result from increased erosion due to site clearance and preparation, or from inadvertent damage or outright vandalism to exposed resource components due to improved accessibility. Similarly, historic structures can suffer indirect impacts when project construction creates improved accessibility to resources by non-project-affiliated personnel and the potential for vandalism or greater weather exposure becomes possible.

Thresholds of Significance

To determine whether a proposed project may have a significant effect on the environment, staff analyzes the project's potential to cause a substantial adverse

change in the significance of historical or unique archaeological resources. The magnitude of an impact depends on:

- the historical resource(s) affected;
- the specific historic significance of any potentially impacted historical resource(s);
- how the historical resource(s) significance is manifested physically and perceptually;
- appraisals of those aspects of any historical resource's integrity that figure importantly in the manifestation of the resource's historical significance; and
- how much the impact will change historical resource integrity appraisals.

Title 14, California Code of Regulations, section 15064.5(b) defines a "substantial adverse change" as the "physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired."

CEQA provides definitions for California Native American tribes, lead agency responsibilities to consult with California Native American tribes, and tribal cultural resources. A "California Native American tribe" is a "Native American tribe in California that is on the contact list maintained by the Native American Heritage Commission (NAHC) for the purposes of Chapter 905 of the Statutes of 2004" (Pub. Resources Code, § 21073). Lead agencies implementing CEQA are responsible to consult with California Native American tribes about tribal cultural resources within specific timeframes. If tribal cultural resources could be impacted by a CEQA project, lead agencies are to exhaust the consultation to points of agreement or termination.

CEQA also states that a project with an impact that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment (Pub. Resources Code, § 21084.2).

5.4.2.2 Direct and Indirect Impacts

a. Would the project cause a substantial adverse change in the significance of a historical resource pursuant to California Code of Regulations, title 14, section 15064.5

Construction

Less Than Significant Impact with Mitigation Incorporated. Historical resources have been identified in the PAA. These include archaeological and historic built environment resources:

Archaeological Resources

1. WRESC-ZEV-MULTI-SITE-1
2. WRESC-ZEV-PRE-SITE-2

3. WRESC-ZEV-PRE-SITE-3
4. WRESC-P1-PRE-SITE-1
5. WRESC-PREF-HIST-SITE-3
6. P-15-003359
7. P-15-007591
8. P-15-008677
9. P-15-012725
10. P-15-014902
11. P-15-002572
12. P-15-018655
13. WRESC-ALTB-HIST-SITE-1
14. P-15-012160
15. P-15-012542
16. P-15-012653

Built Environment Resources

1. Willow Springs International Raceway (Map ID 16)
2. Rosamond Palms Motel (Map ID 31)
3. Chuck Yeager House (Map ID 75)
4. Tropico Gold Mine Historic District (Map ID 91–96)
5. Segment of the Vincent 220kV Transmission Line (Map ID 103).

Also, as noted in the discussion of "Interpretation of Results: Archaeological Resources" the archaeological PAA has a moderate to high probability of containing buried archaeological resources, which could meet CEQA's criteria for historical resources. If such resources were damaged during construction (Impact Potential Damage to Buried Archaeological Resources), it would be considered significant because of the cultural loss to affiliated California Native American tribes or other local communities and the cultural and scientific data loss to all.

To reduce the significance of potential damage to archaeological resources, staff proposes COCs **CUL/TRI-1** through **CUL/TRI-8** contained in this staff assessment. These COCs would put in place a rigorous construction monitoring program and plans designed to reduce impacts to any historical resources of an archaeological nature to a less-than-significant level.

Built environment historical resources have been identified within the PAA, as noted in the discussion of "Interpretation of Results: Historic Built Environment." All built

environment historical resources are within the PAA of the preferred Gen-Tie line and proposed alternative Gen-Tie line routes. Built environment resources that would be impacted include the Willow Springs International Raceway (MAP ID 16), the Rosamond Palms Hotel (MAP ID 31), the Chuck Yeager House (MAP ID 75), the Tropico Gold Mine Historic District (MAP ID 91-96) and a segment of the Vincent 220kV Transmission Line (MAP ID 103). The impacts to these resources would primarily affect the resources' integrity of setting and feeling; however, only one of these resources, the Tropico Gold Mine Historic District, would suffer significantly and requires additional mitigation with the proposed Gen-Tie routes. A summary of impacts follows.

The Willow Springs International Raceway is within the PAA of the preferred Gen-Tie route, and Alternative routes A, B, and C. The raceway would be approximately 0.3 mile from the nearest proposed alignment. Impacts to this resource would primarily be to the integrity of setting, however, this impact would be less than significant as it would not significantly impact the resource's ability to convey its historical significance.

The Rosamond Palms Motel is within the PAA of Alternative Routes A and B. The motel is approximately 145 feet away from the closest portion of the proposed alignment for Alternative A. This would impact both the integrity of setting and feeling for the property; however, since the property is recommended eligible because of its architectural significance and because the potential transmission line route would not drastically alter the setting or feeling of the area, the impacts from the potential transmission line route would be less than significant.

The Chuck Yeager house is within the PAA of the preferred Gen-Tie Route, and alternative routes A and B. The house is approximately 500 feet away from the nearest alignment and the transmission lines would be partially obscured by the mobile home park surrounding it. The impacts to both setting and feeling would be relatively minimal especially considering the existing impacts to these types of integrity because of the existence of the mobile home park. As such, the impacts to this resource would be less than significant.

The Tropico Gold Mine Historic District is within the PAA of the preferred Gen-Tie route. The transmission line would be built entirely within the existing roadway analysis so physical impacts to material elements of the historic district are not anticipated, however, the potential to impact the viewshed and integrity of setting and feeling of the resource, which is a character defining feature, are a concern. The applicant's consultant proposed several mitigation measures to ensure that impacts to the historic district are less than significant.

A segment of the Vincent 220 kV Transmission Line is within the PAA of all proposed transmission line routes. The Vincent 22 kV Transmission Line is listed as a contributing resource for the Big Creek Hydroelectric Historic District. While the transmission line would not physically impact any material elements of the resource, there would be some impacts to the resource's integrity of setting. The viewshed would be altered, however, these impacts are relatively minimal given the 224-mile length of the historic

district and the addition of a transmission line in the vicinity of a portion of this transmission line does not rise to a level of significance that could interfere with the resource's ability to convey historical significance. As such, the impacts to this resource would be less than significant.

To reduce the significance of impacts to the Tropico Gold Mine Historic District, staff proposes COCs **CUL/TRI-9** and **CUL/TRI-10** contained in this staff assessment. Following comments from the project owner concerning constructability issues with moving the transmission line route across the right of way from the Tropico Gold Mine Historic District, staff has rewritten **CUL/TRI-9** to address impacts to the resource in a different manner than in the Preliminary Staff Assessment. The other five historical resources would not require mitigation.

Operation

No Impact. The CEC staff has not identified any historical resource impacts associated with operation of the proposed WRESC.

b. Would the project cause a substantial adverse change in the significance of a unique archaeological resource pursuant to Public Resources Code, section 15064.5

Construction

Less Than Significant Impact with Mitigation Incorporated. Unique archaeological resources have been identified in the archaeological PAA. As noted in the discussion of CEQA Environmental Checklist criteria "a", the archaeological PAA has a moderate probability of containing buried archaeological resources, which could meet CEQA's criteria for unique archaeological resources. If such resources were damaged during construction (Potential Damage to a Unique Buried Archaeological Resource), it would be considered a significant impact because of the cultural loss to affiliated California Native American tribes or other local communities and the cultural and scientific data loss to all.

To reduce the significance of potential damage to a unique buried archaeological resource, staff proposes COCs **CUL/TRI-1** through **CUL/TRI-8** contained in this staff assessment. These COCs would reduce impacts to any discovered unique archaeological resources to a less-than-significant level.

Operation

No Impact. The CEC staff has not identified any unique archaeological resource impacts associated with operation of the proposed WRESC.

c. Would the project disturb any human remains, including those interred outside of dedicated cemeteries?

Construction

Less Than Significant Impact with Mitigation Incorporated. Ground disturbance associated with construction of the proposed WRESC could damage human remains, with or without associated resources that meet CEQA's criteria for historical, unique archaeological, or tribal cultural resources. Inadvertent damage of human remains is a significant impact under CEQA (Potential Inadvertent Damage of Human Remains). The CEC staff proposes COCs **CUL/TRI-1** through **CUL/TRI-6** to reduce impacts to human remains to a less than significant level. COC **CUL/TRI-1** requires that Native American Monitors are part of the construction monitoring team, COC **CUL/TRI-4** requires a workers environmental awareness program, and COCs **CUL/TRI-3**, **CUL/TRI-5**, and **CUL/TRI-6** establish protocols to minimize or avoid impacts on inadvertently discovered human remains.

Operation

No Impact. The CEC staff has not identified any human remains impacts associated with operation of the proposed WRESC.

d. Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code, section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

i. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code, section 5020.1(k), or

Construction

No Impact. The CEC staff has not identified tribal cultural resources that are listed or eligible for listing on the CRHR.

Operation

No Impact. The CEC staff has not identified tribal cultural resources that are listed or eligible for listing on the CRHR.

ii. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code, section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code, section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

Construction

No Impact. The CEC staff has not identified tribal cultural resources that are listed or eligible for listing on the CRHR.

Operation

No Impact. The CEC staff has not identified tribal cultural resources that are listed or eligible for listing on the CRHR.

5.4.2.3 Cumulative Impacts

This staff assessment identifies several historic and Native American archaeological resources in the WRESC PAA. The CEC staff concludes that the impacts from the proposed WRESC would be less than significant with mitigation. This analysis addresses whether past, present, and probable future projects would produce related or cumulative impacts.

A project may result in a significant adverse cumulative impact when its effects are cumulatively considerable. Cumulatively considerable means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, other current projects, and probable future projects. The geographic scope of cumulative analysis is depicted in **Appendix A, Cumulative Impacts**. A list and map of cumulative projects within the study is provided in **Appendix A, Cumulative Impacts**, **Table 1** and **Figure 1**. These projects include:

- Energy Projects =11
- Residential/Housing Projects =12
- Commercial Projects =12
- Mining Projects =2

CEC staff has not identified any evidence that impacts to cultural and tribal cultural resources from the proposed project are likely to combine with similar impacts from the list of cumulative projects. This is due to the location of these other projects from the WRESC, and the nature of the specific impacts at issue. Archaeological sites within the WRESC are eligible or assumed eligible under Criterion 4 for their data potential, so there would need to be direct ground disturbing impacts from the additional projects for there to be any cumulative effects to the data potential. Likewise, with the exception of the Tropico Gold Mine, which is both an archaeological and historic built environment resource, none of the sites are part of larger districts or identified cultural landscapes and therefore would not be cumulatively affected by these other projects. In this case, the relevant impact is to the integrity of setting and feeling which requires relatively close distance among the cultural resource, the WRESC, and the cumulative project. Given the distance and nature of the list of cumulative projects, staff does not find those projects present impacts that will be combined with the WRESC's impacts on integrity of setting and feeling. To the extent there would be any type of impact combination, impacts from the WRESC would be further reduced with implementation

of mitigation. As for other eligible historic built environment resources within the PAA, including the Tropico Gold Mine, cumulative impacts would likewise not rise to a significant level because of the distance and nature of projects on the cumulative projects list. As such, staff does not find that impacts from those projects would combine with the WRESC's impacts to a significant level that would not already be reduced to less than significant by COCs **CUL/TRI-1** through **CUL/TRI-10**.

Less Than Significant with Mitigation Incorporated. To reduce the significance of potential damage to cultural resources, staff proposes COCs **CUL/TRI-1** through **CUL/TRI-10** contained in this staff assessment. Moreover, staff concludes that the cumulative projects would not contribute significantly to these impacts. The CEC staff concludes, therefore, that these cumulative impacts are less-than-significant.

5.4.3 Applicable LORS and Project Conformance

Table 5.4-7 presents staff's determination of conformance with applicable local, state, and federal laws, ordinances, regulations, and standards (LORS), including any proposed COCs, where applicable, to ensure the project would comply with LORS. As shown in this table, staff concludes that with implementation of specific COCs, the proposed project would be consistent with all applicable LORS. The subsection below, "Staff Proposed Conditions of Certification," contains the full text of the referenced COCs.

TABLE 5.4-7 CONFORMANCE WITH APPLICABLE LORS

Applicable LORS	Conformance and Basis for Determination
Federal	
National Historic Preservation Act, Section 106 applies to among other things, a project, activity, or program funded in whole or in part by a federal agency, those carried out with federal financial assistance and those requiring a federal permit, license or approval that has the potential to cause adverse effect to historic properties listed on or eligible for the National Register of Historic Places. The lead federal agency must consider ways to avoid, minimize and mitigate these adverse effects and provide the Advisory Council on Historic Preservation an opportunity to comment, prior to the issuance of permits or funding of the undertaking.	**Yes.** See COCs **CUL/TRI-3–8**
State	
Pub. Resources Code, § 5097.98, requires a landowner on whose property Native American human remains are found to limit further development activity in the vicinity until they confer with the NAHC-identified MLDs to consider treatment options. In the absence of MLDs or of a treatment acceptable to all parties, the landowner is required to reinter the remains elsewhere on the	**Yes.** See COCs **CUL/TRI-3–7**

TABLE 5.4-7 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis for Determination**
property in a location not subject to future disturbance.	
Pub. Resources Code, § 5097.99 prohibits the acquisition, possession, sale, or dissection with malice or wantonness of Native American remains or artifacts taken from a Native American grave or cairn.	
Health and Safety Code, § 7050.5, prohibits the disturbance or removal of human remains found outside a cemetery. It also requires a project owner to halt construction if human remains are discovered and to contact the county coroner.	
Local	
Kern County General Plan: Policy 25	
The County will promote the preservation of cultural and historic resources which provide ties with the past and constitute heritage value to residents and visitors.	**Yes.** See COCs **CUL/TRI-3–10**
Willow Springs Specific Plan: Cultural Resources Goal 1 Policy 1	
To preserve cultural resources contained on sensitive sites within the Willow Springs Specific Plan area.	**Yes.** See COCs **CUL/TRI-3–10**

Abbreviations: MLD = Most Likely Descendant; NAHC = California Native American Heritage Commission

5.4.4 Comments and Responses on the Preliminary Staff Assessment

The applicant submitted comments on the Cultural and Tribal Cultural Resources analysis in the PSA during the public review period. Also during the public review period, the Yuhaaviatam of San Manuel Nation submitted comments on the PSA directly to the CEC staff by email as part of the consultation between the CEC and this California Native American tribe. Beginning with comments from the applicant, this subsection of the analysis presents the comments received, followed by the CEC staff's response to each comment.

Response to Comments from the Applicant (TN 264316)

Comment (p. 12, A-26): Page 5.4-145, COC **CUL/TRI-1**, Verification, paragraph 1 — Suggest shortening requirement to submit qualifications 75 days prior to construction which seems unnecessarily long to facilitate timely construction. Please revise text as follows: "The project owner shall submit the prospective CRS's and any Alternate CRS's qualifications at least ~~75~~ **30** days prior to the start of ground disturbance associated with site mobilization and construction".

Staff response: Changed requirement to submit qualifications from 75 days to 45 days. At least 45 days are needed to meet other requirements that the CRS will be responsible for completing prior to construction.

Comment (p. 13, A-26): Page 5.4-146, COC **CUL/TRI-2**, paragraph 1 – Please revise text as follows:

"COC **CUL/TRI-2** INFORMATION TO BE PROVIDED TO CRS Prior to the start of ground disturbance, the project owner shall provide the CRS with copies of the application for certification (AFC), data responses, confidential cultural resources reports, all supplements, the cultural and tribal cultural resources section from the CEC's Final Staff Assessment (FSA), and the cultural and tribal cultural resources COCs from the **CEC** Final Decision for the project, if the CRS does not already possess copies of these materials. The project owner shall also provide the CRS and the CPM with maps and drawings showing the footprints of the power plant, all linear facility routes, all access roads, and all laydown areas. Maps shall include the appropriate United States Geological Survey quadrangles and a map at an appropriate scale (e.g., 1:24,000 and 1 inch = 200 feet, respectively) for plotting cultural features or materials. If the CRS requests enlargements or strip maps for linear facility routes, the project owner shall provide copies to the CRS and CPM. The CPM shall review map submittals and, in consultation with the CRS, approve those that are appropriate for use in cultural resources planning activities. No ground disturbance shall occur prior to CPM approval of maps and drawings unless such activities are specifically approved by the CPM. Maps shall include any cultural and tribal cultural resources, including any historic built environment resources, identified in the FSA's project area of analysis. If construction of the project would proceed in phases, maps and drawings not previously provided shall be provided to the CRS and CPM prior to the start of each phase. Written notice identifying the proposed schedule of each project phase shall be provided to the CRS and CPM".

Staff response: Changed text to reflect Applicant's comment (adding the bolded text addition above).

Comment (p. 13, A-27): Page 5.4-147, **CUL/TRI-2**, Verification, paragraph 1 – Suggest reducing the 40-day verification requirement, which may cause scheduling issues as it creates a minimum 40-day delay for construction start post CEC final decision. Please revise text as follows: "At least ~~40~~ **15** days prior to the start of ground disturbance, the project owner shall provide the CPM notice that the AFC, data responses, confidential cultural resources documents, all supplements, FSA, and Final Commission Decision have been provided to the CRS, if needed, and the subject maps and drawings to the CRS and CPM. The CPM will review submittals in consultation with the CRS and approve maps and drawings suitable for cultural resources planning activities".

Staff response: Changed text to 15 days.

Comment (p. 13, A27): Page 5.4-151, COC **CUL/TRI-4** Verification, paragraph 1 – Suggest reducing verification timelines to avoid scheduling delays. Please revise text as follows: "At least ~~30~~ **15** days prior to the beginning of ground disturbance, the CRS shall provide the draft text and/or training video for the cultural and tribal cultural

resources WEAP [workers environmental awareness program], including Native American participation, and graphics and the informational brochure to the CPM for review and approval".

Staff response: Did not change from 30 days to 15 days because the 30 days are needed to review the WEAP in case there are changes to be made or additional information that needs to be added.

Comment (p. 13, A-27): Page 5.4-151, COC **CUL/TRI-5**, paragraphs 1 and 2 – Please revise text as follows:

"The project owner shall ensure that a CRS, alternate CRS, or CRM and Native American Monitor shall be on site for any ground disturbance **in native soils** associated with construction of the project.

Prior to the start of ground disturbance, the project owner shall notify the CPM and all interested California Native American tribes of the date on which ground disturbance will begin. Where excavation equipment is actively removing dirt **from native soils** and hauling the excavated material farther than 50 feet from the location of active excavation, full-time archaeological monitoring shall require at least two monitors per excavation area. In this circumstance, one monitor shall observe the location of active excavation, and a second monitor shall inspect the dumped material".

Staff response: Text not changed to include native soils, this should be covered in the Cultural and Tribal Resource Mitigation and Monitoring Plan (CTRMMP) outlined in COC **CUL/TRI-3**.

Comment (p. 13, A27): Page 5.4-158, COC **CUL/TRI-8** – Missing text for Verification – Please see the suggested language as follows: **"Verification: If project plans change to include additional areas that were unable to be surveyed or sites that were not formally evaluated, the CPM will be notified within 30 days of any additional survey or evaluations conducted".**

Staff response: Added text for verification based on the applicant's comment.

Comment (p. 13-14): Page 5.4-158, COC **CUL/TRI-9** – Suggest deleting this COC in its entirety for the reasons set forth below.

Engineering/ROW Constraints

Moving the line as requested in COC **CUL/TRI-9**, was explored and determined not feasible in its entirety for a variety of reasons, including, but not limited to the following:

1) Presence of an existing transmission line in that corridor.
2) Relocation of the Preferred Gen-Tie route will require decommissioning of that line and installation of taller poles to carry the existing line infrastructure as well as Project infrastructure.

3) Rights-of-Way and landowner issues.

Therefore, when assessing the entirety of the route and its potential visual effects, any net potentially adverse impact, should any such impact in fact exist, is entirely mitigated by the application of COC **CUL/TRI-10**.

Moving the Preferred Gen-Tie route to the south side of Felsite Avenue between 65th Street West and Mojave Tropico Road, and to the east side of Mojave Tropico Road from Felsite Avenue to Irone Avenue results in less than a 50-feet difference in distance from the Tropico Gold Mine. The presence of transmission poles and lines on either the north or south side of the roadway, some 50 feet between either option, does not present an impact to reach CEQA thresholds for a significant and material impact to the Tropico Gold Mine.

Page 5.4-159, COC **CUL/TRI-10** – Painting the line poles rustic brown could be considered a practical request and possibly a best-practice and would entirely serve as adequate mitigation for any possible adverse indirect visual impact.

If Staff were to determine adverse impacts are still present, more meaningful and appropriate mitigation measures could be employed. For example, preparation of additional research further documenting the history of the Tropico Gold Mine and its contributions to local, regional, and national history of gold prospecting and mining, commerce, and economic growth of the surrounding area. Such a paper or lay publication could be prepared to benefit the local community, historians, and the public to be made available as an online publication, or perhaps given as a presentation at a local historical society or other event.

Staff response: CEC Staff has rewritten **CUL/TRI-9** to address impacts on the resource in a different manner than in the Preliminary Staff Assessment. The rewritten condition would not require movement of the Preferred Gen-Tie route.

Response to Comments from the Yuhaaviatam of San Manuel Nation (Tuosto 2025)

The Yuhaaviatam of San Manuel Nation (YSMN) submitted comments on the PSA by email on April 29, 2025. Citing the presence of multiple pre-contact archaeological sites and the high probability of encountering tribal cultural resources, the YSMN submitted multiple comments requesting changes to the PSA.

Comment: The YSMN requested that the following language be made a part of the project/permit/plan conditions -- **YSMN CUL-1 Monitoring and Treatment Plan:**

A Monitoring and Treatment Plan that is reflective of the project mitigation ("Cultural Resources" and "Tribal Cultural Resources") shall be completed by the archaeologist and submitted to the Lead Agency for dissemination to the Yuhaaviatam of San Manuel Nation Cultural Resources Management Department (YSMN, also known as San Manuel Band of Mission Indians). Once all parties review and approve the plan, it shall be

adopted by the Lead Agency- the plan must be adopted prior to permitting for the project. Any and all findings will be subject to the protocol detailed within the Monitoring and Treatment Plan.

Staff response: CEC Staff has rewritten **CUL/TRI-3** to address comments from YSMN pertaining to the development and contents of the Cultural and Tribal Cultural Resources Mitigation and Monitoring Plan (CTRMMP). Development of the CTRMMP is proposed as a condition of approval of the project and will occur after project approval but prior to ground disturbance.

Comment: The YSMN requested that the following language be made a part of the project/permit/plan conditions -- **CUL-2 Archaeological Monitoring:**

Due to the heightened cultural sensitivity of the proposed project area, an archaeological monitor with at least 3 years of regional experience in archaeology shall be present for all ground-disturbing activities that occur within the proposed project area (which includes, but is not limited to, tree/shrub removal and planting, clearing/grubbing, grading, excavation, trenching, compaction, fence/gate removal and installation, drainage and irrigation removal and installation, hardscape installation [benches, signage, boulders, walls, seat walls, fountains, etc.], and archaeological work). A sufficient number of archaeological monitors shall be present each work day to ensure that simultaneously occurring ground disturbing activities receive thorough levels of monitoring coverage.

Staff response: CEC Staff has revised **CUL/TRI-1, CUL/TRI-3,** and **CUL/TRI-5** in response to this comment about the professional qualifications and experience of archaeologists and cultural resources monitoring.

Comment: The YSMN requested that the following language be made a part of the project/permit/plan conditions -- **CUL-3 Worker Environmental Awareness Program:**

Prior to project initiation, a qualified archaeologist should be retained to conduct a Worker's Environmental Awareness Program (WEAP) training on archaeological sensitivity for all construction personnel prior to the commencement of any ground-disturbing activities. The training should be conducted by an archaeologist who meets or exceeds the Secretary of Interior's Professional Qualification Standards for archaeology. Tribal representatives from the Consulting Tribes, such as Yuhaaviatam of San Manuel Nation Cultural Resources Management Department (YSMN, also known as San Manuel Band of Mission Indians) will be allowed to attend and/or participate in the WEAP training should they elect to and will be given ten days' notice prior to the training. Archaeological sensitivity training should include a description of the types of cultural material that may be encountered, cultural sensitivity issues, regulatory issues, and the proper protocol for treatment of the materials in the event of a find.

Staff response: CEC Staff has revised **CUL/TRI-4** to incorporate the comment from YSMN pertaining to the professional qualifications of those conducting the cultural and

tribal cultural resources portion of the WEAP training, the requested content of the WEAP, and tribal involvement in the development and presentation of the proposed WEAP training.

Comment: The YSMN requested that the following language be made a part of the project/permit/plan conditions -- **TCR-2 Treatment of Cultural Resources During Project Implementation:**

If a pre-contact cultural resource is discovered during project implementation, ground-disturbing activities shall be suspended 60 feet around the resource(s), and an Environmentally Sensitive Area (ESA) physical demarcation/barrier constructed.

The Project Archaeologist shall develop a research design that shall include a plan to evaluate the resource for significance under CEQA criteria. Representatives from YSMN, the Archaeologist, and the Lead Agency shall confer regarding the research design, as well as any testing efforts needed to delineate the resource boundary. Following the completion of evaluation efforts, all parties shall confer regarding the resource's archaeological significance, its potential as a Tribal Cultural Resource (TCR), and avoidance (or other appropriate treatment) of the discovered resource. Removal of any cultural resource(s) shall be conducted with the presence of a Tribal monitor representing the Tribe, unless otherwise decided by YSMN. All plans for analysis shall be reviewed and approved by the applicant and YSMN prior to implementation, and all removed material shall be temporarily curated on-site.

It is the preference of YSMN that removed cultural material be reburied as close to the original find location as possible. However, should reburial within/near the original find location during project implementation not be feasible, then a reburial location for future reburial shall be decided upon by YSMN, the landowner, and the Lead Agency, and all finds shall be reburied within this location. Additionally, in this case, reburial shall not occur until all ground-disturbing activities associated with the project have been completed, all monitoring has ceased, all cataloguing and basic recordation of cultural resources have been completed, and a final monitoring report has been issued to Lead Agency, CHRIS, and YSMN. All reburials are subject to a reburial agreement that shall be developed between the landowner and YSMN outlining the determined reburial process/location, and shall include measures and provisions to protect the reburial area from any future impacts.

Should it occur that avoidance, preservation in place, and on-site reburial are not an option for treatment, the landowner shall relinquish all ownership and rights to this material and confer with YSMN to identify an American Association of Museums (AAM)-accredited facility within the County that can accession the materials into their permanent collections and provide for the proper care of these objects in accordance with the 1993 CA Curation Guidelines. A curation agreement with an appropriate qualified repository shall be developed between the landowner and museum that legally and physically transfers the collections and associated records to the facility. This agreement shall stipulate the payment of fees necessary for permanent curation of the

collections and associated records and the obligation of the Project developer/applicant to pay for those fees.

All draft records/reports containing the significance and treatment findings and data recovery results shall be prepared by the archaeologist and submitted to the Lead Agency and YSMN for their review and comment. After approval from all parties, the final reports and site/isolate records are to be submitted to the local CHRIS Information Center, the Lead Agency, and YSMN.

Staff response: CEC Staff has made revisions to **CUL/TRI-3, CUL/TRI-5, CUL/TRI-6,** and **CUL/TRI-7** in response to YSMN comments regarding procedures for discoveries of Native American cultural materials, the development of a research design and content of the proposed CTRMMP, tribal coordination in the development of the CTRMMP, the identification, evaluation, treatment, and disposition of Native American cultural and tribal cultural resources encountered during project activities, and Native American coordination in the development of the proposed Final Cultural and Tribal Cultural Resources Report.

Comment: The YSMN requested that the following language be made a part of the project/permit/plan conditions -- **TCR-3 Inadvertent Discoveries of Human Remains:**

If human remains are encountered during any activities associated with the project, work in the immediate vicinity (within a 100-foot buffer of the find) shall cease and the County Coroner shall be contacted pursuant to State Health and Safety Code §7050.5 and that code enforced for the duration of the project.

Staff response: CEC Staff has revised **CUL/TRI-6** regarding the halting construction in the vicinity of human remains in response to YSMN's comment.

5.4.5 Conclusions and Recommendations

As discussed above, the project would have less than significant impacts with mitigation in place related to cultural and tribal cultural resources and would conform with applicable LORS. The CEC is obligated to reduce impacts to the extent possible. Staff therefore recommends adopting the COC's as detailed in subsection "5.4.6 Proposed Conditions of Certification" below.

5.4.6 Proposed Conditions of Certification

The following proposed COCs include measures to both mitigate environmental impacts and ensure conformance with applicable LORS. The COCs below are enforceable as part of the CEC's certificate for the portions of the project constituting the site and related facilities (power plant, gen-tie line to the first point of interconnect.

For purposes of the facility certification issued by the CEC, the project owner must comply with the following COCs on the jurisdictional site and related facilities as delineated in **Section 3, Project Description**.

COC CUL/TRI-1 APPOINTMENT AND QUALIFICATIONS OF CULTURAL RESOURCES PERSONNEL

CULTURAL RESOURCE SPECIALIST The project owner shall assign a Cultural Resource Specialist (CRS) to the project. The project owner may elect to assign one or more alternate CRSs as well. The project owner shall submit the resumes of the proposed CRS and Alternative CRS(s), with at least three references and their contact information, to the CEC's Compliance Project Manager (CPM) for review and approval.

The CRS and Alternate CRS(s) shall have training and background that conform to the U.S. Secretary of the Interior's Professional Qualifications Standards, as published in Title 36, Code of Federal Regulations, part 61. In addition, the CRS and Alternate CRS(s) shall have the following qualifications:

A background in anthropology, archaeology, history, architectural history, or a related field, and

- At least 10 years of archaeological or historical experience (as appropriate for the project site), with resources mitigation and fieldwork;
- At least three years of field experience in California; and
- At least three years of experience in a decision-making capacity on cultural resources projects in California and the appropriate training and experience to knowledgably make recommendations regarding the significance of cultural resources.

The project owner may replace the CRS by submitting the required resume, references and contact information of the proposed replacement CRS to the CPM.

The CRS shall manage all cultural resource monitoring, mitigation, curation, and reporting activities, and any pre-construction cultural resource activities, unless management of these is otherwise provided for in accordance with the cultural resource and tribal cultural resource COCs. The CRS shall serve as the primary point of contact on all cultural resource matters for the CEC. The CRS shall retain Native American Monitors and may elect to obtain the services of Cultural Resource Monitors (CRMs) and other technical specialists, if needed, to assist in monitoring, mitigation, and curation activities. The project owner shall ensure that the CRS makes recommendations regarding the CEQA significance of any cultural or tribal cultural resources that are newly discovered or that may be affected in an unanticipated manner. After all ground disturbances are completed and the CRS has fulfilled all responsibilities specified in these cultural and tribal

cultural resource COCs, the project owner may discharge the CRS, after receiving approval from the CPM.

CULTURAL RESOURCE MONITORS The CRS may assign CRMs. CRMs shall have the following qualifications:

- B.S. or B.A. degree in anthropology, archaeology, historical archaeology, or a related field; and three years of archaeological field experience in California; or
- A.S. or A.A. degree in anthropology, archaeology, historical archaeology, or a related field, and three years of archaeological field experience in California; or
- Enrollment in upper division classes pursuing a degree in the fields of anthropology, archaeology, historical archaeology, or a related field, and three years of archaeological field experience in California.

NATIVE AMERICAN MONITORS Preference in selecting Native American Monitors shall be given to members or representatives of the Yuhaaviatam of San Manuel Nation, Tejon Indian Tribe, and Kern Valley Indian Community. Monitors should have:

- Traditional ties to the area being monitored
- Knowledge of local Native American village sites and habitation patterns
- Knowledge and understanding of Health and Safety Code, section 7050.5 and Public Resources Code, section 5097.9 et seq.
- Ability to effectively communicate the requirements of Health and Safety Code, section 7050.5 and Public Resources Code, section 5097.9 et seq.
- Ability to work with law enforcement officials and the Native American Heritage Commission (NAHC) to ensure the return of all associated grave goods taken from a Native American grave during excavation
- Ability to travel to project sites within traditional tribal territory
- Knowledge and understanding of Title 14, California Code of Regulations, section 15064.5
- Ability to advocate for the preservation in place of Native American cultural features through knowledge and understanding California Environmental Quality Act (CEQA) mitigation provisions
- Ability to read a topographical map and be able to locate site and reburial locations for future inclusion in the NAHC's Sacred Lands Inventory
- Knowledge and understanding of archaeological practices, including the phases of archaeological investigation

CULTURAL RESOURCE TECHNICAL SPECIALISTS The resume(s) of any additional technical specialist(s) (e.g., geoarchaeologist, historical archaeologist, historian, architectural historian, or physical anthropologist), shall be submitted to the CPM for approval. The resume of each proposed specialist shall demonstrate that their training and background meet the U.S. Secretary of Interior's Professional Qualifications Standards for their specialty (if appropriate), as published in Title 36, Code of Federal Regulations, Part 61. The resumes of specialists shall include the names and telephone numbers of contacts familiar with the work of these persons on projects referenced in the resumes and demonstrate to the satisfaction of the CPM that these persons have the appropriate training and experience to undertake the required research. All specialists are under the supervision of the CRS.

Verification: To meet all time requirements set forth in the COCs, the project owner shall submit the prospective CRS's and any Alternate CRS's qualifications at least 45 days prior to the start of ground disturbance associated with site mobilization and construction.

The project owner may replace a CRS by submitting the required resume, references and contact information to the CPM at least 10 working days prior to the termination or release of the then-current CRS. In an emergency, the project owner shall immediately notify the CPM to discuss the qualifications and approval of a short-term replacement while a permanent CRS is proposed to the CPM for consideration.

At least 20 days prior to site mobilization, the CRS shall provide proof of qualifications for any anticipated CRMs and additional specialists for the project to the CPM.

Within 15 days of receiving from a California Native American tribe a request that Native American Monitors be employed, the project owner shall submit a copy of the request and a copy of a response letter to the group notifying them that Native American Monitors have been employed and identifying the Native American Monitors.

If efforts to obtain the services of qualified Native American Monitors are unsuccessful, the project owner shall inform the CPM of this situation in writing at least 30 days prior to the beginning of post-certification cultural resources field work or construction-related ground disturbance.

At least 5 days prior to additional CRMs or Native American Monitors beginning on-site duties during the project, the CRS shall review the qualifications of the proposed CRMs or Native American Monitors and send approval letters to the CPM, identifying the monitors and attesting to their qualifications. At least 10 days prior to any technical specialists beginning tasks, the resume(s) of the specialists shall be provided to the CPM for review and approval. At least 10 days

prior to the start of construction-related ground disturbance, the project owner shall confirm in writing to the CPM that the approved CRS will be available for onsite work and is prepared to implement the cultural resources conditions.

No ground disturbances shall occur prior to CPM approval of the CRS and alternates unless such activities are specifically approved by the CPM.

COC CUL/TRI-2 INFORMATION TO BE PROVIDED TO CRS Prior to the start of ground disturbance, the project owner shall provide the CRS with copies of the application for certification (AFC), data responses, confidential cultural resources reports, all supplements, the cultural and tribal cultural resources section from the CEC's Final Staff Assessment (FSA), and the cultural and tribal cultural resources COCs from the CEC's Final Decision for the project, if the CRS does not already possess copies of these materials. The project owner shall also provide the CRS and the CPM with maps and drawings showing the footprints of the power plant, all linear facility routes, all access roads, and all laydown areas. Maps shall include the appropriate United States Geological Survey quadrangles and a map at an appropriate scale (e.g., 1:24,000 and 1 inch = 200 feet, respectively) for plotting cultural features or materials. If the CRS requests enlargements or strip maps for linear facility routes, the project owner shall provide copies to the CRS and CPM. The CPM shall review map submittals and, in consultation with the CRS, approve those that are appropriate for use in cultural resources planning activities. No ground disturbance shall occur prior to CPM approval of maps and drawings unless such activities are specifically approved by the CPM. Maps shall include any cultural and tribal cultural resources, including any historic built environment resources, identified in the FSA's project area of analysis. If construction of the project would proceed in phases, maps and drawings not previously provided shall be provided to the CRS and CPM prior to the start of each phase. Written notice identifying the proposed schedule of each project phase shall be provided to the CRS and CPM.

Weekly, until ground disturbance is completed, the project construction manager shall provide to the CRS and CPM a schedule of project activities for the following week, including the identification of area(s) where ground disturbance will occur during that week.

The project owner shall notify the CRS and CPM of any changes to the scheduling of the construction phases.

The project owner shall provide the documents described in the first paragraph of this condition to new CRSs if the approved CRS is terminated or resigns.

Verification: At least 15days prior to the start of ground disturbance, the project owner shall provide the CPM notice that the AFC, data responses, confidential cultural resources documents, all supplements, FSA, and Final Commission Decision have been provided to the CRS, if needed, and the subject maps and

drawings to the CRS and CPM. The CPM will review submittals in consultation with the CRS and approve maps and drawings suitable for cultural resources planning activities.

At least 15 days prior to the start of ground disturbance, if there are changes to any project-related footprint, the project owner shall provide revised maps and drawings for the changes to the CRS and CPM.

At least 15 days prior to the start of each phase of a phased project, the project owner shall submit the appropriate maps and drawings, if not previously provided, to the CRS and CPM.

Weekly, during ground disturbance, a schedule of the next week's anticipated project activity shall be provided to the CRS and CPM by letter, e-mail, or fax.

Within 5 days of changing the scheduling of phases of a phased project, the project owner shall provide written notice of the changes to the CRS and CPM.

If a new CRS is approved by the CPM as provided for in **CUL/TRI-1**, the project owner shall provide the CPM notice that the AFC, data responses, confidential cultural resources documents, all supplements, FSA, Final Commission Decision, and maps and drawings have been provided to the new CRS within 10 days of such approval.

COC CUL/TRI-3 CULTURAL AND TRIBAL RESOURCES MITIGATION AND MONITORING PLAN (CTRMMP) Prior to the start of ground disturbance, the project owner shall submit the CTRMMP, as prepared by or under the direction of the CRS in coordination with the consulting tribes (Yuhaaviatam of San Manuel Nation, Tejon Indian Tribe, and Kern Valley Indian Community), to the CPM along with letters or statements of support of the CTRMMP from the consulting tribes for review and approval. Ground disturbance may be initiated only after approval of the CTRMMP by the CPM.

The CTRMMP shall follow the content and organization of the draft model CTRMMP, provided by the CPM, and the authors' name(s) shall appear on the title page of the CTRMMP. The CTRMMP shall identify measures to minimize potential impacts on cultural and tribal cultural resources. Implementation of the CTRMMP shall be the responsibility of the CRS and the project owner. Copies of the CTRMMP shall reside with the CRS, alternate CRS, each CRM, and the project owner's on-site construction manager. No ground disturbance shall occur prior to CPM approval of the CTRMMP, unless such activities are specifically approved by the CPM. Portions of the CTRMMP that describe or map the location(s) of cultural and tribal cultural resources shall be designated as confidential.

The CTRMMP shall include the following elements and measures.

- The following statement included in the Introduction: "Any discussion, summary, or paraphrasing of the Conditions of Certification (COCs) in this CTRMMP is intended as general guidance and as an aid to the user in understanding the COCs and their implementation. The COCs, as written in the Commission Decision, shall supersede any summarization, description, or interpretation of the conditions in the CTRMMP. The Cultural and Tribal Cultural Resources COCs from the Commission Decision are contained in Appendix A."
- A proposed general research design that includes a discussion of cultural research questions and testable hypotheses specifically applicable to the project area, and a discussion of artifact collection, retention/disposal, and curation policies as related to the research questions formulated in the research design. The research design will specify that the preferred treatment strategy for any cultural or tribal cultural resource is avoidance. A specific mitigation plan shall be prepared for any unavoidable impacts to any historical resources, unique archaeological resources, or tribal cultural resources (as defined in the California Environmental Quality Act and determined by the CPM). A prescriptive treatment plan may be included in the CTRMMP for limited data types. Specification of the implementation sequence and the estimated time frames needed to accomplish all project-related tasks during the ground-disturbance and post-ground–disturbance analysis phases of the project.
- Identification of the person(s) expected to perform each of the tasks, their responsibilities, and the reporting relationships between project construction management and the mitigation and monitoring team.
- A description of how Native American observers or monitors will be included, the procedures to be used for selecting them, and their roles and responsibilities (including monitoring of archaeological work).
- A statement regarding the disposition of artifacts that includes the identification of potential on-site reburial location(s) for Native American archaeological materials collected because of project activities. Reburial shall not occur until all ground-disturbing activities associated with the project have been completed, all monitoring has ceased, cataloguing and recording of cultural resources have been completed, and final reports issued to the CPM, CHRIS, and consulting tribes. All Native American archaeological materials not subject to the provisions of Public Resources Code, section 5097.98 *et seq.* are subject to a reburial agreement that shall be developed between the project owner and the consulting tribes. The reburial agreement shall be appended to the CTRMMP and outline the determined reburial process and location(s) and include provisions to protect the reburial area(s) from future impacts and to provide access to culturally affiliated California Native American descendants. The CTRMMP shall also include provisions to accommodate culturally appropriate treatment of Native American human

remains and associated items that could be preferred by a designated most likely descendent, should Native American human remains be encountered. A description of all impact-avoidance measures (such as flagging or fencing) to prohibit or otherwise restrict access to cultural or tribal cultural resources that are to be avoided during ground disturbance, construction, and/or operation, and identification of areas where these measures are to be implemented. The description shall address how these measures would be implemented prior to the start of ground disturbance and how long they would be needed to protect the resources from project-related effects. A statement that all encountered cultural and tribal cultural resources over 50 years old shall be recorded on Department of Parks and Recreation (DPR) 523 forms and mapped and photographed. In addition, all archaeological materials retained during archaeological investigations (survey, testing, data recovery) shall be curated in accordance with the California State Historical Resources Commission's (SHRC's) *Guidelines for the Curation of Archaeological Collections* (1993, or future updated guidelines from the SHRC), into a retrievable storage collection in a public repository or museum.

- A statement that all cultural and tribal cultural resources encountered will be subject to the protocols detailed within the CTRMMP.
- A statement that the removal of any Native American cultural materials shall be conducted in the presence of a tribal monitor representing the consulting tribes unless otherwise decided by cultural resources representatives of the consulting tribes, and all removed materials shall be temporarily curated on-site.
- A statement that the project owner will pay all curation fees for recovered artifacts and for related documentation produced during cultural and tribal cultural resource investigations conducted for the project. The project owner shall identify three facilities that meet American Association of Museums (AAM)-accreditation that can accept archaeological materials resulting from project activities into their permanent collections and provide for the proper care of these objects in accordance with the SHRC's Guidelines for the Curation of Archaeological Collections (1993, or future updated guidelines from the SHRC). The project owner shall coordinate with the consulting tribes to identify at least one facility located within Kern County willing to curate Native American archaeological materials in their permanent collections. Should it occur that avoidance, preservation in place, and on-site reburial are not an option for the treatment and disposition of Native American archaeological material, the project owner shall release control of those items to the identified facility.
- A statement demonstrating when and how the project owner will comply with Health and Human Safety Code, section 7050.5(b), and Public Resources Code, section 5097.98(b) and (e), including the statement that the project owner will notify the CPM and the NAHC of the discovery of human remains.

- A statement that the CRS has access to equipment and supplies necessary for site mapping, photography, and recovery of any archaeological materials that are encountered during ground disturbance and cannot be treated prescriptively.
- A description of the contents, format, and review and approval process of the final Cultural and Tribal Cultural Resources Report (CTCRR), which shall be prepared according to *Archaeological Resource Management Report (ARMR)* guidelines.

Verification: Upon approval of the CRS proposed by the project owner, the CPM will provide to the project owner an electronic copy of the draft model CTRMMP for the CRS.

At least 30 days prior to the start of ground disturbance, the project owner shall submit the CTRMMP to the CPM for review and approval.

At least 30 days prior to the start of ground disturbance, in a letter to the CPM, the project owner shall agree to pay curation fees for any materials generated or collected during archaeological investigations (survey, testing, data recovery).

Within 90 days after completion of ground disturbance (including landscaping), if archaeological materials requiring curation were generated or collected, the project owner shall provide to the CPM a copy of an agreement with, or other written commitment from, a curation facility that meets the standards stated in the SHRC's *Guidelines for the Curation of Archaeological Collections* (1993, or future updated guidelines from SHRC), to accept the archaeological materials from this project. This agreement shall stipulate the payment of fees necessary for permanent curation of the collections and associated records and the obligation of the project owner to pay for those fees. Any agreement concerning curation will be retained and available for audit for the life of the project.

COC CUL/TRI-4 CULTURAL RESOURCES WORKER ENVIRONMENTAL AWARENESS PROGRAM (WEAP) Prior to and for the duration of ground disturbance, the project owner shall provide WEAP training to all new workers within their first week of employment at the project site, along the linear facilities routes, and at laydown areas, roads, and other ancillary areas. The cultural and tribal cultural resources part of this training shall be prepared by the CRS, and shall be conducted by the CRS or an Alternative CRS. WEAP training may be presented in-person, in the form of a video, or as a mix of the two formats. The CRS and/or Alternative CRS shall collaborate with the consulting tribes in preparing and presenting the training. During the training and during construction, the CRS shall be available (by telephone or in person) to answer questions posed by employees. The training may be discontinued when ground disturbance is completed or suspended, but must be resumed when ground disturbance, such as landscaping, resumes. The training shall include:

- A discussion of the cultural sensitivity of the project area;
- A discussion of applicable laws and penalties under law;
- Samples or visuals of artifacts that might be found in the project vicinity;
- A discussion of what such artifacts may look like when partially buried, or wholly buried and then freshly exposed;
- A discussion of what prehistoric and historical archaeological deposits look like at the surface and when exposed during construction, and the range of variation in the appearance of such deposits;
- Instruction that the CRS, Alternate CRS, and CRMs have the authority to halt ground disturbance around a discovery to an extent sufficient to ensure that the resource is protected from further impacts, as determined by the CRS;
- Instruction that employees, if the CRS, Alternate CRS, or CRMs are not present, are to halt work on their own in the vicinity of a potential cultural or tribal cultural resource discovery, and shall contact their supervisor and the CRS or CRM, and that redirection of work would be determined by the construction supervisor and the CRS;
- An informational brochure that identifies reporting procedures in the event of a discovery;
- An acknowledgement form signed by each worker indicating that they have received the training; and
- A sticker that shall be placed on hard hats indicating that environmental training has been completed.

No ground disturbance shall occur prior to implementation of the WEAP program unless such activities are specifically approved by the CPM.

Verification: At least 30 days prior to the beginning of ground disturbance, the CRS shall provide the draft text and/or training video for the cultural and tribal cultural resources WEAP, including Native American participation, and graphics and the informational brochure to the CPM for review and approval. The CRS shall also identify who will be conducting the cultural and tribal cultural resources portion of the training.

At least 15 days prior to the beginning of ground disturbance, the CPM will provide to the project owner a WEAP Training Acknowledgement form for each WEAP-trained worker to sign.

At least 10 days prior to each WEAP training offered, the CRS shall inform the cultural resources representatives for the consulting tribes of the upcoming training and invite them to attend and/or participate should they elect to. Monthly, until ground disturbance is completed, the project owner shall provide in the Monthly Compliance Report (MCR) the WEAP Training Acknowledgement

forms of workers who have completed the training in the prior month and a running total of all persons who have completed training to date.

COC CUL/TRI-5 UNDISCOVERED CULTURAL RESOURCES The project owner shall ensure that a CRS, alternate CRS, or CRM and Native American Monitor shall be present for any ground disturbance associated with construction of the project, including but not limited to tree/shrub removal and planting, clearing/grubbing, grading, excavation, trenching, compaction, fence/gate removal and installation, and hardscape installation.

Prior to the start of ground disturbance, the project owner shall notify the CPM and all interested California Native American tribes of the date on which ground disturbance will begin. Where excavation equipment is actively removing dirt and hauling the excavated material farther than 50 feet from the location of active excavation, full-time archaeological monitoring shall require at least two monitors per excavation area. In this circumstance, one monitor shall observe the location of active excavation, and a second monitor shall inspect the dumped material. For excavation areas where the excavated material is dumped no farther than 50 feet from the location of active excavation, one monitor shall observe both the location of active excavation and inspect the dumped material.

If the CRS believes that the required number of monitors is not appropriate in certain locations, a letter or e-mail detailing the justification for changing the number of monitors shall be provided to the CPM for review and approval prior to any change in the number of monitors.

The research design in the CTRMMP shall govern the collection, treatment, retention/disposal, curation, and reburial of any archaeological materials encountered. On forms provided by the CPM, monitors shall keep a daily log of any monitoring and other cultural and tribal cultural resource activities and any instances of non-compliance with the COCs or applicable laws, ordinances, regulations, and standards (LORS). The daily monitoring logs shall at a minimum include the following information.

- First and last name of the monitors
- Time in and out
- Weather. Specify if weather conditions led to work stoppages.
- Work location (project component). Provide specifics(e.g., power block, landscaping).
- Proximity to cultural or tribal cultural resource(s). Specify if work conducted within 1,000 feet of a known cultural resource.
- Work type (machine)
- Work crew (company, operator, and foreman)

- Depth of excavation
- Description of work
- Stratigraphy
- Artifacts, listed with the following identifying features
    - Field artifact #: When recording artifacts in the daily monitoring logs, the CRS shall institute a field numbering system to reduce the likelihood of repeat artifact numbers. A typical numbering system could include a project abbreviation, monitor's initials, and a set of numbers given to that monitor: e.g., WRESC-MB-123.
    - Description
    - Measurements
    - Universal Transverse Mercator (UTM) coordinates
    - Whether artifacts are likely to be isolates or components of larger resources
    - Assessment of significance of any finds
- Actions taken
- Plan for the next workday

A cover sheet shall be submitted with each day's monitoring logs and shall at a minimum include the following.

- Count and list of first and last names of all monitors for that day
- General description (in paragraph form) of that day's overall monitoring efforts, including monitor names and locations
- Any reasons for halting work that day
- Count and list of all artifacts found that day: include artifact #, location (i.e., grading in Unit X), measurements, UTMs, and very brief description (i.e., historic can, granitic biface, quartzite flake)
- Whether any artifacts were found out of context (i.e., in fill, caisson drilling, flood debris, spoils pile)

Copies of the daily monitoring logs and cover sheets shall be provided by email from the CRS to the CPM, as follows.

- Each day's monitoring logs and cover sheet shall be merged into one PDF document
- The PDF title and headings, and emails shall clearly indicate the date of the applicable monitoring logs

- PDFs for any revised or resubmitted versions shall use the word “revised” in the title

Daily and/or weekly maps shall be submitted along with the monitoring logs as follows.

- The CRS shall provide daily and/or weekly maps of artifacts at the request of the CPM. A map shall also be provided if artifact locations show complexity, high density, or other unique considerations.
- Maps shall include labeled artifacts, project boundaries, previously recorded sites and isolates, aerial imagery background, and appropriate scales

From the daily monitoring logs, the CRS shall compile a monthly monitoring summary report to be included in the MCR. If there are no monitoring activities, the summary report shall specify why monitoring did not occur.

The Cultural and Tribal Cultural Resources section of the MCR shall be prepared in coordination with the CRS and shall include a monthly summary report of cultural and tribal cultural resources-related monitoring. The summary shall:

- List the number of monitors daily, as well as provide monthly monitoring-day totals
- Give an overview of cultural and tribal cultural resource monitoring work for that month and discuss any issues that arose
- Describe fulfillment of requirements of each cultural and tribal cultural resource mitigation measure
- Summarize the confidential appendix to the MCR, without disclosing any specific confidential details
- Include the artifact concordance table (as discussed below), but with removal of UTMs

Each MCR, prepared under supervision of the CRS, shall be accompanied by a confidential appendix that contains:

- Completed DPR 523A forms for all artifacts recorded or collected in that month. For any artifact without a corresponding DPR form, the CRS shall specify why the DPR form is not applicable or pending (i.e. as part of a larger site update).
- A concordance table that matches field artifact numbers with the artifact numbers used in the DPR 523 forms shall be included. The sortable table shall contain each artifact’s date of collection and UTM coordinates and note if an artifact has been deaccessioned or otherwise does not have a corresponding DPR 523 form. Any post-field log recordation changes to artifact numbers shall also be noted. DPR forms shall be submitted as one

combined PDF. The PDF shall organize DPR forms by site and/or artifact number

- The PDF shall include an index and bookmarks

If artifacts from a given location (near each other or an existing resource) are collected month after month, and if agreed upon with the CPM, a final updated DPR 523 form for the resource may be submitted at the completion of monitoring. The monthly concordance table shall note that the DPR 523 form for the included artifacts is pending.

The CRS or alternate CRS shall report daily to the CPM on the status of the project's cultural and tribal cultural resource-related activities, unless reducing or ending daily reporting is requested by the CRS and approved by the CPM. If the CRS and consulting tribes believe that the current level of monitoring is not appropriate in certain locations, a letter or e-mail detailing the justification for changing the level of monitoring shall be provided to the CPM for review and approval prior to any change in the level of monitoring. The CRS, at his or her discretion, or at the request of the CPM, may informally discuss cultural and tribal cultural resource monitoring and mitigation activities with CEC technical staff.

Cultural and tribal cultural resources monitoring activities are the responsibility of the CRS. Any interference with monitoring activities, removal of a monitor from duties assigned by the CRS, or direction to a monitor to relocate monitoring activities by anyone other than the CRS shall be considered non-compliance with these COCs.

Upon becoming aware of any incidents of non-compliance with the Conditions and/or applicable LORS, the CRS and/or the project owner shall notify the CPM.

The CRS shall also recommend corrective action to resolve the problem or achieve compliance with the COCs. When the issue is resolved, the CRS shall write a report describing the issue, the resolution of the issue, and the effectiveness of the resolution measures. This report shall be provided in the next MCR for the review of the CPM.

Verification: At least 30 days prior to the start of ground disturbance, the CPM will notify all Native Americans with whom the CEC communicated during the project review of the date on which the project's ground disturbance will begin.

At least 30 days prior to the start of ground disturbance, the CPM will provide to the CRS an electronic copy of a form to be used as a daily monitoring log and information to be included in the cover sheet for the daily monitoring logs.

While monitoring is on-going, the project owner shall submit each day's monitoring logs and cover sheet merged into one PDF document by email within 24 hours.

The CRS and/or project owner shall notify the CPM of any incidents of non-compliance with the conditions and/or applicable LORS by telephone or email within 24 hours.

The CRS shall provide daily maps of artifacts along with the daily monitoring logs if more than 10 artifacts are found per day, or as requested by the CPM.

The CRS shall provide weekly maps of artifacts if there more than 50 artifacts are found per week, or as requested by the CPM. The map shall be submitted within two business days after the end of each week.

While monitoring is on-going, the project owner shall submit monthly MCRs and accompanying weekly summary reports. The project owner shall attach any new DPR 523A forms, under confidential cover, completed for finds treated prescriptively, as specified in the CTRMMP.

Final updated DPR 523 forms with sites (where artifacts are collected month after month) can be submitted at the completion of monitoring, as agreed upon with the CPM.

At least 24 hours prior to implementing a proposed change in monitoring level, the project owner shall submit to the CPM, for review and approval, a letter or e-mail (or some other form of communication acceptable to the CPM) detailing the CRS's justification for changing the monitoring level.

Within 15 days of receiving them, the project owner shall submit to the CPM copies of any comments or information provided by California Native American tribes in response to the project owner's transmittals of information.

COC CUL/TRI-6 AUTHORITY TO HALT CONSTRUCTION IN THE EVENT OF A DISCOVERY The CRS shall have the authority to halt ground disturbance in the event of a discovery. Redirection of ground disturbance shall be accomplished under the direction of the construction supervisor in consultation with the CRS.

If a cultural or tribal cultural resource over 50 years of age is found (or if younger, determined exceptionally significant by the CRS), or impacts to such a resource can be anticipated, ground disturbance shall be halted or redirected in the immediate vicinity (within 60 feet) of the discovery sufficient to ensure that the resource is protected from further impacts. If the discovery includes human remains, work in the immediate vicinity (within 100 feet) shall be halted or redirected more than 100 feet away from the discovery, the project owner shall comply with the requirements of Health and Human Safety Code § 7050.5(b) and

shall additionally notify the CPM and the NAHC of the discovery of human remains. No action with respect to the disposition of human remains of Native American origin shall be initiated without direction from the CPM. Monitoring, including Native American monitoring, and daily reporting, as provided in other conditions, shall continue during the project's ground-disturbing activities elsewhere, while the halting or redirection of ground disturbance in the vicinity of the discovery shall remain in effect until the CRS has visited the discovery, and all the following has occurred:

- The CRS has notified the project owner, and the CPM has been notified within 24 hours of the discovery, or by Monday morning if the cultural or tribal cultural resource discovery occurs between 8:00 AM on Friday and 8:00 AM on Sunday morning, including a description of the discovery (or changes in character or attributes), the action taken (i.e., work stoppage or redirection), a recommendation of California Environmental Quality Act (CEQA) significance, and recommendations for data recovery from any cultural or tribal cultural resource discoveries, whether or not a determination of CEQA significance has been made.
- If the discovery would be of interest to California Native American tribes, the CRS has notified all California Native American tribes that expressed a desire to be notified in the event of such a discovery
- The CRS has completed field notes, measurements, and photography for a DPR 523 Primary Record form. Unless the find can be treated prescriptively, as specified in the CTRMMP, the "Description" entry of the DPR 523 Primary Record form shall include a recommendation on the CEQA significance of the discovery. If the find is of interest to the consulting tribes, the CRS's recommendation on the CEQA significance of the discovery shall be developed in coordination with the consulting tribes. The project owner shall submit completed forms and statements of support of the proposed recommendations from the consulting tribes (for finds of interest to the consulting tribes) to the CPM.
- The CRS, the project owner, the consulting tribes (for finds of interest to the consulting tribes), and the CPM have conferred, and the CPM has concurred with the significance finding concerning the discovery and approved the CRS's proposed data recovery, if any, including the curation of the artifacts, or other appropriate mitigation; and any necessary data recovery and mitigation have been completed

Ground disturbance may resume only with the approval of the CPM.

Verification: At least 30 days prior to the start of ground disturbance, the project owner shall provide the CPM and CRS with a letter confirming that the CRS, Alternate CRS, CRMs, and Native American Monitors have the authority to halt ground disturbance in the vicinity of a cultural or tribal cultural resource discovery, and that the project owner shall ensure that the CRS notifies the CPM

within 24 hours of a discovery, or by Monday morning if the cultural resources discovery occurs between 8:00 AM on Friday and 8:00 AM on Sunday morning.

Unless the discovery can be treated prescriptively, as specified in the CTRMMP, completed DPR 523 forms for resources newly discovered during ground disturbance shall be submitted to the CPM for review and approval no later than 24 hours following the notification of the CPM, or 48 hours following the completion of data recordation/recovery, whichever the CRS decides is more appropriate for the subject cultural or tribal cultural resource.

Within 48 hours of the discovery of a resource of interest to Native Americans, the project owner shall ensure that the CRS notifies all California Native American tribes that expressed a desire to be notified in the event of such a discovery, and the CRS must inform the CPM when the notifications are complete.

No later than 30 days following the discovery of any Native American cultural materials, the project owner shall submit to the CPM copies of the information transmittal letters sent to the chairpersons and designated cultural resources representatives of the California Native American tribes or groups who requested the information. Additionally, the project owner shall submit to the CPM copies of letters of transmittal for all subsequent responses to Native American requests for notification, consultation, and reports and records.

Within 15 days of receiving them, the project owner shall submit to the CPM copies of any comments or information provided by California Native American tribes in response to the project owner's transmittals of information.

COC CUL/TRI-7 FINAL CULTURAL AND TRIBAL CULTURAL RESOURCES REPORT (CTRR) The project owner shall submit the final CTRR along with letters or statements of support of the CTRR from the consulting tribes to the CPM for approval. The final CTRR shall be written by or under the direction of the CRS, in coordination with the cultural resources representatives of the consulting tribes and shall be provided in the ARMR format. The final CTRR shall report on all field activities including dates, times and locations, results, samplings, and analyses. All survey reports, DPR 523 forms, data recovery reports, and any additional research reports not previously submitted to the California Historical Resources Information System (CHRIS) shall be included as appendices to the final CTRR.

If the project owner requests a suspension of all construction activities for more than 30 days, then a draft CTRR that covers all cultural and tribal cultural resources activities associated with the project shall be prepared by the CRS in coordination with the cultural resources representatives of the consulting tribes and submitted to the CPM along with letters or statements of support of the draft CTRR from the consulting tribes for review and approval on the same day as the

suspension/extension request. The draft CTRR shall be retained at the project site in a secure facility until construction resumes or the project is withdrawn. If the project is withdrawn, then a final CTRR shall be submitted to the CPM for review and approval at the same time as the withdrawal request.

Verification: Within 30 days after requesting a suspension of construction activities, the project owner shall submit a draft CTRR and letters or statements of support from the consulting tribes to the CPM for review and approval.

Within 90 days after completion of ground disturbance (including landscaping), the project owner shall submit the final CTRR and letters or statements of support from the consulting tribes to the CPM for review and approval. If any reports have previously been sent to the CHRIS, then receipt letters from the CHRIS or other verification of receipt shall be included in an appendix.

Within 10 days after CPM approval of the CTRR, the project owner shall provide documentation to the CPM confirming that copies of the final CTRR have been provided to the CHRIS, the curating institution, if archaeological materials were collected, and to the tribal chairpersons and cultural resources representatives of the Yuhaaviatam of San Manuel Nation, Tejon Indian Tribe, Kern Valley Indian Community, and any California Native American tribes that request copies of project-related reports.

COC CUL/TRI-8 ADDITIONAL SURVEY, EVALUATION, AND DATA RECOVERY If the project plans change to include any of the areas that were unable to be surveyed or sites that were not formally evaluated, additional surveys will be conducted and any new resources will be recorded as well as any previously recorded resources revisited, and site records updated. The project owner will confer with the consulting tribes regarding newly identified California Native American cultural resources' archaeological significance, its potential as a tribal cultural resource, and avoidance (or other appropriate treatment). Along these lines all resources will be evaluated for the California Register of Historical Resources, which can include archival research and phase II testing. If any of the archaeological resources constitute a historical resource or a unique archaeological resource under CEQA, avoidance and preservation in place is the preferred manner of mitigation. Preservation in place may be accomplished by, but is not limited to, avoidance, incorporating the resource into open space, capping, or deeding the site into a permanent conservation easement. If preservation in place is demonstrated to be infeasible (this includes the known historical resources within the WRESC facility) and data recovery through excavation is the only feasible mitigation available, an Archaeological Resources Treatment Plan that includes relevant information and research design outlined in COC **CUL/TRI-3**, shall be prepared and implemented by the qualified archaeologist in consultation with the project owner, the consulting California Native American tribes, and the CPM that provides for the adequate recovery of the scientifically consequential information contained in the archaeological

resource. The qualified archaeologist, project owner, and CPM shall consult with appropriate Native American representatives in determining treatment for Native American resources to ensure cultural values ascribed to the resource, beyond those that are scientifically important, are considered. The data recovery will be completed prior to any ground disturbance within the area of the resource and the project owner shall notify the CPM upon completion of any data recovery. Reporting the final data recovery results will be consistent with COC **CUL/TRI-7**.

Verification: If project plans change to include additional areas that were unable to be surveyed, sites that were not formally evaluated, or historical resources that require data recovery because avoidance is not possible, the CPM will be notified within 30 days of any additional survey, evaluations, or data recovery conducted.

COC CUL/TRI-9 CREATE A TROPICO GOLD MINE HISTORIC DISTRICT HISTORY AND MANAGEMENT GUIDELINES DOCUMENT The project owner shall prepare a comprehensive history of the historic district. The project owner shall conduct archival research and acquire contemporary/period photographs to include in the history. It shall be written for the lay public. The project owner shall also create a management guidelines document for the Tropico Gold Mine Historic District and include this history in the management guidelines document. This document shall be written to instruct cultural resource managers and the general public in understanding how to avoid and minimize impacts to historic district. To reduce impacts on the Tropico Gold Mine Historic District to a less than significant level and to ensure that character defining features of the historic district are maintained both the viewshed and the integrity of setting and feeling must be taken into account when managing this resource. As such, the management guidelines document shall address managing visual impacts to the historic district. The project owner is to coordinate with CEC staff and the county of Kern in the creation of these guidelines.

Verification: At least 15 days prior to the start of ground disturbance for the Gen Tie Line route, the project owner shall provide a brief written statement to the CPM with a schedule concerning the creation of the Tropico Gold Mine Historic District history and management guidelines document. This schedule must include coordination opportunities with the county of Kern and with CEC staff.

Upon completion of the Tropico Gold Mine Historic District history and management guidelines document the project owner shall make it available to the public as well as provide a copy to both CEC staff and the county of Kern.

COC CUL/TRI-10 APPLY RUSTIC BROWN FINISH TO TRANSMISSION POLES NEAR TROPICO GOLD MINE HISTORIC DISTRICT To reduce visual impacts to the Tropico Gold Mine Historic District to a less than significant level, the project owner shall give Gen-Tie line poles adjacent to the Tropico Gold Mine Historic District a rustic brown finish using commercially available colorants or

color treatments, such as Natina, to ensure that the steel poles are less visually obtrusive to the Tropico Gold Mine Historic District. This includes the Gen-Tie line poles along Mojave-Tropico Road and Felsite Avenue between Irone Avenue and 65th Street West.

Verification: At least 30 days prior to the start of ground disturbance for the Gen-Tie Line route the project owner shall provide to the CPM a brief written statement with a schedule concerning the implementation of the Gen-Tie line coloration.

Within 90 days of completion of the portion of the Gen-Tie line route in the vicinity of the Tropico Gold Mine Historic District the project owner shall provide to the CPM a brief written statement stating that the Gen-Tie line route constructed in this vicinity was treated with a commercial colorant or color treatment to ensure the steel poles have a rustic brown finish, and photos of the colored steel poles. If the color treatment requires additional time to take effect, then the project owner shall instead provide to the CPM a brief written statement, with a projected timeline until the coloration has taken effect. The project owner shall also provide photos of the steel poles in the steel poles in the vicinity of the Tropico Gold Mine Historic District once the coloration has taken effect.

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5.5 Efficiency and Energy Resources

Testimony of Kenneth Salyphone

5.5.1 Environmental Setting

Existing Conditions

The project site is currently proposed on undeveloped land in an area zoned Exclusive Agriculture (A) District. The area surrounding the project boundary is largely undeveloped with very sparse residential development; the nearest residence is approximately 0.8 miles northwest of the northwest corner of the project site.

Regulatory

Federal

There are no applicable federal laws, ordinances, regulations, and standards (LORS) that govern the efficiency of the utilization of compressed air energy storage facilities.

State

California 2022 Energy Efficiency Standards for Residential and Nonresidential Buildings—Green Building Standards Code, California Code of Regulations, Title 24. The California Green Building Standards Code (California Code of Regulations, Title 24, Part 11) applies to the planning, design, operation, construction, use, and occupancy of newly constructed power plants and their ancillary facilities and requires the installation of energy efficient indoor infrastructure.

Senate Bill 100—The 100 Percent Clean Energy Act of 2018. Senate Bill (SB) 100 (Chapter 312, Statutes of 2018) requires that retail sellers and local publicly owned electric utilities procure a minimum quantity of electricity products from eligible renewable energy resources so that the total kilowatt-hours of those products sold to their retail end-use customers achieve 44 percent of retail sales by December 31, 2024, 52 percent by December 31, 2027, and 60 percent by December 31, 2030. The bill also requires the Public Utilities Commission, California Energy Commission, and State Air Resources Board to utilize programs authorized under existing statutes to meet the state policy goal of 100 percent of total retail sales of electricity in California provided by eligible renewable energy resources and zero-carbon resources by December 31, 2045 (Pub. Util. Code, § 454.53).

Local

Kern County General Plan—Energy Element. The Energy Element defines energy related goals, policies, and measures to protect Kern County's energy resources and encourage development. It principally includes the following:

- The processing of all discretionary energy project proposals shall comply with California Environmental Quality Act (CEQA) Guidelines directing that the environmental effects of a project must be taken into account as part of project consideration.

Cumulative

Section 15130 of the California Environmental Quality Act (CEQA) Guidelines (Cal. Code Regs., tit. 14) requires a discussion of cumulative environmental impacts. Cumulative impacts are two or more individual impacts that, when considered together, are considerable or that compound or increase other environmental impacts. The CEQA Guidelines require that the discussion reflect the severity of the impacts and the likelihood of their occurrence but need not provide as much detail as the discussion of the impacts attributable to the project alone.

Pursuant to CEQA, a cumulative impacts analysis can be performed by either 1) summarizing growth projections in an adopted general plan or in a prior certified environmental document, or 2) compiling a list of past, present, and probable future projects producing related or cumulative impacts. The second method has been utilized for the purposes of this PSA.

5.5.2 Environmental Impacts

EFFICIENCY AND ENERGY RESOURCES Would the project:	**Significant and Unavoidable Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a. Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☒	☐
b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☐	☒

Environmental checklist established by Cal. Code Regs., tit. 14, Div. 6, Ch. 3, Appendix G, energy

5.5.2.1 Methodology and Thresholds of Significance

Methodology

In addition to the above environmental checklist, staff used the following methodology and thresholds of significance to evaluate the project.

The methodology consists of comparing the energy that would be consumed by the proposed project with the available energy resources.

Thresholds of Significance

There is no specific threshold of significance. However, the project would have a significant impact if its construction and operation significantly impact the available energy resources.

5.5.2.2 Direct and Indirect Impacts

a. Would the project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Construction

Less Than Significant Impact. Construction of the project would take approximately 60 months to complete. Construction activities would include, grading, reservoir excavation, shaft drilling, cavern construction, and cleanup (ESHD 2024I). Throughout these construction activities, various equipment, such as bulldozers, excavators, cranes, and trucks would consume nonrenewable energy resources, primarily fossil fuels such as gasoline and diesel. It is anticipated that fossil fuels used by the equipment during construction would be used efficiently and would not result in significant long-term depletion of these energy resources or permanently increase the project's reliance on them.

The project would restrict idling of compression engines (ESHD 2024I). The project would also implement construction waste management methods, such as recycling and waste characterization, to reduce the amount of construction waste going to the landfill (ESHD 2024I).

Therefore, construction would create a less than significant impact on local and regional energy supplies and a less than significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources.

Operation

Less Than Significant Impact. The proposed Willow Rock Energy Storage Center (WRESC or project) would generate electricity utilizing an advanced compressed air energy storage process and air-powered turbine generators. The project would consist of four power trains. Each train includes an electric motor-driven air compressor and air-powered turbine generator, in addition, the project would include a heat exchanger (to transfer thermal energy) and ancillary equipment. Moreover, the trains share six thermal storage tanks and an air storage cavern (excavated from granite). Air is an abundant resource that cannot be depleted.

The project would utilize the electrical grid, during off-peak hours, to power the air compressors which would compress and inject air into the storage caverns. When the project is dispatched to provide electricity to the electrical grid, air would be discharged

from the cavern and heated by the stored thermal energy within the heat exchanger before entering the turbine expander to generate electricity. The net generating capacity of the project, from all four trains, would be approximately 500 megawatts (MW) for a maximum duration of eight hours, or a maximum of 4,000 megawatt-hours (MWh).

The project would utilize three 2.5-MW diesel fuel-fired generators (genset) for emergency backup generation and one 345-kilowatt genset for the fire pump.

The project has two modes of operation: 1.) Charge mode, which consists of compressing air energy and storing it, and 2.) Discharge mode, which consists of utilizing the compressed air to power the turbine generators.

Charge mode would require electricity from the electrical grid to power the four compression trains. The project would operate for up to 13.5 hours per day (4,960 hours per year maximum) during charge mode.

The project would operate in discharge mode when the electrical grid requires additional load demand support. This mode of operation requires compressed air, stored in the caverns, to be discharged to four trains of air-powered turbine generators. The turbine generators could provide the electrical grid with up to 500 MW of electricity for up to eight hours per day (2,976 hours per year).

The project's round-trip efficiency would be approximately 60 percent. The efficiency is the ratio of useful energy output divided by useful energy input. The inefficiency can be attributed to ancillary electrical loads (facility's in-house power demand), heat loss due to heat transfer (heat input into exchangers versus useful heat injected into the turbine), and electrical transmission losses.

In light of the project's projected efficiency rating of 60 percent coupled with the fact that air is an abundant resource that cannot be depleted, WRESC would not result in potentially significant impact due to wasteful, inefficient, or unnecessary consumption of energy resources.

For reliability purposes (i.e., readiness testing and maintenance) the project would include four gensets. The gensets would be expected to operate for no more than 50 hours (each) per year (ESHD 2024I). At this rate, the total quantities of diesel fuel used for the three gensets operating at full load would be approximately 652 barrels per year (bbl/yr).[1] California has a diesel fuel supply of approximately 298,771,000 bbl/yr.[2] The project's use of fuel would constitute a small fraction (less than 0.00022 percent) of

1 Calculated as: (175 gal/hr x 3 generators + 22.5 gal/hr) x 50 hours per year = 27,375 gallons per year = 652 bbl/yr.

2 This is the sum of the annual production of 102,480,000 bbl and available stocks of 196,291,000 bbl obtained from the Energy Commission's Weekly Fuels Watch Report for 2022 (latest annual report available).

available resources, and the state's supply is more than sufficient to meet necessary demand. For these reasons, the project's use of fuel would be less than significant.

Staff concludes that energy consumed by the project would not create significant adverse effects on energy supplies or resources, nor would it consume energy in a wasteful or inefficient manner.

b. Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

Construction

No Impact. The project is committed to energy-efficient construction and would implement measures to reduce energy consumption during construction process. The project would recycle construction and demolition debris in compliance with Assembly Bill 341 and State Bill 1018. See **Section 5.12, Solid Waste Management** for further discussion. Moreover, the project would also comply with the California Green Building Code.

Operation

No Impact. The project would utilize electricity from the electrical grid during charge mode, to compress and store air. In addition, air-powered turbine generators would provide up to 500 MW of electricity to the electrical grid during discharge mode. The project would deliver and receive electricity though an interconnect with Southern California Edison's (SCE) Whirlwind substation. SCE is the electricity service provider in Kern County. SCE has committed to meeting California's Renewable Portfolio Standard through its Integrated Resource Plan (SCE 2022). SCE's 2022 Power Content Label's Power Mix includes 33.2 percent Eligible Renewable, which includes 0.1 percent biomass and biowaste, 5.7 percent geothermal, 0.5 percent eligible hydroelectric, 17 percent solar, and 9.8 percent wind (SCE 2022a). The project would increase renewable energy generation capacity in SCE and the State's portfolio. Furthermore, the project would be consistent with SB 100.

The project would comply with the California Green Building Code through conformance with the California Building Standard Codes.

The project's use of diesel for emergency generators would not obstruct or inhibit the state from achieving its energy-related goals. These generators would be limited in use. Furthermore, the project's primary goal is to provide capacity and energy to California's electric markets and subsequently contribute to the state's commitment to establishing an environmentally clean and reliable electrical system.

Through energy-efficient design and increased renewable electricity generation, the project would neither conflict with nor obstruct state or local plans for renewable energy or energy efficiency and, therefore, would have no impact on those plans.

5.5.2.3 Cumulative Impacts

SCE currently has around 3 gigawatts of energy storage capacity, with plans to add another 8.1 gigawatts to enhance grid reliability. The project's projected maximum energy demand would be nearly 992,000 MWh per year (MWh received from the grid minus MWh sent back to the grid). This would constitute a small fraction of SCE's current resource capacity and even smaller fraction of its future capacity. Therefore, the project would have no cumulative energy and energy resource impact with past, present, or probable future projects.

5.5.3 Project Conformance with Applicable LORS

Table 5.5-1 staff's determination of conformance with applicable local and state LORS to ensure the project would comply with LORS. As shown in this table, staff concludes that the proposed project would be consistent with all applicable LORS.

TABLE 5.5-1 CONFORMANCE WITH APPLICABLE LORS

Applicable LORS	Conformance and Basis for Determination
Local	
Kern County	
Kern County General Plan – Energy Element	**Yes**. The project would comply with the County's General Plan through compliance with energy related goals, policies, and measures to protect the energy resources.
State	
Senate Bill 100—The 100 Percent Clean Energy Act of 2018.	**Yes**. The project would comply with SB100 through its energy-efficient design and increasing renewable electricity generation.
California 2022 Energy Efficiency Standards for Residential and Nonresidential Buildings—Green Building Standards Code, California Code of Regulations, Title 24.	**Yes**. The project would comply with the California Green Building Code through conformance with the California Building Standard Codes.

5.5.4 Comments and Responses on the Preliminary Staff Assessment

The applicant provided the following global comments to the staff assessment (TN 264316, pp. 1 – 3, p. 14):

- Remove multiple references to "forthcoming PSA."
- Consider that there are two fire pumps, one primary all-electric and one secondary diesel-fired 345-kilowatt (kW) (460 horsepower) emergency fire pump

Staff incorporated the proposed modifications listed above into the staff assessment. Staff also corrected the reference to the "Exclusive Agriculture (A) District."

5.5.5 Conclusions and Recommendations

As discussed above, the project would have a less than significant impact related to energy efficiency and energy resources and would conform with applicable LORS.

5.5.6 Proposed Conditions of Certification

There are no proposed conditions of certification for efficiency and energy resources.

5.5.7 References

ESHD 2024h – Ellison Schneider Harris & Donlan LLP (TN 254805). Willow Rock Energy Storage Center SAFC, Volume 1, Part B, dated March 1, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-AFC-02

ESHD 2024i – Ellison Schneider Harris & Donlan LLP (TN 254806). Willow Rock Energy Storage Center SAFC, Volume 1, Part A, dated March 1, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-AFC-02

SCE 2022 – Southern California Edison (SCE). 2022 Integrated Resource Plan. Accesses on: January 3, 2024. Available online at: https://docs.cpuc.ca.gov/PublishedDocs/Efile/G000/M498/K072/498072233.PDF

SCE 2022a – Southern California Edison (SCE). 2022 Power Content. Accesses on: November 15, 2024. Available online at: chrome-https://www.energy.ca.gov/filebrowser/download/6072

5.6 Geology, Paleontology, and Minerals

Testimony of Kevin M. DeLano

5.6.1 Environmental Setting

Willow Rock Energy Storage Center (WRESC or project) proposes to construct and operate a clean energy storage facility. This facility would feature a 520-megawatt (MW) Advanced Compressed Air Energy Storage (A-CAES) system, which would have the capacity to provide up to 4,000 MW hours of energy storage. During off-peak times, the project would compress and inject air, via deep vertical shafts, into a subterranean cavern. As air is compressed, the air temperature rises. To cool down the compressed air, heat is transferred to boiler-grade water by a set of heat exchangers and is stored separately for later use during the discharge cycle. The injection of compressed air into the cavern would displace water upward, into the deep vertical shafts and a hydrostatic compensation reservoir. (WSP 2025g)

To generate electricity (known as the “discharge cycle”), compressed air is discharged from the cavern. The cool high-pressure air exiting the cavern is reheated using the heat stored by the thermal management system and the same set of heat exchangers that were initially used to extract it. The reheated compressed air is then used to drive air- expansion turbine generators, which convert the stored potential energy back into electricity for the grid. The project would also use the deep vertical shafts for excavation, construction, and maintenance of the cavern. (WSP 2025g)

The proposed WRESC site is in the unincorporated area of Kern County, approximately 3.5 miles north of the community of Rosamond, CA, on the western portion of Assessor’s Parcel Number 31-022-13, a privately owned and undeveloped parcel. The WRESC site would occupy approximately 89 acres. The area surrounding the project site is mostly undeveloped, with a few sparsely scattered residences. The closest residence is about 0.8 miles northwest of the WRESC site. (WSP 2025g)

On the north, vacant and undeveloped property bound the WRESC site. On the west, vacant and undeveloped property and the Antelope Valley Freeway bound the WRESC site. On the east and south, the Sierra Highway and Dawn Road bound the WRESC site, respectively. Parcels adjacent to the WRESC site would be used for about 70 acres of temporary construction laydown and parking (temporary laydown) and potentially for about 75 acres for an architectural berm comprised of excavated soil and rock. The parcels proposed for temporary laydown are within the proposed architectural berm’s footprint. (WSP 2025g)

The WRESC would deliver generated electricity to Southern California Edison’s Whirlwind Substation, southwest of the WRESC at the intersection of 170th Street West and Rosamond Boulevard, Rosamond, CA, via a 19.1-mile 230-kilovolt interconnection generation-tie (gen-tie) line. The gen-tie has a preferred route and six alternative route

options. While the preferred route is mostly on privately owned parcels, a portion of the gen-tie line may cross a 172-acre area owned by the Bureau of Land Management. For all route options, the gen-tie is proposed to have above-ground and below-ground sections. (ESHD 2024i)

The regional and local potential for the occurrence of geologic hazards and paleontological, geological, and mineral resources of commercial, recreational, and scientific value are discussed below under Existing Conditions.

Existing Conditions

Geologic Hazards and Resources

Regional Geology

The proposed project is in the western part of the Mojave Desert geomorphic province of California. The Mojave Desert geomorphic province contains vast desert plains with isolated mountain ranges (CGS 2002). The Mojave Desert geomorphic province's western area is an east-west oriented wedge known as the "Mojave Block". The Garlock and San Andreas faults are the province's northwest and southwest boundaries, respectively. The project is in the Antelope Valley, a structural basin filled with hundreds to several thousand feet of Cenozoic alluvial sediment deposits. Surface deposits in the Antelope Valley are Quaternary alluvium and windblown sands. Underlying the Quaternary surficial sediments is a Mesozoic, potentially Cretaceous, quartz monzonite, a plutonic rock that primarily comprises granitic batholith which underlies the Mojave Desert (Dibblee 1963). The quartz monzonite dominated granitic batholith is the region's crystalline basement bedrock and may be 15 to 20 miles thick (Dibblee, 1963; Cheadle et al. 1986). In the western Rosamond Hills, approximately vertical dike swarms cut the quartz monzonite. (Dibblee 1963)

Within the Antelope Valley, the project site is an isolated hill on the northeastern side of the Rosamond Hills, an east-west oriented trending uplifted area. The hill is comprised of exposed Mesozoic quartz monzonite. High-angle W-NW and E-NE-striking normal faults cut the Rosamond Hills. (Dibblee 1963)

Local Geology, Stratigraphy, and Soils

The proposed WRESC site is on the northeastern part of the Rosamond Hills. The proposed gen-tie line would span 19.1 miles to the west-southwest, through the Rosamond Hills, into the Willow Springs area of the Antelope Valley. The geologic units described below are within one mile of the WRESC site or 0.25 miles of the gen-tie line. (ESHD 2024i)

- A thin, 3.0 ft to 7.5 ft, layer of alluvium and soil overlays the project site. As defined in the Unified Soil Classification System (ASTM 2025), the soils are loose to very dense well graded sands, silty sands, and clayey sands. (ESHD 2024q)

- Quaternary deposits underlie most of the proposed gen-tie line. These deposits are recent in age, presumably Pleistocene to Holocene, and unconformably overlie older igneous and sediment rocks.
    - Quaternary alluvium (Qa) underlies most of the proposed gen-tie line and is proximal to the north and eastern boundaries of the project site (ESHD 2024h). Dibblee (1963) described the map unit as unconsolidated and undissected alluvium and surficial deposits of recent age. Alluvium is composed of gravel, sand, and silt grain sizes and is found in alluvial fans or as broad and nearly flat valley-fill. (Dibblee 1963)
    - Quaternary windblown sand (Qs) occasionally underlies the proposed gen-tie line and is proximal to the northwest boundary of the project site (ESHD 2024h). Dibblee (1963) described the map unit as loose windblown sand that forms dune ridges on the surrounding the east and south sides of Rosamond Lake. Windblown sand is sorted and fine-grained. (Dibblee 1963)
- The Tropico group is a series of Miocene and Pliocene volcanic, pyroclastic, and sedimentary rocks that outcrop in the Antelope Valley and western Mojave Desert. The maximum exposed thickness of the Tropico group is 2,800 ft. The Tropico group contains three formations, two of which briefly underlie the gen-tie line. The third formation is not mapped near the project site nor gen-tie line and is not described.
- Miocene (age inferred) Fiss fanglomerate (Tf) briefly underlies the proposed gen-tie line, west of the project site. The Fiss fanglomerate is an alluvial fan deposit mostly composed of eroded volcanic rocks from the unconformably underlying Gem Hill formation. The Fiss fanglomerate is the middle formation in the Tropico Group. (Dibblee 1963)
    - The Fiss fanglomerate contains lenses of a felsite breccia (Tfb), which were interpreted as a probable landslide breccia, or perhaps a lava flow breccia. (Dibblee 1963)
- Miocene (age inferred) Gem Hill formation briefly underlies the proposed gen-tie line, west of the project site. The Gem Hill formation is composed of mostly light-colored volcanic rocks, especially lithic tuffs. The Gem Hill formation is the lowest formation in the Tropico Group.
    - Lithic tuff, tuff-breccia, and tuffaceous sandstone (Tgt) briefly underlie a portion of the proposed gen-tie line (ESHD 2024h). The tuff contains small angular rock fragments and pumice in a white, tan, and green matrix. (Dibblee 1963)
    - Basalt lava flows (Tgba) briefly underlie a portion of the proposed gen-tie line (ESHD 2024h). The basalt is black, fine-grained, vesicular and massive with fracture parting. (Dibblee 1963)
    - The Bobtail quartz latite member is part of the Gem Hill Formation and has three facies mapped within 0.25 miles of the gen-tie line. The three facies are porphyritic igneous rocks composed of large crystals in a fine-grained crystal

matrix (Tgp), felsite lava flows (Tgf), and a perlite obsidian that forms at volcanic plugs (Tgo) (Dibblee 1963; ESHD 2024h). The felsite lava flows briefly underlie a portion of the proposed gen-tie line. (ESHD 2024h)

- Mesozoic quartz monzonite underlies the project site an eastern portion of the gen-tie line. Quartz monzonite in the Rosamond Hills is a massive, uniform, medium- to coarse-grained holocrystalline granitic rock. The quartz monzonite's color is buff white on weathered surfaces and gray-white on fresh surfaces. The quartz monzonite's mineral assemblage is approximately equal percentages of quartz, potassium feldspar, and plagioclase feldspar, with small percentages of biotite and rare hornblende. Quartz monzonite may vary locally to granite and granodiorite. Quartz monzonite is the region's crystalline basement and noncomformably underlies the younger rock formations and deposits (Dibblee 1963)
    - The top 20 ft to 45 ft of the quartz monazite bedrock is weathered and decomposed to silty to clayey sand (SM, SC). The decomposing quartz monzonite is moderately hard to very soft and very slightly fractured to moderately fractured. (ESHD 2024q)
    - Aplitic- to pegmatitic-grain size dike swarms cut the Mesozoic quartz monzonite (ESHD 2024g). The dikes' mineral assemblage is dominantly quartz and feldspar. The dikes' widths range from less than one inch to about 6 ft and are more resistant to erosion than the quartz monzonite. (Dibblee 1963)

A deep subsurface geotechnical investigation bored three core holes at the project site to assess the lithology of the A-CAES cavern target horizon. From the ground surface, the core holes drilled 3,015 ft and 3,167 ft down to elevations between 445 ft and 607 ft below mean sea level. The target horizon is nearly entirely quartz monzonite.

The proposed footprint of the subsurface cavern is about 0.8 miles away from ZEV-CH-02-23. Within the target depth horizon in core ZEV-CH-02-23, two thin diorite dikes intersected the core. Also in this core, quartz monzonite in the lower part of the target horizon has recrystallized, mostly into monazite, a hard and resistant mineral.

In all three core holes, the quartz monzonite showed varying amounts of hydrothermal alteration. Hydrothermal alteration occurs when hot and mineral-rich fluids interact with rocks and minerals, changing mineral compositions, textures, and structures (ESHD 2024g). Dibblee (1963) hypothesized that hydrothermal alternation of quartz monzonite in region occurs on faults and fractures.

In core ZEV-CH-01-23, quartz monzonite in the target horizon is slightly altered to almost entirely fresh. In core ZEV-CH-02-23, thick zones of moderately to highly altered quartz monzonite were logged between the 456 feet and 401 feet above mean sea 0level (AMSL). In core ZEV-CH-03-23, the quartz monzonite was logged as moderately to highly altered between 570 and 455 ft AMSL. In borehole ZEV-CH-03-23, elsewhere in the target interval, the quartz monzonite was mostly logged as fresh to slightly altered. (ESHD 2024g)

At the WRESC site, groundwater depth is 40 ft. Groundwater depth is anticipated to vary with seasonal hydrology and nearby groundwater pumping. (ESHD 2024q)

Faulting and Seismicity

Southern California, which includes the western Mojave Block, is a complex tectonic plate boundary with many active faults with high shaking potential. The western Mojave Block is in one of the most seismically active areas in the United States (CDOC) 2016b; ESHD 2024i). The active NE-striking Garlock fault and NW-striking San Andreas fault bound the Mojave Block on the northwest and southwest, respectively. Within the Mojave Block, there are many active NW-striking faults. Faults within, bounding, and beyond the Mojave Block may produce high-magnitude earthquakes that could impact Kern County, including the project site. The project could be subject to seismic hazards of varying degrees, depending on the proximity to and length of nearby active faults, the local geologic and topographic conditions, and the magnitude of the seismic events. Seismic hazards primarily include ground rupture along fault traces, ground shaking, and possibly liquefaction induced by strong ground shaking. (ESHD 2024i)

In accordance with the 1972 Alquist-Priolo Earthquake Fault Zone Act, the California Geological Survey (CGS) delineates Earthquake Fault Zones to prevent the construction of buildings for human occupancy on Holocene-active faults and fault zones. Earthquake Fault Zones are regulatory boundary zones surrounding well defined Holocene-active faults or fault zones. Holocene-active faults are those that have ruptured in the past 11,700 years (CDOC 2018). For the evaluation in this report, Holocene-active faults are termed “active faults”.

Pre-Holocene faults have not ruptured in the past 11,700 years. However, evidence that Pre-Holocene faults may rupture in the future should be considered (CDOC 2018). For the evaluation in this report, Pre-Holocene faults have evidence of rupture in the past 1.6 million years are termed “potentially active faults”.

In accordance with the 1990 Seismic Hazards Mapping Act, the CGS delineates Zones of Required Investigation to mitigate human and property losses from liquefaction and earthquake-induced landslides (CDOC 2008). There are no Zones of Required Investigation intersecting the project site. The closest zone of required investigation to the project is a liquefaction hazard zone approximately seven miles south of the project site, near Lancaster, CA. (CDOC 2024a; ESHD 2024i)

According to the United States Geological Survey (USGS) Quaternary Fault and Fold Database of the United States and the CGS Fault Activity Map of California, there are no active nor potentially active faults intersecting the project site. Numerous active and potentially active faults exist within 40 miles of the project site (CDOC 2015; USGS 2017). About 8.5 miles to the southwest, the Willow Springs fault is the closest potentially active fault to the project site. Several significant active faults are within 25 miles of the project site. The Garlock fault is 15 miles northwest of the site. The San Andreas fault zone is 21 miles southwest of the project site. The Mirage Valley fault

zone is 23 miles southeast of the project site. **Table 5.6-1** lists numerous named faults within 40 miles of the project site that are active or potentially active. There are comparatively minor, potentially active, unnamed faults within 40 miles of the project that are not included in **Table 5.6-1**. (CDOC 2015; USGS 2017)

TABLE 5.6-1 QUATERNARY FAULTS IN PROXIMITY TO THE PROJECT SITE

Fault	Status	Approximate Distance from the Project Site (miles)
Willow Springs fault	Potentially active	8.5
Garlock fault (active)	Active	15
Cottonwood fault	Potentially active	16
Tyler Horse fault	Potentially active	16
San Andreas fault zone	Active	21
Mirage Valley fault zone	Potentially active	23
Blake Ranch fault	Potentially active	25
Clearwater fault zone	Potentially active	25
Kramer Hills fault zone	Potentially active	27
Southern Sierra Nevada fault zone	Potentially active	27
Helendale-South Lockhart fault zone	Active	33
Lenwood-Lockhart fault zone	Active	33
Llano fault	Potentially active	33
White Wolf fault zone	Active	35
Breckenridge fault zone	Potentially active	39
San Gabriel fault zone	Active	40

Sources: CDOC 2015; USGS 2017

Dibblee (1963) interpreted the Rosamond Hills as an E-W trending uplifted area, potentially an upwarp, of Mesozoic quartz monzonite. The potentially largest fault in the Rosamond Hills is about 3000 ft northeast of the WRESC site. The fault is a NW-striking, presumably SW-dipping normal fault with about 6 miles of surface exposure. Evidence for the fault's surface exposure in quartz monzonite is a zone of pulverized quartz monzonite covered by surficial crust of white caliche-like crust. In addition, many small, NE- to NW-striking, high-angle, and presumably normal or possibly strike-slip, faults cut the Rosamond Hills. (Dibblee 1963). Faults in the Rosamond Hills do not show evidence of recent activity. (Dibblee 1963; USGS 2017)

Strong Ground Motion

The western Mojave Block is one of the most seismically active regions in both California and the United States (CDOC 2016b; ESHD 2024i). Faults in the western Mojave Block have a high likelihood of producing earthquakes and intense ground

shaking. Although the project site is not within an active Earthquake Fault Zone as defined by the Alquist-Priolo Act, the project site is in an area with the potential for ground shaking that may cause structural or property damage in the event of an earthquake (CDOC 2024a).

At, and near, the ground surface, the intensity of ground motion depends upon the magnitude of an earthquake, the distance from the epicenter, and the geology between the epicenter and the site. In softer materials, such as unconsolidated soil, ground shaking intensity increases because the seismic wave velocity decreases and the wave amplitude increases. In harder materials, such as bedrock, ground motion decreases because seismic wave velocity increases and wave amplitude decreases.

The CGS's Earthquake Shaking Potential Map online mapping application categorizes areas based on the anticipated intermediate ground motion with a two percent exceedance probability in 50 years, or approximately a 2,500-year return period. The CGS's Earthquake Shaking Potential Map categorizes the project site has medium to low shaking potential. (CDOC 2016b; ESHD 2024i)

ESHD (2024i) describes a preliminary evaluation of the project site using the USGS Earthquake Survey Hazard Tool (USGS 2018). The evaluation assumed a 2,475-year return period and Site Class B (rock) subsurface material. Results indicate a peak ground acceleration (PGA) of 0.40g, the acceleration due to gravity, and mean earthquake magnitude of 7.09 can be expected at the project site (ESHD 2024i). The earthquake magnitude scale was not stated.

ESHD (2024g) describes an evaluation of the project site using the Applied Technology Council software for the ASCE7-16 Design Standard. The evaluation assumed a 2,475-year return period and Site Class A (hard rock) material. Results indicate a PGA of 0.39g and a Richter earthquake magnitude of 7.5 can be expected at the project site. (ESHD 2024g). It is noted that that estimates for mean earthquake magnitude and Richter earthquake magnitude may be different earthquake magnitude scales.

Sharma and Judd (1991), Jaramillo (2017), and Dowding and Rozen (1978) evaluated seismic risk to underground openings. These studies found that when PGA was less than 0.19 g, no damage occurred in underground tunnels. If PGA was 0.19 g to 0.50 g, minor damage occurred in underground tunnels. The studies concluded that if a rupturing fault does not intersect an underground opening, an underground opening that is deeper than 200 ft to 300 ft would sustain little damage during an earthquake. (ESHD 2024g)

Geologic and Mineral Resources of Recreational, Commercial, and Scientific Value

In the context of the California Environmental Quality Act (CEQA), mineral resources are land areas or deposits deemed significant by the California Department of Conservation (CDOC). A mineral resource is a concentration of natural inorganic materials or

fossilized organic material occurring in such form, quantity, or quality that there are reasonable prospects for economic extraction. Inorganic mineral resources include non-fuel materials such as aggregate (sand and gravel), metals (gold, silver, and iron), and industrial minerals (clays, limestone, and gypsum). Petroleum resources include crude oil and natural gas.

Production of mineral and fossil fuels resources play an important role in Kern County's economy. Major economic mineral resources include minerals used in construction or industrial applications (borax), cement production, construction aggregate products (sand and gravel), and fossil fuels (oil). (Kern County 2009)

The State Mining and Geology Board (SMGB) is responsible for administration of a mineral lands inventory process termed classification designation. Areas are classified based on geologic factors without regard to existing land use and land ownership. The SMGB has established Mineral Resources Zones throughout most of California. The CDOC Mineral Land Classification of Southeastern Kern County, California mapped the region surrounding the proposed WRESC site and gen-tie line. The CDOC (1999) mapped existing mines and prospects, and mapped mineral resource zones for borates, limestone, gold, dimension stone, silica, and pozzolan. Mineral resource zones, mines, and prospects mapped in CDOC (1999) are north, south, and west, but do not intersect the project site and gen-tie line. (ESHD 2024i)

The CDOC Division of Mine Reclamation's list of mines, referred to as the AB 3098 List and regulated under the Surface Mining and Reclamation Act (SMARA), and Mines Online mapping application list approximately 64 active or potentially active mines in Kern County (CDOC 2016a, 2024b). According to the USGS Mineral Resources online mapping application, one open pit mine or quarry and eight prospect pits are mapped at the project site (USGS 2011). The mines at the project site are not active (CDOC 2016a). The closest active mines to the project site are two open-pit mines, about 1.5 miles to the south. The mines produce sand and gravel or decomposed granite. (CDOC 2016a)

According to the CDOC Geologic Energy Management Division (CalGEM) Well Finder online mapping application, there are no energy production related wells at the project site, in the Antelope Hills, nor in Rosamond, CA. (CDOC 2023)

Several issues influence the extraction of mineral resources in Kern County, including the location of geologic deposition, the potential for impacts to the environment, commercial value, and land use conflicts. At the project site, the geologic unit at the surface and in the subsurface is Mesozoic quartz monzonite, a granitic rock that occurs throughout the western Mojave Province. Quartz monzonite is not unique in terms of commercial value. (Dibblee, 1963)

Paleontological Resources

Paleontological resources are fossils and fossiliferous deposits consisting of vertebrate fossils, invertebrate fossils, plant, trace fossils and other data. Paleontological resources are older than recorded human history or the Mid- Holocene (approximately 5,000 radiocarbon years). (SVP 2010)

Fossils are important scientific and educational resources because they document the present and evolutionary history of now-extinct organisms. Fossils are important in reconstructing the environments in which those organisms lived; in determining the relative ages of the strata in which they occur; and the geologic events that resulted in the deposition of the sediments that buried them. Fossils are considered a nonrenewable scientific resource and are afforded protection under several federal, state, and local laws, ordinances, and regulations because most, if not all, of the organisms they represent no longer exist. (SVP 2010)

Paleontological Potential

Society of Vertebrate Paleontology

The paleontological potential of a geologic unit exposed in a project area is inferred from the abundance of fossil specimens and previously recorded fossil sites in exposures of the unit, or of similar units in similar geological settings. The underlying assumption is that a geologic unit is likely to yield fossil remains in a quantity and of a quality similar to fossil remains previously recorded from the unit elsewhere in the region (SVP 2010).

As described in SVP (2010), the paleontological potential of a geologic unit reflects:

- The potential for yielding abundant or significant vertebrate fossils or for yielding a few significant vertebrate, invertebrate, plant, or trace fossils.
- The importance of recovered evidence for proper stratigraphic interpretation, age determination of a geologic unit, paleoenvironmental and paleoclimatic reconstructions, or for understanding evolutionary processes.

Determining the paleontological potential of a geologic unit helps to determine which units may require mitigation to reduce potential impacts to paleontological resources during the development of the project. In its guidelines for assessment and mitigation of adverse impacts to paleontological resources, the Society of Vertebrate Paleontology (SVP) established the following four categories of paleontological potential of geologic units: high, low, undetermined, and none. The categories are described in detail in **Table 5.6-2**.

TABLE 5.6-2 SOCIETY OF VERTEBRATE PALEONTOLOGY: DEFINITIONS OF PALEONTOLOGICAL POTENTIAL

Rating	Definition
High	Geologic units from which vertebrate or significant invertebrate, plant, or trace fossils have been recovered are considered to have a high potential for containing additional scientifically important paleontological resources. Geologic units that contain potentially datable organic remains older than late Holocene, including deposits associated with animal nests or middens, and geologic units which may contain new vertebrate deposits, traces, or trackways, are also classified as having High Potential.
Low	Geologic units with low potential are known to produce significant fossils only on rare occasions, and only preserve fossils in rare circumstances such that the presence of fossils is the exception not the rule, for example, basalt flows or recent colluvium.
Undetermined	Geologic units for which little information is available concerning their geologic context (depositional environment, age) and potential to contain paleontological resources are considered to have undetermined potential. The paucity of data is usually from a lack of study in that unit or because of high variability in the unit's lithology. Typically, further study is necessary to determine whether these units have high, low, or no potential to contain scientifically significant paleontological resources. In cases where no subsurface data are available, paleontological potential can sometimes be determined by strategically located excavations into subsurface stratigraphy.
None	Geologic units with no potential are those that formed at high temperatures and pressures, deep within the Earth, such as plutonic igneous rocks, and high-grade metamorphic rocks. Since the environment in which these rocks formed is not conducive to the preservation of biological remains, they do not contain fossils. Manmade fill also is considered to possess no paleontological potential.

Source: SVP 2010

Bureau of Land Management

The Bureau of Land Management's Potential Fossil Yield Classification (PFYC) system considers mapped geologic units to evaluate the potential for paleontological resources and potential impacts. The PFYC system serves as preliminary guidance to determine where further evaluation of potential paleontological resources and impacts may be needed. The PFYC system uses the following categories: class 1 – very low, class 2 – low, class 3 - moderate, class 4 – high, and class 5 – very high. The categories are described in detail in **Table 5.6-3**. (BLM 2023; ESHD 2024h)

TABLE 5.6-3 BUREAU OF LAND MANAGEMENT: POTENTIAL FOSSIL YIELD CLASSIFICATION SYSTEM

Rating	Definition	Management and Mitigation
Class 1 – Very Low	Geologic units that are not likely to contain recognizable paleontological resources. Units assigned to Class 1 typically have one or more of the following characteristics: • Geologic units are igneous or metamorphic, excluding airfall and reworked volcanic ash units.	An assignment of Class 1 normally does not trigger further analysis unless paleontological resources are known or found to exist.

TABLE 5.6-3 BUREAU OF LAND MANAGEMENT: POTENTIAL FOSSIL YIELD CLASSIFICATION SYSTEM

Rating	Definition	Management and Mitigation
	• Geologic units are Precambrian in age.	Management concerns for paleontological are usually negligible or not applicable. Paleontological mitigation is unlikely to be necessary except in very rare or isolated circumstances that result in the unanticipated presence of paleontological resources, such as unmapped geology contained within a mapped geologic unit. Standard stipulations should be put in place prior to authorizing any land use action to accommodate an unanticipated discovery.
Class 2 - Low	Geologic units that are not likely to contain paleontological resources. Units assigned to Class 2 typically have one or more of the following characteristics: • Sediments exhibit significant physical and chemical changes (i.e., diagenetic alteration) that make fossil preservation unlikely. • Units are generally younger than 10,000 years before present. • Geologic units are recent aeolian deposits. • Field surveys have verified that significant paleontological resources are not present or are very rare.	An assignment of Class 2 may not trigger further analysis unless paleontological resources are known or found to exist. Except where paleontological resources are known or found to exist, management concerns are generally low and further assessment is usually unnecessary except in occasional or isolated circumstances. The probability of impacting significant paleontological resources is low. Localities containing important paleontological resources may exist but are occasional and should be managed on a case-by-case basis. Paleontological mitigation is only necessary where paleontological resources are known or found to exist. Standard stipulations should be put in place prior to authorizing any land use action to accommodate unanticipated discoveries.
Class 3 - Moderate	Sedimentary geologic units where fossil content varies in significance, abundance, and predictable occurrence. Units assigned to Class 3 have some of the following characteristics:	An assignment of Class 3 includes geologic units of moderate or infrequent occurrence of paleontological resources. Management concerns are moderate because the existence of significant paleontological resources is known to be low. Management considerations cover a broad range of options that

TABLE 5.6-3 BUREAU OF LAND MANAGEMENT: POTENTIAL FOSSIL YIELD CLASSIFICATION SYSTEM

Rating	Definition	Management and Mitigation
	• They are marine in origin with sporadic known occurrences of paleontological resources. • Common invertebrate or plant fossils may be found in the area, and opportunities may exist for casual collecting. • Units may contain significant paleontological resources, but these occurrences are widely scattered. • Paleontological resources may occur intermittently, but abundance is known to be low.	may include record searches, pre-disturbance surveys, monitoring, mitigation, or avoidance. Surface-disturbing activities may require assessment by a qualified paleontologist to determine whether significant paleontological resources occur in the area of a proposed action, and whether the action could affect the paleontological resources. Paleontological mitigation strategies will be proposed based on the nature of the proposed activity.
Class 4 - High	Geologic units that are known to contain a high occurrence of paleontological resource. Units assigned to Class 4 typically have the following characteristics: • Rare or uncommon fossils, including nonvertebrate (such as soft body preservation) or unusual plant fossils, may be present. • Significant paleontological resources have been documented but may vary in occurrence and predictability. • Surface-disturbing activities may adversely affect paleontological resources. • Illegal collecting activities may impact some areas.	An assignment of Class 4 indicates the likelihood of impacting significant paleontological resources is moderate to high and is dependent on the proposed action. Management concerns are moderate to high, depending on the proposed action. Paleontological mitigation strategies will depend on the nature of the proposed activity, but field assessment by a qualified paleontologist is normally needed to assess local conditions. Mitigation plans must consider the nature of the proposed disturbance, such as removal or penetration of protective surface alluvium or soils, potential for future accelerated erosion, or increased ease of access that could result in looting. Detailed field assessment is normally required, and on-site monitoring or spot checking may be necessary during land-disturbing activities. In some cases, avoidance of known paleontological resources may be necessary.
Class 5 – Very High	Highly fossiliferous geologic units that consistently and predictably produce significant paleontological resources. Units assigned to Class 5 have some or all the following characteristics:	An assignment of Class 5 indicates the likelihood for impacting significant paleontological resources is high.

TABLE 5.6-3 BUREAU OF LAND MANAGEMENT: POTENTIAL FOSSIL YIELD CLASSIFICATION SYSTEM

Rating	Definition	Management and Mitigation
	• Significant paleontological resources have been documented and occur consistently. • Paleontological resources are highly susceptible to adverse impacts from surface-disturbing activities. • Unit is frequently the focus of illegal collecting activities.	Management concerns for paleontological resources in Class 5 areas are high to very high. A field survey by a qualified paleontologist is almost always needed. Paleontological mitigation may be necessary before or during surface-disturbing activities. The area should be assessed prior to land tenure adjustments. Pre-work surveys are usually needed, and on-site monitoring may be necessary during land use activities. Avoidance or resource preservation through controlled access, designation of areas of avoidance, or special management designations should be considered.

Source: BLM 2023; ESHD 2024h

Regulatory

The project would be required to comply with all applicable federal, state, and local laws, ordinances, regulations, and standards (LORS) and conditions of certification (COCs) issued by the California Energy Commission (CEC). The issuance of a certification by the CEC and oversight provided by the CEC via the CEC's delegate chief building official (DCBO) would confirm that the project complies with the applicable regulatory framework.

Federal Geologic Hazards, Geologic and Mineral Resources

Federal Mine Safety and Health Act

As described in the CFR, Title 30, Chapter I, Subchapter K, Part 57, the 1977 Federal Mine Safety and Health Act prescribes standards for underground metal and non-metal mines to protect human life, promote health and safety, and prevent accidents. (CFR 1985)

Occupational Safety and Health Administration

The Code of Federal Regulations (CFR) prescribes standards for safe construction of mines and underground structures. The CFR, Title 29, Subtitle B, Chapter XVII, Part 1926, Subpart S contains regulations developed by the Occupational Safety and Health Administration (OSHA) to ensure safe construction of underground tunnels, shafts, chambers, and passageways, including compressed air projects. (CFR 2019)

Pipeline and Hazardous Materials Safety Administration

The CFR prescribes standards for storage of natural gas underground. The CFR, Title 49, Subtitle B, Chapter I, Subchapter D, Part 192, Subpart A, Part 192.12 contains regulations developed by the Pipeline and Hazardous Materials Safety Administration to develop integrity management programs to ensure safe operation of underground natural gas storage facilities. (CFR 2025c)

U.S. Army Corps of Engineers

The following U.S. Army Corps of Engineers manuals and specifications recommend guidance for the design and safe excavation and construction of underground structures. Engineering Manual 1110-1-1804: Engineering and Design, Geotechnical Investigations recommends guidance geotechnical investigations for civil engineering projects. Appendix C provides guidance for mapping geologic and engineering conditions in tunnels and shafts. (USACE 2001)

Engineering Manual 1110-2-2901: Tunnels and Shafts in Rock recommends guidance for planning, design, and construction of tunnels and shafts in rock for civil engineering projects (USACE 1997). Engineering Manual 1110-1-3500: Chemical Grouting Technology recommends guidance for chemical grouting, which is the process of injecting a chemically reactive solution into rock to develop strength and control water flow. The guidance describes chemical grouting materials, equipment, methods, planning, and specifications. (USACE 1995a).

Guide Specification for Civil Works Construction: Section 02330: Tunnel and Shaft Grouting recommends guidance for grouting, or tunnel linings, in excavated tunnels and shafts. The guidance describes materials, equipment, and procedures. Described grouting procedures include drilling drain holes, exploration holes, and grout holes, preparing and injecting grout, and patching and cleanup. (USACE 1995b)

U.S. Bureau of Reclamation

The U.S. Bureau of Reclamation (USBR) Engineering Geology Field Manual, Volumes I and II, provide field-oriented geotechnical engineering guidance to USBR staff. The guidance is also recommended for industry practitioners because it emphasizes applying geology to solve engineering problems. (USBR 2001ab)

Federal Paleontological Resources

Antiquities Act

As described in the CFR, Title 43, Subtitle A, Part 3, the 1906 Antiquities Act requires the U.S. Department of Agriculture, U.S. Department of Defense, and the U.S. Department of the Interior to permit collection of objects of historic and scientific interest on federal lands. Collections must be stored in public museums. The U.S. Department of the Interior permits collecting on federal lands owned that are not

managed by the U.S. Department of Agriculture nor U.S. Department of Defense. (CFR 1954)

Paleontological Resources Preservation Act

As described in the CFR, Title 43, Subtitle A, Part 49, the 2009 Paleontological Resources Preservation Act requires the U.S. Department of the Interior to permit collection of paleontological resources on federal lands. The U.S. Department of the Interior owns collected paleontological resources and may transfer ownership or administration to federal or non-federal educational institutions. (CFR 2025a)

State Geologic Hazards, Geologic and Mineral Resources

Alquist Priolo Earthquake Fault Zoning Act

As described in the California Public Resources Code (PRC), Division 2, Chapter 7.5, the 1972 Alquist-Priolo Earthquake Fault Zone Act requires the California Geological Survey (CGS) to delineate Earthquake Fault Zones to prevent the construction of buildings for human occupancy on active faults. Earthquake Fault Zones are regulatory boundary zones surrounding well defined Holocene-active faults or fault segments. (CDOC 2018; CPRC 2024b)

The Alquist-Priolo Earthquake Fault Zone Act recognizes three types of faults. Holocene-active faults are those that have ruptured in the Holocene Epoch, or past 11,700 years. Pre-Holocene faults have not ruptured in the past 11,700 years and not regulated under the Alquist-Priolo Earthquake Fault Zone Act. Evidence that Pre-Holocene faults may rupture in the future should be considered. Age-undetermined faults are those in which the most recent rupture is unknown. The Alquist-Priolo Earthquake Fault Zone Act considers age-undetermined faults as Holocene-active faults, until proven otherwise. (CDOC 2018; CPRC 2024b)

California Building Code

The 2022 California Building Code (CBC) prescribes standards for constructing safer buildings. The 2022 CBC, Title 24, Part 2 (Volumes 1 & 2) contains provisions for earthquake safety based on factors including occupancy type, soil and rock profile, ground strength, and distance to seismic sources. (CBC 2022)

The 2022 CBC, Title 24, Part 2 (Volumes 1 & 2), Chapter 18, Section 1803 requires that a geotechnical and geohazard report be prepared for most development projects to evaluate seismic and geologic conditions, such as surface fault ruptures, ground shaking, liquefaction, differential settlement, lateral spreading, expansive soils, and slope stability. These reports help determine the final engineering and building design for the project. The CBC is updated every three years, with the 2022 CBC effective on January 1, 2023, and updated with a July 2024 Supplement. (CBC 2022)

Seismic Hazards Mapping Act

As described in the Public Resources Code, Division 2, Chapter 7.8, the 1990 Seismic Hazards Mapping Act requires the California Geological Survey to publish maps identifying Zones of Required Investigation that are subject to the effects of strong ground shaking, such as liquefaction, landslides, tsunamis, and seiches. The Seismic Hazards Act requires a geotechnical report to be prepared that defines and delineates any seismic hazard prior to approval of a project in a seismic hazard zone. (CDOC 2008; CPRC 2017)

Surface Mining and Reclamation Act

As described in the Public Resources Code, Division 2, Chapter 9, section 2710 et seq, the 1975 Surface Mining and Reclamation Act (SMARA) provides a comprehensive surface mining and reclamation policy for the regulation of surface mining operations to assure that adverse environmental impacts are minimized and mined lands are reclaimed to a usable condition. SMARA also encourages the production, conservation, and protection of the State's mineral resources (CPRC 2022). Public Resource Code section 2207 provides annual reporting requirements for all mines in the state. (CPRC 2024a)

County governments enact ordinances to implement SMARA at the local level. County governments are the holder of reclamation financial assurances (CPRC 2022). The administering agency for Kern County is the Kern County Planning and Natural Resources Department.

State Paleontological Resources

The CEQA lead agency having jurisdiction over a project is responsible for ensuring that paleontological resources are protected in compliance with CEQA and other applicable statutes. The CEC is the lead agency with the responsibility of ensuring that fossils are protected during project construction and operation. (CCR, 2023; CPRC 2025)

The Public Resources Code, Division 13, Chapter 2.6, section 21081.6 requires that the CEQA lead agency demonstrate project compliance with mitigation measures developed during the environmental impact review process. (CPRC 1994)

Local Geologic Hazards

Kern County Municipal Code

The 2025 Kern County Municipal Code largely adopts the 2022 CBC with specific edits. Title 17 – Building and Construction include buildings and construction requirements to mitigate geologic hazard potential that are applicable to all new construction, including the project (Kern County 2025). These requirements include, but are not limited to:

- Chapter 17.08 – Kern County Building Code. Adopts the 2022 California Building Code (CBC 2022), except as noted in Chapter 17.08.040 and as amended in Chapter 17.08. (Kern County 2025).
    - Chapter 17.08 contains exceptions and amendments that may be relevant to the project, including, but are not limited to, county specific procedures for flood hazard areas, flood resistance, flood, snow, and wind loads, and grading. (Kern County 2025)
- Chapter 17.28 – Kern County Grading Code. Adopts the 2022 California Building Code (CBC 2022), including requirements for preliminary soil and geotechnical reports prior to grading. (Kern County 2025)

Kern County General Plan

Numerous active and potentially active faults in, and near, Kern County can produce high-magnitude earthquakes and moderate-to-extreme ground shaking throughout the county. Geologic hazards associated with seismicity include surface rupture, ground shaking, ground failure, slope instability, subsidence, and liquefaction. (Kern County 2009). The Kern County Board of Supervisors' primary policy statements for implementing goals, policies, and measures to protect the county from geologic hazards are contained in the Kern County General Plan, specifically in Chapter 1 – Land Use and Chapter 4 - Safety Element. Mitigation of geologic hazards minimizes loss of life, injury, and property damage, and reduces associated economic and social disruption (Kern County 2009)

The goals, policies, and implementation measures in Chapter 1.3 – Physical and Environmental Constraints seek to ensure that new buildings and facilities are zoned outside of fault rupture and landslide hazard zones and are designed to withstand seismic hazards associated with ground shaking, ground failure, and shallow groundwater. (Kern County 2009)

The goals, policies, and implementation measures in Chapter 4.3 - Seismically Induced Surface Rupture, Ground Shaking, and Ground Failure seek to ensure that new buildings and facilities are zoned outside of fault rupture zones and designed to withstand seismically induced ground shaking and failure. (Kern County 2009)

The goals, policies, and implementation measures in Chapter 4.5 – Landslides, Subsidence, Seiche, and Liquefaction seek to ensure that landslide risks to new buildings and facilities are eliminated and subsidence, clay soils, and liquefaction risks are mitigated. (Kern County 2009)

Related local goals, policies, and implementation measures for mitigation of geologic hazards are included in the Willow Springs Specific Plan. The Willow Springs Specific Plan is an important part of the Kern County General Plan's Chapter 1 - Land Use, Open Space, and Conservation Element and sets specific goals, policies, and standards for the Willow Springs area. (Kern County 2008, 2009)

Local Geologic, Mineral, and Paleontological Resources

Kern County General Plan

Chapter 1 - Land Use, Open Space, and Conservation Element serves as the primary policy statement by the Board of Supervisors regarding geologic and mineral resources of commercial, scientific, and recreational value, including paleontological resources. (Kern County 2009)

The production of mineral and fossil fuels resources is central to Kern County's economy. Major economic resources include minerals used in construction or industrial applications (borax), cement production, construction aggregate products (sand and gravel), and fossil fuels (oil). In 2009, the Kern County General Plan predicted that demand for these mineral resources would increase and stated that Kern County potentially produces the most fossil fuels of any county in California. (Kern County 2009)

The goals, policies, and implementation measures in Chapter 1.9 - Resource seek to preserve and protect the future availability of mineral resources without impairing the economic opportunity of petroleum, agriculture, and rangeland in Kern County. The goals, policies, and implementation measures ensure resource development minimize impacts on nearby resource lands and encourage safe and orderly energy development in the county, while adequately mitigating the impacts to surrounding environmental, aesthetic, and adjacent land uses. (Kern County 2009)

The policy in Chapter 1.10.3 – Archaeological, Paleontological, Cultural, and Historical Preservation promotes the preservation of Kern County's historical, archeological, paleontological, cultural, and historical resources which connect residents and visitors to the past and heritage values. The implementation measures regarding paleontological resources direct the county to coordinate with academic institutions and preserve known paleontological resources where feasible. (Kern County 2009)

The Willow Springs Specific Plan contains related local goals, policies, and implementation measures for geologic, mineral, and paleontological resources of commercial, scientific, or recreational value. (Kern County 2008)

Professional Standards

Geologic Hazards and Resources

American Concrete Institute

The American Concrete Institute (ACI) is an American standards organization that develops and internationally publishes standards for concrete products, structures, and technology. ACI (2014), titled ACI 506.2-13: Specification for Shotcrete, describes standards for the application of wet- and dry-, and fiber-reinforced, shotcrete. The

standards include recommended materials, processes, quality control measures, and inspection protocols. (ACI 2014)

ACI (2022), titled ACI PRC-506-22: Shotcrete-Guide, is a guide for shotcrete construction that recommends materials and equipment, crew organization, and procedures for preparation, application, quality assurance, and quality control. ACI (2022) is a commentary to ACI (2014). (ACI 2022)

ASTM International

ASTM International is an international standards organization that publishes professional standards for many professional fields, including geology, engineering, and geotechnical engineering. ASTM (2017), titled 4879-08: Standard Guide for Geotechnical Mapping of Large Underground Openings in Rock, describes standards for characterizing and documenting rock surface conditions in large civil or mining excavations. Note, ASTM International withdrew this standard in 2017 and did not replace it.

ASTM (2020), titled F432-19: Standard Specification for Roof and Rock Bolts and Accessories, describes standards for chemical, mechanical, and dimensional requirements for roof and rock bolts and accessories. The standards included recommended materials, processes, quality control measures, and inspection protocols. (ASTM 2020)

Paleontological Resources

Society of Vertebrate Paleontology (SVP), an international organization of professional paleontologists, has established guidelines and standard procedures that outline acceptable professional practices in the conduct of paleontological resource assessments and surveys, monitoring and mitigation, data and fossil recovery, sampling procedures, and specimen preparation, identification, analysis, and curation. (SVP 2010)

Cumulative

Cumulative projects are identified as past projects, current projects, or reasonably foreseeable future projects that, when viewed in connection with the proposed project, cause its effect(s) on geology, paleontology, and minerals to be potentially significant. A master list of cumulative projects located within Kern County is provided in **Appendix A**, **Table A-1.**

The cumulative project setting for geology, paleontology, and minerals includes all projects which may expose people or property to geologic hazards or destroy geologic, mineral, and paleontological resources of commercial, scientific, or recreational value. A project may have these potential impacts if it includes construction, excavation of native materials, groundwater pumping, or fossil fuel production.

5.6.2 Environmental Impacts and Mitigation

Consistent with CEQA Guidelines section 15126.2, an agency's environmental analysis shall focus on the significant effects of the proposed project on the environment. An agency is not required to analyze the impact of existing environmental conditions on a project or its future users unless a proposed project might cause or risk exacerbating environmental hazards or conditions that already exist.[1] (CCR, 2005)

For purposes of assessing geological hazards and consistent with CEQA Guidelines section 15126.2, staff identified existing geological hazards and then assessed whether the project would cause or exacerbate an existing geological hazard causing a significant environmental impact (CCR, 2005). Even though the project would not exacerbate existing geological hazards, and thus there is not significant impact under CEQA, COCs are included to ensure the project's design, grading, and construction complies with applicable LORS to protect human life, property, and grid reliability.

GEOLOGY, PALEONTOLOGY, AND MINERALS Would the project:	**Significant and Unavoidable Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:	☐	☒	☐	☐
i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
ii. Strong seismic ground shaking?	☐	☒	☐	☐
iii. Seismic-related ground failure, including liquefaction?	☐	☒	☐	☐
iv. Landslides?	☐	☒	☐	☐
b. Result in substantial soil erosion or the loss of topsoil?	☐	☒	☐	☐
c. Be located on geologic units or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site	☐	☒	☐	☐

1 See California Bldg. Indus. Assn. v. Bay Area Air Quality Mgmt. Dist., 62 Cal. 4th 369, (2015)

GEOLOGY, PALEONTOLOGY, AND MINERALS Would the project:	**Significant and Unavoidable Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
landslide, lateral spreading, subsidence, liquefaction, or collapse?				
d. Be located on expansive soil, as defined in Section 1803.5.3 of the California Building Code (2022), creating substantial direct or indirect risks to life or property?*	☐	☒	☐	☐
e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☒	☐
f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐
g. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State?	☐	☐	☒	☐
h. Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☒	☐

Environmental checklist established by Cal. Code Regs., tit. 14, Div. 6, Ch. 3, Appendix G, geology and soils and minerals. *Geology and Soils question (d) reflects the current 2022 California Building Code (CBC), effective January 1, 2023, which is based on the International Building Code (2021).

5.6.2.1 Methodology and Thresholds of Significance

The current CBC (2022) provides geotechnical and geological investigation and design guidelines that engineers shall follow when designing a facility. The criterion used to assess impact significance includes evaluating both if geologic hazards impact the project and if the project causes or exacerbates existing geological hazards. Geologic hazards include faulting and seismicity, liquefaction, dynamic compaction, hydrocompaction, subsidence, expansive soils, landslides, tsunamis, seiches, and others as may be dictated by site-specific conditions. (CBC 2022)

Staff reviewed regional geologic, soil, and mineral resource mapping and site-specific investigations to assess geologic hazards and potential impacts on paleontological resources, unique geologic features, and mineral resources. The geologic map and literature review of the region included CDOC (2002, 2008, 2015, 2016, 2023, 2024a, 2024b) and Dibblee (1963, 1967).

Staff reviewed project-specific preliminary shallow subsurface (ESHD 2024g) and deep subsurface geotechnical investigations (ESHD 2024g) and the applicant's interpretations of geologic hazards (ESHD 2024h, 2024i). The shallow subsurface geotechnical investigation evaluated shallow soil and rock at the proposed WRESC site. The investigation drilled and logged 11 borings to depths of 51 ft to 71 ft below ground surface (bgs) and installed and monitored two groundwater wells. The investigation advanced six infiltration borings to 4 feet to 6.5 feet bgs and conducted in-situ infiltration testing. The investigation collected samples and conducted laboratory testing (ESHD 2024q). Staff evaluated the results from the shallow subsurface geotechnical investigation, in conjunction with regional geologic and soil mapping, to evaluate risks from geologic hazards on project construction and operation at the surface.

The deep subsurface geotechnical investigation evaluated the suitably of the A-CAES cavern target horizon at the proposed WRESC site for seismic hazards, especially fault rupture, ground failure, and seismic shaking. The report evaluated the results of corehole drilling advanced to depths of 3,015 ft to 3,167 ft bgs, core logging, packer testing and geophysical logging, and structural defect and orientation analysis. The report evaluated the results of laboratory geomechanical property testing of intact rock, the rock mass, in-situ stress conditions, seismic risk, and rock mass strength and deformation properties (ESHD 2024g). Staff evaluated results from the deep subsurface geotechnical investigation to evaluate risks from geologic hazards for underground openings.

CEC staff reviewed regional geologic mapping and a site-specific paleontological investigation to assess potential impacts on paleontological resources. To develop a baseline paleontological resources inventory of the project study area, the project owner's paleontological consultant reviewed published geologic maps to identify the geologic units present at and below the surface within the project site (Dibblee 1963). To assess the paleontological sensitivity of the project, the paleontological consultant also reviewed the online paleontological collection databases of the UCMP (UCMP 2023), Paleobiology Database (PBDB 2024), and Natural History Museum of Los Angeles County (NHMLA) (ESHD 2024ff) and consulted primary literature (Woodburne et al 2004). The consultant also reviewed the BLM's PFYC system classifications of geologic units that underlie the project site. (ESHD 2024h)

The paleontological consultant conducted a pedestrian and windshield field survey of the proposed WRESC site. The paleontological consultant also conducted a windshield survey of the potential gen-tie site, with pedestrian surveys where outcrops of Miocene to Pliocene rock formations were mapped. (ESHD 2024h)

Paleontological sensitivity ratings of the geologic formations were assigned based on results from the records search, literature review, field investigation, and both SVP (2010) and the PFYC guidelines. Ratings consider how project construction and operation may impact potential nonrenewable paleontological resources. Construction-related impacts that typically affect or have the potential to affect paleontological

resources include mass excavation operations, drilling and borehole excavations, trenching, tunneling, and grading. (ESHD 2024h)

5.6.2.2 Direct and Indirect Impacts

a. Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.

Construction and Operation

Less Than Significant Impact. When a fault ruptures and produces an earthquake, the ground surface may rupture. Kern County is an area of high seismic activity. The project does not intersect known active nor potentially active faults, as fault activity is defined by the Alquist-Priolo Earthquake Fault Zoning Act (CDOC 2015). Dibblee (1963) mapped an unnamed fault about 3000 ft northeast of the WRESC site, the fault is not considered active or potentially active (CDOC 2015; USGS 2017). There are at least seventeen known active and potentially active faults systems within forty miles of the project site. Many of these faults have the potential to produce high-magnitude earthquakes throughout Kern County. (CDOC 2015; USGS 2017; ESHD 2024i)

There are no Zones of Required Investigation within the project site (CDOC 2024a). The closest Zone of Required Investigation to the project is a liquefaction zone approximately seven miles to the south, near Lancaster, CA. The Willow Springs fault is about eight point five miles from the project site and is the closest potentially active fault. The Garlock and San Andreas faults are respectively 15 miles and 21 miles from the project site. They are the closest active faults considered to have the most significant seismic potential. (CDOC 2024a; ESHD 2024i)

Due to the distance to known and mapped active and potentially active faults, the construction, operation, and maintenance of the project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a fault in an earthquake hazard zone. During project construction and operation, the impacts from rupture of a known active or potentially active fault on the project, including on human life, property, and grid reliability, would be less than significant.

ii. Strong seismic ground shaking?

Construction and Operation

Less Than Significant Impact with Mitigation Incorporated. The project is not within a mapped active Earthquake Hazard Zone, as defined by the Alquist-Priolo Fault Zoning Act. However, regional earthquakes may subject the project may be subject to strong seismic ground shaking. For example, there are at least seventeen known active and potentially active faults systems within forty miles of the project (CDOC 2015; USGS 2017; ESHD 2024i). Strong seismic ground shaking can result in structural damage and can trigger other geologic hazards, such as liquefaction and landslides. Preliminary evaluations estimate that the project can anticipate peak ground accelerations of PGA of 0.40g and a mean earthquake magnitude of 7.09. (ESHD 2024h, 2024i)

To inform the project's final design, COC **GEO-1** requires the project owner to complete and submit a geotechnical and geohazard report to the CEC for review and approval. The report should include final grading and facility design refinements to mitigate, to the extent feasible, hazards from strong seismic ground shaking.

A geotechnical evaluation of the A-CAES cavern target horizon found that the quartz monzonite bedrock is expected to be seismically stable (ESHD 2024i). Literature evaluating the seismic stability of caverns supports the conclusion that deep underground openings are seismically stable, if the rupturing fault does not intersect the opening (Dowding and Rozen 1978; Sharma and Judd 1991; Jaramillo 2017). COC **GEO-2** requires the proposed underground structures, the cavern and vertical shafts, be designed and constructed with appropriate civil and structural design criteria provided, including the LORS referenced in Appendix 2A (ESHD 2024o). COC **GEO-3** requires inspections and maintenance of the proposed underground structures.

During project construction and operation, compliance with COCs **GEO-1** through **GEO-3**, and Facility Design COCs **GEN-1**, **CIVIL-1**, and **STRUC-1** (see **Section 4.1, Facility Design**) would ensure the project's design, grading, and construction would mitigate potential impacts from strong seismic ground shaking on the project, including on human life, property, and grid, to less than significant.

iii. Seismic-related ground failure, including liquefaction?

Construction and Operation

Less Than Significant with Mitigation Incorporated. Liquefaction is a phenomenon in which saturated, cohesionless soils, such as sand, silt, and gravel, temporarily lose their strength and liquefy when subjected to dynamic forces, such as intense and prolonged ground shaking. To be susceptible to liquefaction, potentially liquefiable soils must be saturated or nearly saturated. In general, liquefaction hazards are most severe in saturated soils up to 50 feet to 60 feet bgs. The potential for liquefaction increases if

groundwater levels are shallower than 60 feet bgs. Potential hazards associated with liquefaction include ground deformation and lateral spreading. (ESHD 2024i)

Seismic-related ground failure, including liquefaction, is a potential risk to the proposed project. According to the CGS Seismic Hazards Program: Liquefaction Zones online mapping application, the CGS has not performed liquefaction hazard mapping for the project areas (CDOC 2022; ESHD 2024h). Regional geologic mapping shows quartz monzonite bedrock at the surface of the WRESC site and architectural berm and temporary laydown site (Dibblee 1963). Quartz monzonite bedrock is not typically a liquefiable material. However, there is evidence of liquefaction potential at the WRESC site.

A shallow subsurface geotechnical investigation found a 3.0 ft to 7.5 ft thick layer of alluvium and soil at the surface of the WRESC site (ESHD 2024q). National Resource Conservation Service soil mapping shows that three potentially liquefiable soil types may exist at the WRESC site (ESHD 2024h). Under the alluvium and soil, the uppermost 20 feet to 50 feet of quartz monzonite bedrock is very soft, fractured, weathered, and in some areas, decomposed all the way to sand (ESHD 2024q). The alluvium and soil and the decomposed quartz monzonite at the WRESC site are potentially liquefiable materials. The quartz monzonite bedrock that underlies the project site is hard rock and is not susceptible to liquefaction.

Although a shallow subsurface geotechnical investigation of the architectural berm and temporary laydown site was not performed and regional geologic mapping shows quartz monzonite bedrock at the surface (Dibblee 1963), there is evidence of liquefaction potential at these sites. National Resource Conservation Service soil mapping shows that two potentially liquefiable soil types may exist at the architectural berm and temporary laydown site (ESHD 2024h). These sites are adjacent to the WRESC site. Therefore, the architectural berm and temporary laydown site have liquefaction potential.

A shallow subsurface geotechnical investigation of the gen-tie line's preferred and alternative routes was not performed. However, regional geologic mapping shows that potentially liquefiable materials, Quaternary alluvium and windblown deposits, underlie most of the routes (Dibblee 1963; ESHD 2024h). Therefore, the gen-tie line's routes have liquefaction potential.

Liquefaction potential also depends on groundwater levels. When the shallow subsurface geotechnical investigation was performed, the depth to groundwater at the WRESC site was 30 feet bgs, which is within the decomposed quartz monzonite (ESHD 2024q). However, the applicant did not provide information that indicates that a quantitative liquefaction analysis was performed for the WRESC site using the highest levels of historical groundwater.

A quantitative liquefaction analysis would consider the highest historical groundwater levels. The highest historical groundwater levels for the WRESC, architectural berm and temporary laydown, and gen-tie sites are unknown (ESHD 2024q). Since groundwater elevations fluctuate, staff conservatively assumes that elevated groundwater levels that could saturate liquefiable materials may occur at the project sites.

To inform the project's final design, COC **GEO-1** requires the project owner to complete and submit a geotechnical and geohazard report to the CEC for review and approval. The report should include final grading and facility design refinements to ~~reduce~~ mitigate, to the extent feasible, hazards from seismically induced ground failure, including liquefaction.

During project construction and operation, compliance with COCs **GEO-1** through **GEO-3**, and Facility Design COCs **GEN-1**, **CIVIL-1**, and **STRUC-1** (see **Section 4.1, Facility Design**) would ensure the project's design, grading, and construction would mitigate potential impacts from seismically induced ground failure on the project, including on human life, property, and grid reliability, to less than significant.

iv. Landslides?

Construction and Operation

Less Than Significant Impact with Mitigation Incorporated. A landslide, or mass wasting, is a mass of rock, soil, or debris that has been displaced downslope by sliding, flowing, or falling. The CGS Map Sheet 58: Deep-Seated Landslide Susceptibility online mapping application classifies the landslide susceptibility of areas, from 0 to 10, low to very high. The landslide susceptibility rankings are based on rock strength and slope steepness (CDOC 2010). Saturation also influences landslide susceptibility.

The proposed WRESC site, including the architectural berm and temporary laydown site are in a class 0 area (ESHD 2024i). The potential impacts of landslides on the safety of people or structures during construction and operation of the WRESC and temporary laydown sites would be less than significant.

An evaluation of the gen-tie line's landslide susceptibility was not performed. The gen-tie line's preferred and alternative routes include a section that runs parallel to the Mojave Tropico Road, west and northwest of Rosamond, CA. Within this section of Mojave Tropic Road, the CGS Map Sheet 58: Deep-Seated Landslide Susceptibility online mapping application classifies two areas as classes 5 to 9. The remainder of the proposed gen-tie line routes are in class 0 areas. (CDOC 2010)

To inform the project's final design, COC **GEO-1** requires the project owner to complete and submit a geotechnical and geohazard report to the CEC for review and approval. The report should include final grading and facility design refinements to mitigate, to the extent needed, hazards to the project from landslides.

During project construction and operation, compliance with COC **GEO-1**, and Facility Design COCs **GEN-1**, **CIVIL-1**, and **STRUC-1,** would ensure the project's design, grading, and construction would mitigate potential impacts from landslides on the project, including on human life, property, and grid reliability, to less than significant.

b. Would the project result in substantial soil erosion or the loss of topsoil?

Construction and Operation

Less Than Significant with Mitigation Incorporated. Project construction can increase the potential for water and wind to erode soil. The impact of construction on soil resources depends on soil erodibility, construction methods, and schedule. As discussed earlier, alluvium and soil are known or interpreted at the WRESC and architectural berm and temporary laydown sites, respectively (ESHD 2024h, 2024i, 2024q). Quaternary alluvium and windblown deposits, which may have a surficial soil layer, are mapped under most of the gen-tie line preferred and alternative routes. (Dibblee 1963; ESHD 2024i).

For the project's final design, grading, construction, and operation, COC **WATER-1** requires the project owner to obtain approval from the CPM and the Lahontan Regional Water Quality Control Board of the Drainage Erosion and Sedimentation Control Plan for managing stormwater during Project construction and operations. A complete description of COC **WATER-1** is in **Section 5.16, Water Resources**.

During project construction and operation, compliance with Water Resources COCs **WATER-1** would mitigate potential impacts from substantial soil erosion or loss of topsoil to less than significant.

c. Would the project be located on geologic units or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?

Construction and Operation

Soil Settlement

Less Than Significant with Mitigation Incorporated. The potential for soil settlement depends on soil thickness, soil characteristics, including stiffness modulus and compression indices, and loading (ESHD 2024i). The 3.0 feet to 7.5 feet thick layer of surficial alluvium and soil at the WRESC site is likely susceptible to settlement (ESHD 2024q). Due to the relatively thin soil layer, the amount of soil settlement that may occur is considered minor. The underlying quartz monzonite bedrock is considered to have a negligible settlement potential (ESHD 2024i, 2024q).

A shallow subsurface geotechnical investigation of the architectural berm and temporary laydown site was not performed. Two of the soil types that underlie the WRESC site also underlie the adjacent architectural berm and temporary laydown site (ESHD 2024i). Staff assumes similar thin soil thickness under the architectural berm and temporary laydown site. However, due to the lack of a site-specific geotechnical investigation and the proposed mass of the architectural berm, staff conservatively assumes these soils have settlement potential.

A shallow subsurface geotechnical investigation of the gen-tie line's preferred and alternative routes was not performed. Regional geologic mapping shows that Quaternary alluvium and windblown deposits underlie most of the routes (Dibblee 1963; ESHD 2024h). Staff conservatively assumes these materials have soil settlement potential.

To inform the project's final design, COC **GEO-1** requires the project owner to complete and submit a geotechnical and geohazard report to the CEC for review and approval. The report should include final grading and facility design refinements to further mitigate, to the extent feasible, hazards from soil settlement.

During project construction and operation, compliance with COC **GEO-1** and Facility Design COCs **GEN-1**, **CIVIL-1**, and **STRUC-1**, would ensure the project's design, grading, and construction methods would mitigate potential impacts from, and on, soil settlement hazards to less than significant.

Landslide

Less Than Significant with Mitigation Incorporated. Construction at the proposed WRESC site would include permanent embankments for the hydrostatic compensation surface reservoir and, potentially, a permanent architectural berm permanently to store excavated rock and soil. (ESHD 2024i).

An evaluation of the gen-tie line's landslide susceptibility was not performed. As described earlier, the gen-tie line's preferred and alternative routes include two areas that are categorized as moderately to highly susceptible to landslides. (CDOC 2010)

To inform the project's final design, COC **GEO-1** requires the project owner to complete and submit a geotechnical and geohazard report to the CEC for review and approval. The report should include final grading and facility design refinements to further mitigate, to the extent feasible, hazards from project construction and operation on landslides. New permanent slopes would be designed, graded, and constructed for slope stability, including appropriate minimum safety factures during static and seismic conditions.

During project construction and operation, compliance with COC **GEO-1**, and Facility Design COCs **GEN-1**, **CIVIL-1**, and **STRUC-1**, would ensure the project's design,

grading, and construction would mitigate potential impacts from, and on, landslide hazards to less than significant.

Lateral Spreading and Liquefaction

Less Than Significant with Mitigation Incorporated. Lateral spreading is a type of seismically induced ground failure that occurs when liquefied materials spread horizontally. As discussed earlier, potentially liquefiable materials are known or interpreted to exist at the WRESC, architectural berm and temporary laydown, and gen-tie line sites.

To inform the project's final design, COC **GEO-1** requires the project owner to complete and submit a geotechnical and geohazard report to the CEC for review and approval. The report should include final grading and facility design refinements to further mitigate, to the extent feasible, hazards from lateral spreading and liquefaction.

During project construction and operation, compliance with COC **GEO-1** and Facility Design COCs **GEN-1**, **CIVIL-1**, and **STRUC-1**, would ensure the project's design, grading, and construction would mitigate potential impacts from, and on, lateral spreading and liquefaction hazards to less than significant.

Subsidence

Less Than Significant. Subsidence is the gradual settling of the ground surface in response to the movement of material belowground. Natural processes that may cause subsidence include soil compaction, sinkhole formation, and earthquakes. Artificial activities that may cause subsidence include removal or addition of material belowground, such as groundwater pumping, hydraulic fracturing, oil extraction, and mining.

Construction of the proposed project would not include installation of, nor use of existing, groundwater wells for any purposes, including filling the hydrostatic compensation reservoir. During construction and operation of the project, the project would purchase water from Antelope Valley East Kern Water Agency to fill the hydrostatic compensation reservoir. During construction of the hydrostatic compensation reservoir, temporary and localized dewatering may be needed for excavation. During project construction and operation, potential impacts on subsidence hazards would be less than significant.

Collapse

Less Than Significant with Mitigation Incorporated. Construction of the proposed WRESC project would require excavation of hydrostatic compensation reservoir, deep vertical shafts, and a cavern. If any of these excavations and underground openings were to collapse during project construction or operation, potential settlement or subsidence impacts may occur at the surface. The potential impacts depend on the

design of underground openings, the extent of collapse, and site-specific subsurface and surface conditions. (ESHD 2024i)

COC **GEO-2** requires the proposed underground structures, the cavern and vertical shafts, be designed and constructed with appropriate civil and structural design criteria provided, including the LORS referenced in Appendix 2A (ESHD 2024o). COC **GEO-3** requires inspections and maintenance of the proposed underground structures.

During project construction and operation, compliance with COCs **GEO-2** and **GEO-3** would ensure the project's design, excavation, and construction would mitigate potential impacts on collapse hazards to less than significant.

Anthropologically Induced Seismicity

Less Than Significant. Some artificial activities may increase the preexisting strain on belowground rock masses and induce earthquakes, especially if stress on an active fault is increased. Construction and operation of the proposed project includes two activities that could induce seismicity, reservoir-induced seismicity and compressed air-induced seismicity.

Reservoir-induced seismicity may occur in two situations. First, the weight of water in a reservoir may add stress to underlying rock formations, potentially inducing underground materials to move and generate seismicity. Second, if water seepage from a reservoir intersects a fault, the water could reduce friction on the fault enough to cause a fault rupture and associated earthquake. Potential impacts from reservoir-induced seismicity typically occurs if the following conditions exist: the reservoir is more than approximately 260 feet bgs, active faults intersect or are near the reservoir, and water seeps from the reservoir. The proposed hydrostatic compensation reservoir would be less than 100 feet bgs, have an engineered low permeability liner, and is not near an active fault (ESHD 2024i). The potential impacts from reservoir-induced seismicity on the safety of people and structures resulting from construction and operation would be less than significant.

Hydraulic fracturing of rock for gas and oil exploration is known to cause seismicity. The process of hydraulic fracturing includes injecting liquid at pressures of, or exceeding, 9000 pounds per square inch (psi) into deep wells to fracture underground rock formations. To operate the proposed WRESC, compressed air would be stored in the excavated cavern at pressures of 800 to 1100 psi, or less. To maintain project performance, the project seeks to avoid fracturing of the bedrock surrounding the cavern to prevent air and water from leaking (ESHD 2024i). During project construction and operation, the project's potential impacts on anthropologically induced seismicity would be less than significant.

d. Would the project be located on expansive soil, as defined in Section 1803.5.3 of the California Building Code (2022), creating substantial direct or indirect risks to life or property?

Construction and Operation

Less Than Significant with Mitigation Incorporated. Expansive soils swell with wetting and shrink with drying. Untreated expansive soils could damage future buildings and pavements on the project site. Expansive soils, if present, can be readily mitigated by either soil amendments or by removal and replacement with non-expansive soils, among other methods. (ESHD 2024i)

The shallow subsurface geotechnical investigation evaluated soil and rock at the proposed WRESC site (ESHD 2024q). Soils at the WRESC site have negligible shrink-swell potential. (ESHD 2024h, 2024i) A shallow subsurface geotechnical investigation of the architectural berm and temporary laydown site was not performed. Staff assumes the site has negligible shrink-swell potential because the site is adjacent to the WRESC site and have the same soils (ESHD 2024i). The impacts from expansive soils on the safety of people or structures during construction and operation the WRESC site and architectural berm and temporary laydown site would be considered less than significant.

A shallow subsurface geotechnical investigation of the gen-tie line's preferred and alternative route was not performed. Regional geologic mapping shows that Quaternary alluvium and windblown deposits underlie most of the routes (Dibblee 1963; ESHD 2024h). Staff conservatively assumes these deposits may contain expansive soils that require mitigation.

To inform the project's final design, COC **GEO-1** requires the project owner to complete and submit a geotechnical and geohazard report to the CEC for review and approval. The report shall include final grading and facility design refinements to mitigate, to the extent feasible, hazards from expansive soils.

During project construction and operation, compliance with COC **GEO-1** and Facility Design COCs **GEN-1**, **CIVIL-1**, and **STRUC-1**, would ensure the project's design, grading, and design would mitigate potential impacts from expansive soils on the project, including on human life, property, and grid reliability, to less than significant.

e. Would the project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

Construction and Operation

Less Than Significant Impact. During project construction, septic wastewater production would be limited to temporary toilet and sanitary facilities, which would be serviced by a

third-party contractor. Septic wastewater would be disposed of offsite. No septic wastewater would be discharged at or near the project site. (ESHD 2024h)

During project operation, septic waste from the administration and control building would be directed to an underground septic tank. The septic tank would be periodically emptied and trucked to an offsite approved disposal facility. Alternatively, the septic tank may dispose of wastewater via a lateral septic system. (ESHD 2024h)

During project construction and operation, compliance with Water Resources COC **WATER-4** (see **Section 5.16, Water Resources**) would mitigate potential impacts from wastewater disposal and septic tanks on soils. With mitigation incorporated, the potential impacts related to septic wastewater disposal during project construction and operation would be considered less than significant.

f. Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Construction and Operation

Less Than Significant with Mitigation Incorporated. The thin layer of alluvium and soil at the WRESC site is 3 feet to 7.5 feet thick. The soil has an undetermined paleontological potential. Underlying the soil is Mesozoic quartz monzonite, a plutonic igneous rock with no paleontological potential.

The project's paleontological consultant reviewed online paleontological collection databases (PBDB 2023; UCMP 2023; ESHD 2024ff), consulted primary literature (Dibblee 1963; Woodburne et al 2004), and conducted a field survey of the project site. The records databases did not contain any fossil localities associated with the Fiss Fanglomerate or Gem Hill Formation. Also, the records databases did not identify any known fossil localities from Miocene, Pliocene, and Pleistocene age geologic formations within the project site. The records databases did contain fossil localities for Pleistocene age geologic lacustrine, fluvial, and aeolian formations. These formations are similar to the Quaternary alluvium and windblown sand deposits that underlie much of the gen-tie line routes and surround the WRESC site and architectural berm and temporary laydown site. (ESHD 2024i)

Field survey results were consistent with information contained in existing geologic mapping and the online paleontological collection databases. The field survey confirmed that surface material at the proposed WRESC, architectural berm and temporary laydown, and gen-tie line sites is unconsolidated silt to gravel. The field survey also confirmed that outcrops of quartz monzonite, Gem Hill formation, and Fiss Fanglomerate along the proposed gen-tie line route have low to no potential for paleontological sensitivity.

Table 5.6-4 presents the paleontological potential of the geologic units that may be impacted during ground-disturbing activities for the project.

TABLE 5.6-4 PALEONTOLOGICAL POTENTIAL OF GEOLOGIC UNITS

Geologic Unit	Geologic Map Abbreviation	Paleontological Potential
Quaternary alluvium	Qa	Low sensitivity. Pleistocene to Holocene surface deposits typically have low potential for paleontological deposits. However, the potential for paleontological resources increases with depth.
Quaternary windblown sand deposits	Qs	Low sensitivity. Windblown sand deposits are typically too recent to contain paleontological resources, but they may cover older geologic units that have paleontological potential.
Miocene Fiss Fanglomerate	Tf	Low sensitivity. Alluvial fans have a low potential for paleontological resources because the process of alluvial fan formation is poor at preserving fossils. No known fossils are documented in the Fiss Fanglomerate formation.
Miocene Fiss Fanglomerate: felsite breccia	Tfb	Low sensitivity. Extrusive igneous rocks and breccia deposits do not typically contain paleontological resources. No known fossils are documented in the Fiss Fanglomerate formation.
Miocene Gem Hill formation: Lithic tuff, tuff-breccia, and tuffaceous sandstone	Tgt	Low sensitivity. Amongst extrusive igneous rock types, airfall types have a relatively greater potential to contain paleontological resources. However, no known fossils are documented in the Gem Hill formation.
Miocene Gem Hill formation: basalt	Tgba	Low sensitivity. Extrusive igneous rocks, such as basalt lava flows, only contain fossils in rare circumstances
Miocene Gem Hill formation: felsite	Tgf	Low sensitivity. Extrusive igneous rocks, such as felsite lava flows, only contain fossils in rare circumstances
Miocene Gem Hill formation: porphyry	Tgp	No potential. Intrusive igneous rocks do not contain paleontological resources
Miocene Gem Hill formation: obsidian	Tgo	Low sensitivity. Low sensitivity. Extrusive igneous rocks, such as obsidian flows, only contain fossils in very rare circumstances
Mesozoic quartz monzonite	qm	No potential. Intrusive igneous rocks do not contain paleontological resources

Source: (ESHD 2024h)

Geological features are the result of geological processes, or actions that occur above and below the Earth's surface. Geological features that are unusual or out of the ordinary are unique. However, there are no unique geologic features mapped or identified within the site footprint (ESHD 2024h, 2024i). Potential impacts from construction and operation on unique geological resources would be considered less than significant.

During construction and operation of the project, staff proposes COCs **PAL-1** through **PAL-8** to address the potential for the discovery of paleontological resources during excavation in native materials. With mitigation incorporated, potential impacts from

construction and operation on paleontological resources would be considered less than significant.

g. Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State?

Construction and Operation

Less Than Significant Impact. Production of mineral and fossil fuels resources play an important role in Kern County's economy. Major economic mineral resources include minerals used in construction or industrial applications (borax), cement production, construction aggregate products (sand and gravel), and fossil fuels (oil) (Kern County 2009). The CDOC Mineral Land Classification of Southeastern Kern County, California mapped the region surrounding the proposed WRESC site and gen-tie line. The mineral land classification map shows existing mines and prospects, and mapped mineral resource zones for borates, limestone, gold, dimension stone, silica, and pozzolan. Mineral resource zones, mines, and prospects mapped in CDOC (1999) are north, south, and west, but do not intersect, the proposed WRESC site and gen-tie line. (ESHD 2024i)

The sedimentary, volcanic, and plutonic rock formations underlying the project site are widespread in southeastern Kern County. The geologic units are not unique in terms of commercial, scientific, and recreational value (ESHD 2024i). The impacts from project construction and operation on mineral resources of commercial, scientific, or recreational value would be considered less than significant.

h. Would the project result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?

Construction and Operation

The CDOC Division of Mine Reclamation's list of mines, referred to as the AB 3098 List, which is regulated under SMARA, and the Mines Online mapping application list approximately 64 active or potentially active mines in Kern County (CDOC 2016a, 2024b). According to the USGS Mineral Resources online mapping application, one open pit mine or quarry and eight prospect pits are mapped at the project site (USGS 2011). However, the mines at the project site are not active (CDOC 2016a). The closest active mines to the proposed WRESC site are two open-pit mines that are both about 1.5 miles south of the proposed WRESC project site. The mines produce sand and gravel or decomposed granite. (CDOC 2016a)

The sedimentary, volcanic, and plutonic rock formations underlying the project site are widespread in southeastern Kern County. The geologic units are not unique in terms of commercial, scientific, and recreational value (ESHD 2024i). The impacts of project

construction and operation of locally important mineral recovery sites would be considered less than significant.

5.6.2.3 Cumulative Impacts

A cumulative impact refers to a proposed project's incremental effect together with other closely related past, present, and reasonably foreseeable future projects whose impacts may compound or increase the incremental effect of the project. The proposed project may have cumulative impacts if the incremental effect of the project is considerable when viewed in connection with other past, present, and reasonably foreseeable future projects (PRC § 21083; CCR, Title 14, § 15064[h], 15065[c], 15130, and 15355).

Geologic Hazards

The proposed project would be constructed and operated in a seismically active geologic environment. Geological hazards are generally site-specific and depend on localized geologic and soil conditions. Potential geologic hazards associated with ground rupture, strong seismic ground shaking, seismically induced ground failure, landslides, unstable geologic units and soils, expansive soils, and soil erosion would be mitigated to less than significant through design, grading, and construction.

To inform the project's final design, COC **GEO-1** requires the project owner to complete and submit a geotechnical and geohazard report to the CEC for review and approval. The report should include final grading and facility design refinements to mitigate the impacts of geologic hazards on the project, and the project's impacts on geologic hazards, to less than significant. The refinements shall be incorporated into the project's final design.

COC **GEO-2** requires the proposed underground structures, the cavern and vertical shafts, to be designed, excavated, and constructed with appropriate civil and structural design criteria provided, including the LORS referenced in Appendix 2A (ESHD 2024o). COC **GEO-3** requires inspections and maintenance of the proposed underground structures.

Compliance with COCs **GEO-1** through **GEO-3**, Facility Design COCs **GEN-1**, **CIVIL-1**, and **STRUC-1**, Water Resources COC **WATER-1**, the CBC, CFR, Kern County Municipal Code, and all other applicable federal, state, and local LORS, would mitigate the impacts from geologic hazards on the project, including on human life, property, and grid reliability, and the project's impacts on geologic hazards, to less than significant. With this mitigation, this project's cumulative impacts would not be considerable.

Compliance with Water Resources COC **WATER-4**, and all applicable federal, state, and local LORS, would mitigate potential impacts from wastewater disposal and septic tanks on soils. With mitigation, this project's cumulative impacts would not be considerable.

As is required for the project, cumulative projects in the area are required to comply with applicable LORS related to geological hazards. For other projects, adherence to all LORS pertaining to building safety and construction would mitigate cumulative impacts related to geologic hazards to less than significant.

Geologic, Mineral, and Paleontological Resources

There is potential for fossils to be encountered during grading, excavation, and construction. If significant paleontological resources are uncovered, they should be protected and preserved in accordance with COCs **PAL-1** through **PAL-8** and all other applicable federal, state, and local LORS. With this mitigation, this project's cumulative impacts on paleontological resources would not be considerable.

No unique surface or near surface geologic features nor resources of commercial, scientific, and recreational value, including mineral resources, were identified in the project area. Development of this project is not expected to lead to a significantly cumulative effect on geologic and mineral resources in the project area.

As is required for the project, cumulative projects in the area are required to comply with applicable LORS related to geologic, mineral, and paleontological resources. For other projects, adherence to all LORS pertaining to geologic, mineral, and paleontological resources would not be considerable.

5.6.3 Project Conformance with Applicable LORS

Table 5.6-5 lists staff's determination of conformance with applicable local, state, and federal LORS, including any proposed COCs to ensure that the project would comply with LORS. As shown in this table, staff concludes that with implementation of specific COCs, the proposed project would be consistent with all applicable LORS. The subsection below, *Staff Proposed Conditions of Certification*, contains the full text of the referenced COCs.

TABLE 5.6-5 CONFORMANCE WITH APPLICABLE LORS

Applicable LORS	Conformance and Basis For Determination
Federal	
The 1906 **Antiquities Act** federal agencies to permit the collection of objects of historic and scientific interest. Collected objects must be stored in a public museum. (CFR 1954)	**Yes.** Compliance with the following COCs shall ensure the proposed project complies with the Antiquities Act's laws and regulations. COCs **PAL-1** through **PAL-8** were developed based upon the guidance provided by the SVP and Bureau of Land Management (BLM) standards to ensure that, if present, paleontological resources would be properly identified and appropriate protection or salvage measures implemented to mitigate the loss of these resources due to construction. COCs **PAL-1** through **PAL-8** require identification of a qualified Paleontological Resource Specialist, identification

TABLE 5.6-5 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
	of qualified Paleontological Resource Monitors, training of site workers, periodic reporting, and collection, documentation and archival of any significant paleontological resources identified.
The 1977 **Federal Mine Safety and Health Act** requires standards for underground metal and non-metal mines to protect life, promote health and safety, and prevent accidents. (CFR 1985)	**Yes.** Compliance with COCs **GEO-1** through **GEO-3, CIVIL-1,** and **STRUC-1,** shall ensure the proposed project complies with the Federal Mine Safety and Health Act's laws and regulations.
The **Occupational Safety and Health Administration** developed regulations for the construction of underground tunnels, shafts, chambers, and passageways, including compressed air projects. (CFR 2019)	**Yes.** Compliance with COCs **GEO-1** through **GEO-3, CIVIL-1,** and **STRUC-1,** shall ensure the proposed project complies with these Occupational Safety and Health Administration regulations**.**
The 2009 **Paleontological Resources Preservation Act** requires the U.S. Department of the Interior to permit collection of paleontological resources on federal lands. The U.S. Department of the Interior to owns collected paleontological resources and may transfer ownership or administration to federal or non-federal educational institutions (CFR 2025a)	**Yes.** Compliance with the following COCs shall ensure the proposed project complies with the Paleontological Resources Preservation Act's laws and regulations. COCs **PAL-1** through **PAL-8** were developed based upon the guidance provided by the SVP and Bureau of Land Management (BLM) standards to ensure that, if present, paleontological resources would be properly identified and appropriate protection or salvage measures implemented to mitigate the loss of these resources due to construction. COCs **PAL-1** through **PAL-8** require identification of a qualified Paleontological Resource Specialist, identification of qualified Paleontological Resource Monitors, training of site workers, periodic reporting, and collection, documentation and archival of any significant paleontological resources identified.
The **Pipeline and Hazardous Materials Safety Administration** developed regulations requiring integrity management programs for underground natural gas storage facilities. (CFR 2025c)	**Not applicable.** The proposed project is not an underground natural gas storage facility and is not subject to this regulation. However, this regulation informed the development of COC **GEO-3**.
U.S. Army Corps of Engineers	
Engineering Manual 1110-1-1804: Engineering and Design, Geotechnical Investigations recommends guidance geotechnical investigations for civil engineering projects. (USACE 2001)	**Yes.** Compliance with the COCs **GEO-1** through **GEO-3**, **GEN-1, CIVIL-1**, and **STRUC-1** shall ensure the proposed project complies with the relevant and appropriate components of this USACE guidance.
Engineering Manual 1110-2-2901: Tunnels and Shafts in Rock recommends guidance for planning, design, and construction of tunnels and shafts in rock for civil engineering projects. (USACE 1997)	**Yes.** Compliance with the COCs **GEO-1** through **GEO-3, GEN-1, CIVIL-1**, and **STRUC-1** shall ensure the proposed project complies with the relevant and appropriate components of this USACE guidance.

TABLE 5.6-5 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
Engineering Manual 1110-1-3500: Chemical Grouting Technology recommends guidance for chemical grouting. (USACE 1995a)	**Yes.** Compliance with the COCs **GEO-1** through **GEO-3**, **GEN-1, CIVIL-1,** and **STRUC-1** shall ensure the proposed project complies with the relevant and appropriate components of this USACE guidance.
Guide Specifications for Civil Works Construction: Section 02330: Tunnel and Shaft Grouting recommends methodologies for lining excavated tunnels with grout. (USACE 1995b)	**Yes**. Compliance with the COCs **GEO-1** through **GEO-3, GEN-1, CIVIL-1,** and **STRUC-1** shall ensure the proposed project complies with the relevant and appropriate components of this USACE guidance**.**
United States Bureau of Reclamation	
Engineering Geology Field Manual, Volumes I and II, provide field-oriented geotechnical engineering guidance. (USBR 2001ab)	**Yes.** Compliance with the COCs **GEO-1** through **GEO-3, GEN-1, CIVIL-1**, and **STRUC-1** shall ensure the proposed project complies with the relevant and appropriate components of this USBR guidance**.**
State	
The 1972 **Alquist-Priolo Earthquake Fault Zoning Act** requires the California Geological Survey to designate Alquist-Priolo Fault Zones, which are active faults that have evidence of surface rupture in the past 11,000 years. The act mitigates against surface fault rupture of known active faults beneath occupied structures. The act requires disclosure to potential buyers of existing real estate and a 50-foot setback for new occupied buildings. Portions of the site and proposed ancillary facilities are located within designated Alquist-Priolo Fault Zones. The proposed site layout places occupied structures outside of the 50-foot setback zone. (CPRC 2024b)	**Yes.** Compliance with COCs **GEO-1, CIVIL-1,** and **STRUC-1**, shall ensure the proposed project complies with the Alquist-Priolo Earthquake Fault Zoning Act's laws and regulations.
The 2022 **California Building Code** includes a series of standards that are used in project investigation, design, and construction (including seismicity, grading and erosion control). The CBC has adopted provisions in the International Building Code and has been amended by Kern County. (CBC 2022)	**Yes.** Compliance with COCs **GEO-1** through **GEO-3, GEN-1, CIVIL-1, STRUC-1, WATER-1,** and **WATER-4,** shall ensure the proposed project complies with the California Building Code's standards and provisions.
The 1990 **Seismic Hazards Mapping Act** requires the California Geological Survey to identify areas (zones) that are subject to the effects of strong ground shaking, such as liquefaction, landslides, tsunamis, and seiches. Requires a geotechnical report be prepared that defines and delineates any seismic hazard prior to approval of a project in a seismic hazard zone. (CPRC 2017)	**Yes.** Compliance with COCs **GEO-1** through **GEO-3, CIVIL-1,** and **STRUC-1**, shall ensure the proposed project complies with the Seismic Hazards Mapping Act's laws and regulations.

TABLE 5.6-5 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
The 1975 **Surface Mining and Reclamation Act** provides a comprehensive surface mining and reclamation policy for the regulation of surface mining operations to assure that adverse environmental impacts are minimized and mined lands are reclaimed to a usable condition. (CPRC 2022)	**Not applicable.** The project is exempt from SMARA pursuant to PRC section 2714 (b) because onsite excavation and onsite earthmoving activities are integral and necessary for the construction of structures and will be undertaken to prepare a site for the construction of those structures, compliance with COCs **GEN-1,** and **CIVIL-1,** the proposed project was rezoned consistent with general plan designation of resources management and the surplus materials will not be exported until actual construction work has commenced and shall cease if construction activities have terminated or are no longer being actively pursued.
Local	
Kern County Municipal Code (2025)	
Title 17. Identifies building and construction requirements to reduce hazard potential that are applicable to all new construction, including the project.	**Yes.** Compliance with COCs **GEO-1** through **GEO-3, GEN-1, CIVIL-1, STRUC-1, WATER-1,** and **WATER-4** shall ensure the proposed project complies with the Kern County Municipal Code's ordinances and standards.
Kern County General Plan (2009): Chapter 1 - Land Use, Open Space, and Conservation Element: Section 1.3 - Physical and Environmental Constraint	
Goal: To strive to prevent loss of life, reduce personal injuries, and property damage, minimize economic and social diseconomies resulting from natural disaster by directing development to areas which are not hazardous.	**Yes.** Compliance with COCs **GEO-1** through **GEO-3, GEN-1, CIVIL-1, STRUC-1, WATER-1,** and **WATER-4** shall ensure the proposed project complies with the goal, policies, and implementation measures in the Physical and Environmental Constraint section in the Land Use, Open Space, and Conservation Element of the Kern County General Plan.
Policy 1.3-1: Kern County will ensure that new developments will not be sited on land that is physically or environmentally constrained ((Map Code 2.1 (Seismic Hazard), Map Code 2.2 (Landslide), Map Code 2.3 (Shallow Groundwater), Map Code 2.5 (Flood Hazard), Map Codes from 2.6 – 2.9, Map Code 2.10 (Nearby Waste Facility), and Map Code 2.11 (Burn Dump Hazard)) to support such development unless appropriate studies establish that such development will not result in unmitigated significant impact.	
Policy 1.3-2: In order to minimize risk to Kern County residents and their property, new development will not be permitted in hazard areas in the absence of implementing ordinances and programs. These ordinances will establish conditions, criteria, and standards for the approval of development in hazard areas.	
Policy 1.3-3: Zoning and other land use controls will be used to regulate and, in some instances, to prohibit development in hazardous areas.	

TABLE 5.6-5 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
Policy 1.3-4: Special requirements will be applied to new housing within recently active fault zones.	
Policy 1.3-5: New residential uses in fault zones should be limited to single-family housing units.	
Policy 1.3-6: Regardless of percentage of slope, development on hillsides will be sited in the least obtrusive fashion, thereby, minimizing the extent of topographic alteration required and reducing soil erosion while maintaining soil stability.	
Policy 1.3-7: Ensure effective slope stability, wastewater drainage, and sewage treatments in areas with steep slopes are adequate for development.	
Implementation Measure 1.3-A: Adopt requirements and procedures in zoning, subdivision, and site development regulations and building criteria for Seismic Hazard designated areas. Include the following in these requirements and procedures: (1) The preparation of special geologic and seismic studies consistent with the requirements of the Safety Element (Chapter 4) of this General Plan. (2) The following specific and detailed criteria shall apply within special studies zones and shall be included in any planning program, ordinances, rules and regulations adopted by the County pursuant to said SPECIAL STUDIES ZONES ACT (PRC Division 4, Part 2). If the precise location of a fault trace cannot be established, or if a portion of an active fault trace is depicted as "inferred" on the Kern County Seismic Hazard Atlas, require a setback of 100 feet from the appropriate location depicted: (a) No structure for human occupancy, public or private, shall be permitted to be placed across the trace of an active fault. Furthermore, the area within 50 feet of an active fault shall be assumed to be underlain by active branches of that fault unless and until proven otherwise by an appropriate geologic investigation and submission of a report by a geologist registered in the State of California. This 50-foot standard is intended to represent minimum criteria only	

TABLE 5.6-5 CONFORMANCE WITH APPLICABLE LORS

Applicable LORS	Conformance and Basis For Determination
for all structures. Certain essential or critical structures, such as high-rise buildings, hospitals, and schools should be subject to more restrictive criteria at the discretion of the Board of Supervisors. (b) Application for a development permit for any project (as defined in the Public Resources Code Section 2621.6) within a special studies zone 14 shall be accompanied by a geologic report prepared by a geologist registered in the State of California and directed to the problem of potential surface fault displacement through the project site, unless such report is waived pursuant to PRC Section 2623. (c) Geologic reports shall be filed with the State Geologist. (d) A geologist registered in the State of California, within or retained by the County, must evaluate the geologic reports required herein and advise the Kern County Planning Department of the findings. (e) Comprehensive geologic and engineering studies should be required for any critical or essential structure as previously defined whether or not it is located within a special studies zone. (f) In accordance with Section 2625 of the Public Resources Code, each application for approval of a project within a delineated special studies zone may be charged a reasonable fee by the County. (g) As used herein, the following definitions apply: (1) A "project" includes any structure for human occupancy or new real estate development as defined under Section 2621.6 of the Public Resource Code. (2) A "structure for human occupancy" is one that is regularly, habitually, or primarily occupied by humans; excluding there from freeways, roadways, bridges, railways, airport runways, and tunnels. The excluded transportation structures should be sited and designed with due consideration to the hazard of surface faulting. Mobile homes, whose body width exceeds eight (8) feet,	

TABLE 5.6-5 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
are considered structures for human occupancy. (3) A "new real estate development" is defined as any new development of real property which contemplates the eventual construction of “structures for human occupancy.”	
Implementation Measure 1.3-B: A seismic analysis may be required for those areas in Kern County which are susceptible to landslides.	
Implementation Measure 1.3-C: Cooperate with the Kern County Water Agency to classify lands in the County overlying groundwater according to groundwater quantity and quality limitations.	
Implementation Measure 1.3-D: Review and revise the County's current Grading Ordinance as needed to ensure that its standards minimize permitted topographic alteration and soil erosion while maintaining soil stability.	
Implementation Measure 1.3-E: Development proposed in areas with steep slopes (Map Code 2.4) will be reviewed for conformity to Chapter 19.88 Hillside Development Ordinance or Chapter 19.52 Special Planning (SP) District to ensure that appropriate soil stability, drainage, and sewage treatment will result.	
Kern County General Plan (2009): Chapter 1 - Land Use, Open Space, and Conservation Element: Section 1.9 – Resource	
Goal: • To contain new development within an area large enough to meet generous projections of foreseeable need, but in locations which will not impair the economic strength derived from the petroleum, agriculture, rangeland, or mineral resources, or diminish the other amenities which exist in the County. • Protect areas of important mineral, petroleum, and agricultural resource potential for future use. • Ensure the development of resource areas minimize effects on neighboring resource lands.	**Yes.** The project complies with the goal, policies, and implementation measures in the Resource section in the Land Use, Open Space, and Conservation Element of the Kern County General Plan.

TABLE 5.6-5 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
Policy 1.8-1: Appropriate resource uses of all types will be encouraged as desirable and consistent interim uses in undeveloped portions of the County regardless of General Plan designation.	
Policy 1.8-2: In areas with a resource designation on the General Plan map, only industrial activities which directly and obviously relate to the exploration, production, and transportation of the particular resource will be considered to be consistent with this General Plan.	
Policy 1.8-14: Emphasize conservation and development of identified mineral deposits.	
Policy 1.8-16: Lands classified as MRZ-2, as designated by the State of California, should be protected from encroachment of incompatible land uses.	
Implementation Measure 1.8-H: Use the California Geological Survey's latest maps to locate mineral deposits until the regional and Statewide importance mineral deposits map has been completed, as required by the Surface Mining and Reclamation Act.	
Implementation Measure 1.8-K: Protect oilfields and mineral extraction areas through the use of appropriate implementing zone districts: A (Exclusive Agriculture), DI (Drilling Island), NR (Natural Resource), or PE (Petroleum Extraction).	
Kern County General Plan (2009): Chapter 1 - Land Use, Open Space, and Conservation Element: Section 1.10.3 – Archaeological, Paleontological, Cultural, and Historical Preservation	
Policy 1.10-25: The County will promote the preservation of cultural and historic resources which provide ties with the past and constitute a heritage value to residents and visitors.	**Yes.** Compliance with the following COC's shall satisfy the policy and implementation measures in the Archeological, Paleontological, Cultural, and Historical Preservation section in the Land Use, Open Space, and Conservation Element of the Kern County General Plan. COCs **PAL-1** through **PAL-8** were developed based upon the guidance provided by the SVP and Bureau of Land Management (BLM) standards to ensure that, if present, paleontological resources would be properly identified and
Implementation Measure 1.10-K: Coordinate with the California State University, Bakersfield's Archaeology Inventory Center.	
Implementation Measure 1.10-L: The County shall address archaeological and historical resources for discretionary projects in accordance with the California Environmental Quality Act (CEQA).	

TABLE 5.6-5 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
Implementation Measure 1.10-M: In areas of known paleontological resources, the County should address the preservation of these resources where feasible.	appropriate protection or salvage measures implemented to mitigate the loss of these resources due to construction. COCs **PAL-1** through **PAL-8** require identification of a qualified Paleontological Resource Specialist, identification of qualified Paleontological Resource Monitors, training of site workers, periodic reporting, and collection, documentation and archival of any significant paleontological resources identified.
Kern County General Plan (2009): Chapter 4 – Safety Element: Section 4.2 – General Policies and Implementation Measure, Which Apply to More Than One Safety Constraint	
Policy 4.2-1: That the County's program of identification, mapping, and evaluating the geologic, fire, flood safety hazard areas, and significant concentrations of hydrogen sulfide in oilfield areas, presently under way by various County departments, be continued.	Yes. Compliance with the COCs **GEO-1** through **GEO-3, GEN-1, CIVIL-1, STRUC-1,** and **WATER-1** shall ensure the proposed project complies with the policies and implementation measures in the General Policies and Implementation Measure, Which Apply to More Than One Safety Constraint section in the Safety Element of the Kern County General Plan.
Policy 4.2-3: That the County government encourage public support of local, State, and federal research programs on geologic, fire, flood hazards, valley fever, plague, and other studies so that acceptable risk may be continually reevaluated and kept current with contemporary values.	
Policy 4.2-4: The County shall encourage extra precautions be taken for the design of significant lifeline installations, such as highways, utilities, and petrochemical pipelines.	
Policy 4.2-5: The adopted Kern County, California Multi-Hazard Mitigation Plan is incorporated by reference. This multi-jurisdictional plan, approved in compliance with the Disaster Mitigation Act of 2000, provides long-term planning to reduce the impacts of future disasters.	
Implementation Measure 4.2-A: All hazards (geologic, fire, and flood) should be considered whenever a Planning Commission or Board of Supervisor's action could involve the establishment of a land use activity susceptible to such hazards.	
Implementation Measure 4.2-B: The Safety Element should be reviewed and comprehensively revised every five years, or whenever substantially new scientific evidence becomes available.	
Implementation Measure 4.2-C: Require detailed site studies for ground shaking characteristics, liquefaction potential, dam failure inundation, flooding potential, and fault rupture potential as background to the design	

TABLE 5.6-5 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
process for critical facilities under County discretionary approval.	
Implementation Measure 4.2-D: Require seismic review prior to major addition, renovation, or increase in occupancy of buildings.	
Implementation Measure 4.2-F: The adopted multi-jurisdictional Kern County, California Multi-Hazard Mitigation Plan, as approved by FEMA, shall be used as a source document for preparation of environmental documents pursuant to CEQA, evaluation of project proposals, formulation of potential mitigation, and identification of specific actions that could, if implemented, mitigate impacts from future disasters and other threats to public safety.	
Kern County General Plan (2009): Chapter 4 – Safety Element: Section 4.3 – Seismically Induced Surface Rupture, Ground Shaking, and Ground Failure	
Policy 4.3-1: The County shall require development for human occupancy to be placed in a location away from an active earthquake fault in order to minimize safety concerns.	**Yes.** Compliance with the COCs **GEO-1** through **GEO-3, GEN-1, CIVIL-1,** and **STRUC-1** shall ensure the proposed project complies with the policy and implementation measures in the Seismically Induced Surface Rupture, Ground Shaking, and Ground Failure section in the Safety Element of the Kern County General Plan.
Implementation Measure 4.3-B: Require geological and soils engineering investigations in identified significant geologic hazard areas in accordance with the Kern County Code of Building Regulations.	
Implementation Measure 4.2-C: The fault zones designated in the Kern County Seismic Hazard Atlas should be considered significant geologic hazard areas. Proper precautions should be instituted to reduce seismic hazard, whenever possible in accordance with State and County regulations.	
Implementation Measure 4.2-D: Detailed geologic investigations shall be conducted in conformance with guidelines of the California Geological Survey for all discretionary permits and construction designed for human occupancy in an Alquist-Priolo Earthquake Fault Zone.	
Implementation Measure 4.2-G: Route major lifeline components such as highways, utilities, petroleum or chemical pipelines around areas of high groundwater whenever possible. Where they must cross an area of high groundwater, plans, and permits shall require design features to accommodate extensive ground rupture without prolonged disruption of an essential service or threat to health and safety.	

TABLE 5.6-5 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
Implementation Measure 4.3-H: Require that plans and permits for installation of major lifeline components such as highways, utilities, petroleum or chemical pipelines to incorporate design features to accommodate potential fault movement in areas of active faults without prolonged disruption of essential service or threat to health and safety.	
Implementation Measure 4.3-I: Design significant lifeline installations, such as highways, utilities, and petrochemical pipelines which cross an active fault, to accommodate potential fault movement without prolonged disruption of essential service or creating threat to health and safety.	
Implementation Measure 4.3-K: Encourage and support local, State, and federal research programs for delineation of geologic and seismic hazards so that acceptable risk may be continually re-evaluated and kept current with state-of-the-art information and contemporary values.	
Implementation Measure 4.3-L: Require seismic review prior to major addition, renovation, or increase in occupancy of buildings.	
Kern County General Plan (2009): Chapter 4 – Safety Element: Section 4.5 – Landslides, Subsidence, Seiche, and Liquefaction	
Policy 4.5-1: Determine the liquefaction potential at sites in areas of shallow groundwater (Map Code 2.3) prior to discretionary development and determine specific mitigation to be incorporated into the foundation design, as necessary, to prevent or reduce damage from liquefaction in an earthquake.	**Yes.** Compliance with the COCs **GEO-1** through **GEO-3, GEN-1, CIVIL-1, STRUC-1,** and **WATER-1** shall ensure the proposed project complies with the policies and implementation measures in the Landslides, Subsidence, Seiche, and Liquefaction section in the Safety Element of the Kern County General Plan.
Policy 4.5-2: Route major lifeline installations around potential areas of liquefaction or otherwise protect them against significant damage from liquefaction in an earthquake.	
Policy 4.5-3: Reduce potential for exposure of residential, commercial, and industrial development to hazards of landslide, land subsidence, liquefaction, and erosion.	
Implementation Measure 4.5-B: Require liquefaction investigations in all areas of high groundwater potential and appropriate foundation design to mitigate potential damage to buildings on sites with liquefaction potential.	

TABLE 5.6-5 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
Implementation Measure 4.5-C: Develop and maintain maps, at an appropriate scale, showing the location of all geologic hazards, including active faults, Alquist-Priolo Earthquake Fault Zones, 100-year flood hazard boundary, the extent of projected dam failure inundation and time arcs, depth of inundation, land subsidence, slope failure and earthquake-induced landslides, high groundwater, and liquefaction potential.	
Implementation Measure 4.5-D: Discretionary actions will be required to address and mitigate impacts from inundation, land subsidence, landslides, high groundwater areas, liquefaction and seismic events through the CEQA process.	
Willow Springs Specific Plan (2008): Resource	
Goal 3: Encourage retention of productive agricultural and dormant mineral resources by imposing a restriction on allowing urban type land uses on nearby adjacent lands.	Yes. Compliance with the COCs **GEO-1** through **GEO-3, GEN-1, CIVIL-1,** and **STRUC-1** shall ensure the proposed project complies with the goal, policy, and mitigation/implementation measures in the Resource element of the Willow Springs Specific Plan.
Policy 2: Require review of discretionary projects in those areas designated for Resource use by the appropriate agency to determine potential resource loss.	
Mitigation/Implementation Measure 1: Amendments to the plan within areas presently designated Map Code 8.4, which allow uses other than mineral production, may be permitted upon certification by a State of California certified geologist or mining engineer that significant mineral deposits are not present, and the proposed use would not hinder potential development of any adjacent mineral resources.	
Mitigation/Implementation Measure 5: All grading and landform modifications shall be conducted in conformance with state-of-the-practice design and construction parameters. Typical standard minimum guidelines are set forth in Chapter 70 of the Uniform Building Code. All graded slopes shall be constructed so that the entire slope is stable.	
Mitigation/Implementation Measure 7: Remedial grading shall be required within the southern half of Section 35, T9N, R14W, SBB&M, to remove and recompact the upper approximate four feet of native materials which are subject to collapse/hydroconsolidation.	

TABLE 5.6-5 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
Mitigation / Implementation Measure 8: Prior to grading permit issuance, evaluation of the collapse/hydroconsolidation potential and other engineering parameters of the various alluvial and lacustrine sediments and to provide appropriate remedial grading recommendations, a comprehensive geotechnical investigation, including exploratory drilling/trenching, sampling, and laboratory testing shall be required. Page 10 of Appendix B of the Environmental Impact Report provides recommended remedial measures that may be considered on an individual project basis.	
Mitigation / Implementation Measure 10: Due to the potential of radioactivity associated with possible uranium-bearing alluvial deposits to affect inhabitants in the eastern portion of the project area, a complete evaluation shall be required on an individual project basis prior to grading permit issuance.	
Mitigation / Implementation Measure 11: Remedial grading and removal shall be performed on the sites which consist of erodible and collapsible soils prior to site development.	
Mitigation / Implementation Measure 12: As the lateral and vertical extent of expansive and corrosive Mojave, Pond-Oban, Rosamond, and Sunrise series soils are not accurately known, geotechnical studies by qualified civil engineering firms shall be performed prior to final design and construction of proposed developments.	
Mitigation / Implementation Measure 13: To minimize expansive soil conditions, complete avoidance or engineering design for correction of adverse conditions shall be required prior to building permit issuance on an individual project basis. Contained in Appendix B of the Environmental Impact Report "Soils and Geology Report" on page 12, provisions are recommended as remedial measures to lessen adverse conditions.	
Willow Springs Specific Plan (2008): Seismic/Safety Element	
Goal 1: To promote a safe and healthful living environment.	**Yes.** Compliance with the COCs **GEO-1** through **GEO-3, GEN-1, CIVIL-1, STRUC-1,** and **WATER-1** shall ensure the proposed project complies with the goals, policies, and mitigation/implementation measures in the Seismic/Safety element of the Willow Springs Specific Plan.
Goal 2: Reduce the potential for property damage and injury by requiring development standards that adequately mitigate these environmental constraints where feasible to do so.	
Goal 3: Protect human life and health.	

TABLE 5.6-5 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
Goal 6: Minimize prolonged business interruptions.	
Goal 12: To reduce economic and social disruption resulting from earthquakes and various other geological hazards by assuring the continuity of vital services and functions.	
Goal 13: To create an awareness in the population of the Specific Plan Update area of areas of possible earthquake damage.	
Goal 14: To preserve from development those areas having steep slope so as to protect the natural landscape from loss of vegetative cover and subsequent erosion and sedimentation.	
Goal 15: To protect community residents from undue hazards and costs associated with road maintenance, slope instability, improper drainage, and inadequate sewage treatment.	
Policy 2: Regardless of percentage of slope, development on hillsides will be sited in the least obtrusive fashion, thereby minimizing the extent of topographic alteration required.	
Policy 3: Development proposed in areas with steep slopes will be reviewed for conformity to the adopted Hillside Development Ordinance to ensure that appropriate soil stability, drainage, and sewage treatment will result in a satisfactory manner.	
Policy 4: Compliance with site-specific issues, goals, policies, and implementation measures contained in the Seismic/Safety Element of the Kern County General Plan.	
Policy 8: The residents of the plan area shall be made aware, through this document, of the relative earthquake hazards associated with living in the various portions of the plan area.	
Policy 9: All new construction in the plan area shall comply with Chapter 23 of the Uniform Building Code (UBC), which includes building pad and foundation design standards for structures in UBC Seismic Zone IV.	
Policy 10: No new Map Codes 5.1 or 5.2 designations will be permitted for property having a Map Code 2.1 constraint overlay unless an approved, site-specific geologic report indicates that no fault hazard exists.	
Policy 11: Construction of dwellings or other structures shall not be allowed on slopes of over 30 percent, except as provided by the Kern County Zoning Ordinance.	

TABLE 5.6-5 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
Mitigation/Implementation Measure 1: Application for discretionary projects within areas designated Map Code 2.1 shall be subject to requirements of the current Kern County Zoning Ordinance.	
Mitigation/Implementation Measure 16: All areas designated with the physical constraint overlay Map Code 2.1 shall permit development only in accordance with the Kern County Safety Element.	
Mitigation/Implementation Measure 17: All developments on slopes 30 percent or less and designated Map Code 2.4 are required to be developed in accordance with requirements of the Kern County Zoning Ordinance and the Open Space and Conservation Element of this Specific Plan.	
Mitigation/Implementation Measure 18: Any projects identified with problems relating to shallow groundwater or landslide prone are required to be evaluated in a report and certified in writing by a qualified professional (in the field). The report shall be submitted to the Department of Planning and Development Services for review and approval.	
Mitigation/Implementation Measure 19: All final map subdivisions are required to prepare a geologic hazards analysis to determine what mitigation measures may be necessary to ensure the project is suitable for its intended use.	
Mitigation/Implementation Measure 25: Soils on graded slopes shall be strengthened by planting to reduce the potential of erosion. During the interim period before the ground cover takes hold, straw, wood chips, and plastic (visqueen) shall be used as stabilizing agents.	
Willow Springs Specific Plan (2008): Open Space/Conservation Element	
Mitigation/Implementation Measure 1: Grading shall be restricted to slopes of less than 30 percent.	**Yes.** Compliance with the COCs **GEO-1** through **GEO-3, GEN-1, CIVIL-1,** and **STRUC-1** shall ensure the proposed project complies with the mitigation/implementation measure in the Open Space/Conservation Element of the Willow Springs Specific Plan.
Professional Standards	
American Concrete Institute	
ACI 506.2-13: Specification for Shotcrete recommends standards for shotcrete application. (ACI 2014)	**Yes.** Compliance with the COCs **GEO-1** through **GEO-3, GEN-1, CIVIL-1,** and **STRUC-1** shall ensure the proposed project complies with the relevant and appropriate components of this ACI standard.

TABLE 5.6-5 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
ACI PRC-506-22: Shotcrete-Guide, is a guide for shotcrete construction. (ACI 2022)	**Yes**. Compliance with the COCs **GEO-1** through **GEO-3, GEN-1, CIVIL-1,** and **STRUC-1** shall ensure the proposed project complies with the relevant and appropriate components of this ACI standard.
ASTM International	
ASTM International published **ASTM 4879-08: Standard Guide for Geotechnical Mapping of Large Underground Openings in Rock** to recommend standards for characterizing and documenting rock surface conditions in large civil or mining excavations. Note, ASTM International withdrew this standard in 2017 and did not replace it. (ASTM 2017)	**Yes**. Compliance with the COCs **GEO-1** through **GEO-3, GEN-1, CIVIL-1,** and **STRUC-1** shall ensure the proposed project complies with the relevant and appropriate components of this ASTM International standard.
ASTM International published **ASTM F432-19: Standard Specification for Roof and Rock Bolts and Accessories** to recommend standards for chemical, mechanical, and dimensional requirements for roof and rock bolts and accessories. This standard was most recently updated in 2020. (ASTM 2020)	**Yes**. Compliance with the COCs **GEO-1** through **GEO-3, GEN-1, CIVIL-1,** and **STRUC-1** shall ensure the proposed project complies with the relevant and appropriate components of this ASTM International standard.
Society for Vertebrate Paleontology (2010)	
The Society for Vertebrate Paleontology (SVP) published **Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Non-Renewable Paleontological Resources** to recommend a set of procedures and standards for assessing and mitigating impacts to vertebrate paleontological resources. The measures were adopted in October 1995 and revised in 2010 following adoption of the Paleontological Resources Preservation Act (PRPA) of 2009. The SVP impact mitigation guidelines establish criteria for identifying and assessing significant paleontological resources. Additionally, these guidelines include standards and procedures to be employed prior to site disturbance, monitoring during disturbance, and preservation/mitigation of identified resources.	**Yes.** Compliance with the following COCs shall ensure compliance with Society for Vertebrate Paleontology standards. COCs **PAL-1** through **PAL-8** were developed based upon the guidance provided by the SVP and Bureau of Land Management (BLM) standards to ensure that, if present, paleontological resources would be properly identified and appropriate protection or salvage measures implemented to mitigate the loss of these resources due to construction. COCs **PAL-1** through **PAL-8** require identification of a qualified Paleontological Resource Specialist, identification of qualified Paleontological Resource Monitors, training of site workers, periodic reporting, and collection, documentation and archival of any significant paleontological resources identified.

5.6.4 Comments and Responses on the Preliminary Staff Assessment

Response to Comments from the Applicant (TN 264316)

The project applicant submitted comments (WAP 2025s) on the Preliminary Staff Assessment (PSA) Section 5.6 Geology, Paleontology, and Minerals (CEC 2025n). Staff prepared the following responses to comments.

Comment: In WSP (2025s), one comment on page 14 requests edits to the description of geotechnical investigations performed by the project applicant in PSA Section 5.6.1 Existing Conditions, Local Geology, Stratigraphy, and Soils on PSA page 5.6-4. The comment states that six, not three, core holes were drilled. The comment suggests addition of a sentence stating that core hole ZEV-CH-02-23 is 0.8 miles away from the proposed surface footprint of the subsurface cavern.

Response: Staff's analysis used docketed information, specifically a February 16, 2024 report titled *Geotechnical Characterization Report for the Willow Rock-Dawn Road Project Site.* The report was prepared by Agapito Associates, Inc for Hydrostor Inc. The report was submitted to the project docket on March 1, 2024 in six parts. The first part, TN# 254804, is titled *Willow Rock Energy Storage center Supplemental AFC Volume II – Appendix 54A – Part I*. (ESHD 2024g)

Staff's understanding of the geotechnical investigation performed in ESHD (2024g) excavated and analyzed three corings only: ZEV-CH-01-23, ZEV-CH-02-23, and ZEV-CH-03-23. If the applicant completed additional deep subsurface geotechnical investigations, staff requests that the applicant inform staff and submit that information to the project docket.

Staff incorporated the comment's suggestion to clarify the location of core hole ZEV-CH-02-23.

Comment: In WSP (2025s), two comments on page 15 request edits to PSA Section 5.6.2.2 Direct and Indirect Impacts, Strong Seismic Ground Shaking on PSA page 5.6-24. The comments request replacing the phrase "strong seismic ground shaking" with "site-representative seismic ground shaking."

Response: The CEQA environmental checklist in the CCR Title 14, Division 6, Chapter 3, Appendix G, geology and soils and minerals requires an analysis of whether the project would directly or indirectly cause potential substantial adverse effects, including risk of loss, injury, or death involving strong seismic ground shaking (CCR 2018). Therefore, staff does not agree with the suggested edits and keeps the phrase "strong seismic ground shaking".

Comment: In WSP (2025s), one comment on page 15 requests an edit to the PSA Section 5.6.2.2 Direct and Indirect Impacts, Landslides on PSA page 5.6-26. The comment states that the WRESC and temporary laydown sites are in areas classified as class 0 areas for landslide risk. Two areas of the proposed and alternative gen-tie line routes are in areas classified as class 5 to 9 for landslide risk. The remainder of the gen-tie line is classified as class 0 for landslide risk. The comment requests that the geotechnical and geohazard report required in COC **GEO-1** only be required to evaluate landslide hazards along the proposed and alternative gen-tie routes.

Response: COC **GEO-1**, in Section 5.6.6 Proposed Conditions of Certification, restates requirements in the CBC (2022) sections 1803.1 through 1803.7 for geotechnical and geohazard investigation and reporting. Section 1803.2 permits the DCBO to waive the requirement for a geotechnical investigation for a condition, such as slope instability, if satisfactory data from adjacent areas is available that demonstrates an investigation is not necessary. Should the project be approved, the applicant can make the above request to the DCBO.

Comment: In WSP (2025s), one comment on page 15 requests the addition of COC **WATER-1** (see Section 5.16 Water Resources) to the PSA Section 5.6.2.2 Direct and Indirect Impacts, Soil Erosion and Topsoil Loss on PSA page 5.6-27.

Response: In **Section 5.16 Water Resources**, staff revised COCs **WATER-1** and **WATER-2**. In Section 5.6.2.2 Direct and Indirect Impacts, Soil Erosion and Topsoil Loss, staff replaced statements and references to the PSA COC **WATER-2** with the revised COC **WATER-1**.

Comment: In WSP (2025s), one comment on page 15 requests the addition of COC **WATER-1** (see Section 5.16 Water Resources) to PSA Section 5.6.5. Proposed Conditions of Certification on PSA page 5.6-52.

Response: In Section 5.6.2.3 Cumulative Impacts on page 5.6-36, Table 5.6-5 Project Conformation with Applicable LORS, and in Section 5.6.6 Proposed Conditions of Certification, staff replaced references to PSA COC **WATER-2** with the revised **COC WATER-1**.

Comment: In WSP (2025s), one comment on pages 16 and A-28 requests two edits to **COC PAL-3** on PSA Section 5.6.5 Proposed Conditions of Certification on PSA page 5.6-52. The comment requests that, in the event of a significant fossil discovery, the COC state that work should stop in the area of the discovery. The comment requests the COC state the Paleontological Resource Specialist has authority to determine appropriate procedures for inventory, preparation, and delivery of fossil materials.

Response: Staff mostly agrees with this edit. Staff edited COC **PAL-3** in Section 5.6.6 Proposed Conditions of Certification. Staff also revised COC **PAL-3** to give the CPM authority to deem fossils appropriate for inventory, preparation, and delivery for curation.

6. A discussion of procedures to be followed: (a) in the event of a significant fossil discovery, (b) stopping construction in the area of the discovery, (c) resuming construction, and (d) how notifications shall be performed…
8. Procedures to inventory, prepare, and deliver fossil materials the PRS or CPM deem appropriate for curation in a retrievable storage collection at a public repository or museum that meet the Society of Vertebrate Paleontology's standards and requirements for the curation of paleontological resources.

Comment: In WSP (2025s), one comment on page 16 requests an edit to COC **GEO-2** in PSA Section 5.6.5 Proposed Conditions of Certification on PSA page 5.6-54. The comment requests the professional standard Norwegian Tunneling Society Publication 16 be removed. The comment states that COC **GEO-2** contains adequate standards in design of underground structures and this professional standard is not needed.

Response: Staff agrees with this edit. Staff removed the Norwegian Tunneling Society Publication 16 (NTS 2007) as a professional standard within COC **GEO-2** in Section 5.6.6 Proposed Conditions of Certification. Staff deleted statements and references to NTS (2007) from the Section 5.6.1 Environmental Setting, Regulatory, Professional Standards, Geologic Hazards and Resources, Table 5.6-5 Project Conformation with Applicable LORS, and Section 5.6.7 References.

Note, in the PSA Table 5.6-5 Project Conformation with Applicable LORS on pages 5.6-38 to 5.6-53, staff mistakenly stated the publication year for NTS (2007) was 2016 and used NTS (2016) for the citation.

Comment: In WSP (2025s), one comment on page 16 requests the deletion of COC **GEO-3** on PSA page 5.6-54. The comment states inspections of underground structures will be conducted remotely, on a temporally limited basis, and spatially limited to the vertical shafts and the cavern zone near the shafts. The comment states that inspecting underground caverns annually is not standard practice in other fields, such as mined hydrocarbon storage facilities.

Response: Staff revised COC **GEO-3** in Section 5.6.6 Proposed Conditions of Certification. COC **GEO-3** is based on regulations for underground natural gas storage facilities in the Code of Federal Regulations, Title 49, Subtitle B, Chapter I, Subchapter D, Part 192, Subpart A, Part 192.12 (CFR 2025c).

COC **GEO-3** requires the project owner to develop and implement an integrity inspection program. The revised language of COC **GEO-3** is as follows:

GEO-3 The project owner shall develop and implement an integrity inspection program for the excavated underground structures, including the cavern and vertical shafts. Program elements shall include:

- Procedures, timelines, and triggering events for remote and/or in-person inspections and maintenance under the responsible charge of an appropriately qualified California licensed geologist or engineer.
- Procedures and timelines for notifying the CPM of inspection results and maintenance actions.
- A plan for training workers in safety, awareness, and implementation of the integrity inspection plan.
- A plan for updating the integrity inspection program based on information gained from previous inspections.

Verification: At least 30 days (or a project owner and DCBO mutually agreed upon alternative time frame) prior to the start of any increment of excavation in the DCBO-approved master drawing and master specifications list, the project owner shall submit to the DCBO and CPM the integrity inspection plan for review and approval.

Staff added a summary of CFR (2025c) to the Section 5.6.1 Environmental Setting, Regulatory, Federal Geologic Hazards, Geologic and Mineral Resources and to Table 5.6-5 Project Conformation with Applicable LORS.

Comment: In WSP (2025s), four comments on pages 15 and 16 request deletion of in-text referrals to maintenance of underground structures and COC **GEO-3** on PSA pages 5.6-1, 5.6-24, 5.6-27, 5.6-30, and 5.6-35.

Response: Staff did not incorporate this comment because the revised COC **GEO-3** addresses the suggested change.

Response to Comments from CURE (TN 264343)

The California Unions for Reliable Energy (CURE), a project intervenor, submitted comments (CURE 2025u) on the PSA **Section 5.6, Geology, Paleontology, and Minerals** (CEC 2025n). Staff prepared the following responses to comments.

Comment: In CURE (2025u), one comment on page 8 claims that the COC **GEO-1** on PSA page 5.6-53**,** which requires geotechnical and geohazard investigations and design recommendations, is improper because it defers impact analysis and identification of mitigation until after the California Energy Commission potentially certifies the project.

Response: See global response to comments on deferred mitigation in **Section 9, Compliance Conditions and Compliance Monitoring Plan.**

5.6.5 Conclusions and Recommendations

As discussed above, with implementation of the COCs, the project would have a less than significant impact related to geology, paleontology, and minerals and would conform with applicable LORS. Staff recommends adopting the COCs as detailed in subsection “5.6.6 Proposed Conditions of Certification” below.

5.6.6 Proposed Conditions of Certification

The following COCs are proposed for Geology, Minerals, and Paleontology for the proposed project. Descriptions of COCs **GEN-1**, **CIVIL-1**, and **STRUC-1** are in **Section 4.1, Facility Design.** Descriptions of COCs **WATER-1** and **WATER-4** are in **Section 5.16, Water Resources**. Since the project is unlikely to exacerbate an existing geologic hazard, such as inducing seismic activity, the engineering related COCs primarily ensure the project is appropriately designed to withstand geologic hazards impacting the project and supports grid reliability. For purposes of these COCs,

references to the California Building Code and Code of Federal Regulations means the code in force at the time the project starts ground disturbing activities.

GEO-1 As described in the CBC Sections 1803.2 to 1803.5, if the DCBO determines that investigative conditions exist, the project owner shall perform geotechnical investigations for questionable soils, expansive soils, shallow groundwater, deep foundations, rock strata, excavations near foundations, compacted fill material, controlled low-strength material, alternate setback and clearance, and Seismic Design Categories C through F. In accordance with the California Business and Professions Code and CBC Section 1803.1, the geotechnical investigations shall be conducted by a registered design professional.

As described in the CBC Section 1803.6, the project owner shall write a geotechnical report that documents the results from the geotechnical investigations and provides project design recommendations to mitigate geologic hazards. In accordance with the CBC Section 1803.1, the geotechnical report shall be prepared and signed by a California registered geotechnical engineer, certified engineering geologist, and a registered geophysicist, where applicable.

In accordance with the CBC Section 1803.7, the geotechnical investigation report shall include a geohazards report that considers seismic hazards. The geohazard report shall identify site-specific geologic and seismic conditions that may require mitigation. The report shall recommend project design criteria to mitigate geologic and seismic hazards. The project owner shall incorporate recommendations for project design criteria into the final project design. An appropriate qualified California-certified licensed engineering geologist, in consultation with a California registered geotechnical engineer, shall prepare the geohazards portion of the geotechnical report.

Verification: As described in the CBC Section 1803.6, the project owner shall submit a written geotechnical report to the CEC's DCBO for review and approval. The project owner shall provide the CPM copies of the geotechnical investigations and geohazards report and any comments by the DCBO at least 60 days prior to grading.

GEO-2 Final design and construction of underground openings shall be in accordance with all applicable LORS listed below:

- Code of Federal Regulations
  - Title 29, Subtitle B, Chapter XVII, Part 1926, Subpart S
  - Title 30, Chapter I, Subchapter K, Part 57
- U.S. Army Corp of Engineers
  - Engineering Manual 1110-1-1804: Engineering and Design, Geotechnical Investigations

  - Engineering Manual 1110-2-2901: Tunnels and Shafts in Rock
  - Engineering Manual 1110-1-3500: Chemical Grouting Technology
- Guide Specification for Civil Works Construction: Section 02330: Tunnel and Shaft Grouting
- U.S. Bureau of Reclamation Engineering Geology Field Manual, Volumes I and II
- American Concrete Institute
  - ACI 506.2-13: Specification for Shotcrete
  - ACI PRC-506-22: Shotcrete-Guide
- ASTM International
  - 4879-08: Standard Guide for Geotechnical Mapping of Large Underground Openings in Rock. Note, ASTM International withdrew this standard in 2017 and did not replace it.
  - F432-19: Standard Specification for Roof and Rock Bolts and Accessories
- Norwegian Tunneling Society Publication 16: Underground Constructions for the Norwegian Oil and Gas Industry

Verification: At least 30 days (or a project owner and DCBO mutually agreed upon alternative time frame) prior to the start of any increment of excavation in the DCBO-approved master drawing and master specifications list, the project owner shall submit to the DCBO the final design plans, specifications and calculations, with a copy of the transmittal letter to the CPM.

The project owner shall submit to the CPM, in the next MCR, a copy of a statement from the DCBO that the proposed structural plans, specifications, and calculations were approved and comply with the requirements set forth in applicable engineering LORS.

GEO-3 The project owner shall develop and implement an integrity inspection program for the excavated underground structures, including the cavern and vertical shafts. Program elements shall include:

- Procedures, timelines, and triggering events for remote and/or in-person inspections and maintenance under the responsible charge of an appropriate qualified California licensed geologist or engineer.
- Procedures and timelines for notifying the CPM of inspection results and maintenance actions.
- A plan for how to train workers in safety, awareness, and implementation of the integrity inspection plan.

- A plan for how to update the integrity inspection program with information gained from experience.

Verification: At least 30 days (or a project owner and DCBO mutually agreed upon alternative time frame) prior to the start of any increment of excavation in the DCBO-approved master drawing and master specifications list, the project owner shall submit to the DCBO and CPM the integrity inspection plan for review and approval.

PAL-1 The project owner shall provide the CPM with the resume, qualifications, and contact information of its paleontological resource specialist (PRS) for review and approval. The PRS's resume shall demonstrate to the satisfaction of the CPM the appropriate education and experience to accomplish the required paleontological resource tasks. The PRS's resume shall also include the names and phone numbers of references that can be contacted to verify information.

As determined by the CPM, the PRS shall meet the minimum qualifications for a Qualified Professional Paleontologist as defined in the Code of Federal Regulations, CFR, Title 43, Subtitle A, Part 49 – Paleontological Resources Preservation and in the Society of Vertebrate Paleontology's Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources (SVP 2010). The qualifications of the PRS shall include the following:

1. Institutional affiliations, appropriate credentials, and college degree (M.S., Ph.D., or equivalent).
2. Ability to recognize and collect fossils in the field.
3. Local geological and biostratigraphic expertise.
4. Proficiency in identifying vertebrate and invertebrate fossils.
5. At least three years of paleontological resource mitigation and field experience in California and at least one year of experience leading paleontological resource mitigation and field activities.

The project owner shall ensure that the PRS obtains qualified paleontological resource monitors (PRMs) to monitor as he or she deems necessary on the project. PRMs shall have the equivalent of the following qualifications:

1. B.S. or B.A. degree in geology or paleontology and a minimum of one year of relevant paleontological resource monitoring experience in California; or
2. A.S. or A.A. in geology, paleontology, or biology and a minimum of four years of relevant paleontological resource monitoring experience in California; or
3. Enrollment in upper division classes pursuing a bachelor's degree or a more advanced degree in the field of geology or paleontology and a minimum of three years of relevant paleontological resource monitoring experience in California.

If the approved PRS is replaced prior to completion of project mitigation and submittal of the paleontological resources report (PRR), the project owner shall obtain CPM approval for the replacement PRS. The project owner shall keep resumes on file for the qualified PRSs and PRMs.

The PRM's resume shall include the names and contact information of references. If a PRM is replaced, the resume of the replacement PRM shall also be provided to the CPM for review and approval.

Verification: At least 60 days prior to the start of ground disturbance, the project owner shall submit a resume and statement of availability of its designated PRS for on-site work to the CPM for review and approval. CPM approval is required prior to the initiation of ground disturbing activities.

At least 30 days prior to ground disturbance, the PRS or project owner shall provide a letter with resumes naming anticipated PRMs for the project. The letter shall state that the identified PRMs meet the minimum qualifications for paleontological resource monitoring as required by this condition of certification. If additional PRMs are needed during the project, the PRS shall provide additional letters and resumes to the CPM. The letter shall be provided to the CPM for approval no later than one week prior to the monitor's beginning on-site duties.

Prior to any change of the PRS, the project owner shall submit the resume of the proposed new PRS to the CPM for review and approval.

PAL-2 The project owner shall provide the PRS and the CPM, for review and approval, maps and drawings showing the footprint of the power plant, construction laydown areas, and all related facilities. Maps shall identify all areas of the project where ground disturbance is anticipated. If the PRS requests enlargements or strip maps for linear facility routes, the project owner shall provide copies to the PRS and CPM. The site grading plan and the plan and profile drawings for the utility lines would be acceptable for this purpose. The plan drawings must show the location, depth, and extent of all ground disturbances and be at a scale between 1 inch = 40 feet (1:480) and 1 inch = 100 feet (1:1,200). If the footprint of the project or its linear facilities change, the project owner shall provide maps and drawings reflecting those changes to the PRS and CPM.

If construction of the project proceeds in phases, maps and drawings may be submitted prior to the start of each phase. A letter identifying the proposed schedule of each project phase shall be provided to the PRS and CPM. Before work commences on affected phases, the Project owner shall notify the PRS and CPM of any construction phase scheduling changes.

At a minimum, the project owner shall ensure that the PRS or PRM consults weekly with the project superintendent and construction field manager to confirm area(s) to be worked the following week, until ground disturbance is completed.

Verification: At least 30 days prior to the start of ground disturbance, the project owner shall provide maps and drawings to the PRS and CPM for review and approval.

If there are planned changes to the footprint of the project, revised maps and drawings shall be provided to the PRS and CPM at least 15 days prior to the start of ground disturbance.

If there are changes to the scheduling of the construction phases, the project owner shall submit a letter to the CPM within five days of identifying the changes.

PAL-3 The project owner shall ensure that the PRS prepares a Paleontological Resources Monitoring and Mitigation Plan (PRMMP) and submits it to the CPM for review and approval. Approval of the PRMMP by the CPM shall occur prior to any ground disturbance. The PRMMP shall function as the formal guide for monitoring, collecting, sampling, and reporting activities, and may be modified with CPM approval. The PRMMP shall be used as the basis of discussion when on-site decisions or changes are proposed. Copies of the PRMMP shall include all updates and reside with the PRS, each PRM, the project's on-site manager, and the CPM.

The PRMMP shall be developed in accordance with the Code of Federal Regulations, CFR, Title 43, Subtitle A, Part 49 – Paleontological Resources Preservation and the Society of Vertebrate Paleontology's Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources (SVP 2010). The PRMMP shall include, but not be limited to, the following:

1. Procedures for, and assurance, that those procedures would be followed in the performance and sequence of project-related tasks, such as any literature searches, pre-construction surveys, worker environmental training, field work, flagging or staking, construction monitoring, mapping and data recovery, fossil preparation and collection, identification and inventory, preparation of final reports, and transmittal of materials for curation.
2. Identification of the person(s) expected to assist with each of the tasks required by the PRMMP and these COCs.
3. A thorough discussion of the geologic units expected to be encountered, the location and depth of the units relative to the project when known, and the

known sensitivity of those units based on the occurrence of fossils either in that unit or in correlative units.

4. An explanation of why sampling is needed, a description of the sampling methodology, and how much sampling is expected to take place and in which geologic units. This should include descriptions of the sampling procedures that shall be used for fine-grained and coarse-grained units.
5. A discussion of the locations where monitoring of project construction activities is deemed necessary, and a proposed plan for monitoring and sampling at these locations.
6. A discussion of procedures to be followed: (a) in the event of a significant fossil discovery, (b) stopping construction in the area of the discovery, (c) resuming construction, and (d) how notifications shall be performed.
7. A discussion of equipment and supplies necessary for collection of fossil materials and any specialized equipment needed to prepare, remove, load, transport, and analyze large-sized fossils or extensive fossil deposits.
8. Procedures to inventory, prepare, and deliver fossil materials the PRS or CPM deem appropriate for curation in a retrievable storage collection at a public repository or museum that meet the Society of Vertebrate Paleontology's standards and requirements for the curation of paleontological resources.
9. Identification of the institution that has agreed to receive data and fossil materials collected, requirements or specifications for materials delivered for curation and how they shall be met, and the name and phone number of the contact person at the institution.
10. A copy of the paleontological resources COCs.
11. A copy of the daily monitoring log form.

Verification: At least 30 days prior to ground disturbance, the project owner shall provide a copy of the PRMMP to the CPM for review and approval. Approval of the PRMMP by the CPM shall occur prior to any ground disturbance. The PRMMP shall include an affidavit of authorship by the PRS and acceptance of the PRMMP by the project owner evidenced by a signature.

PAL-4 Prior to ground disturbance the project owner and the PRS shall prepare a CPM-approved Worker Environmental Awareness Program (WEAP).

The WEAP shall address the possibility of encountering paleontological resources in the field, the sensitivity and importance of these resources, and legal obligations to preserve and protect those resources. The purpose of the WEAP is to train project workers to recognize palaeontologic resources and identify procedures they must follow to ensure there are no impacts to sensitive palaeontologic resources.

The WEAP shall include:

1. A discussion of applicable laws and penalties under the law.
2. Good quality photographs or physical examples of fossils expected to be found in units of high palaeontologic sensitivity at, or near, the project site.
3. Information that the PRS and PRM have the authority to stop or redirect construction in the event of a discovery or unanticipated impact on a paleontological resource.
4. Instruction that employees are to stop or redirect work in the vicinity of a find and to contact their supervisor and the PRS or PRM.
5. An informational brochure that identifies reporting procedures in the event of a discovery.
6. A WEAP certification of completion form signed by each worker indicating that they have received the training.
7. A sticker that shall be placed on hard hats indicating that environmental training has been completed.

The project owner shall submit the training script and, if the project owner is planning to use a video for training, a copy of the training video, with the set of reporting procedures for workers to follow that shall be used to present the WEAP and qualify workers to conduct ground disturbing activities that could impact paleontological resources.

Verification: At least 30 days prior to ground disturbance, the project owner shall submit the draft WEAP, including the brochure and sticker, to the CPM for review and comments. The submittal shall also include a draft training script and the set of reporting procedures for workers to follow.

At least 15 days prior to ground disturbance, the project owner shall submit to the CPM for approval the final WEAP and training script. If the project owner is planning to use a video for training, a copy of the training video shall be submitted following final approval of the WEAP and training script.

PAL-5 No worker shall excavate or perform any ground disturbance activity prior to receiving CPM-approved WEAP training by the PRS, unless specifically approved by the CPM.

Prior to project ground disturbance, the following workers shall be WEAP trained by the PRS in-person: project managers, construction supervisors, foremen, and all general workers involved with or who operate ground-disturbing equipment or tools. Following the start of ground disturbing activities and after the initial WEAP training conducted prior to ground disturbance, a CPM- approved video or in-

person training may be used for new employees. If a video is used a qualified trainer shall be present to monitor training and respond to questions.

The training program may be combined with other training programs prepared for cultural and biological resources, hazardous materials, or other areas of interest or concern. A WEAP certification of completion form shall be used to document who has received the required training.

Verification: In the Monthly Compliance Report (MCR), the project owner shall provide copies of the WEAP certification of completion forms with the names of those trained, trainer identification, and type of training (in-person and/or video) offered that month. The MCR shall also include a running total of all persons who have completed the training to date.

The resume and qualifications of the trainer shall be submitted to the CPM for review and approval prior to providing WEAP training.

If the project owner requests an alternate paleontological WEAP trainer, the resume and qualifications of the trainer shall be submitted to the CPM for review and approval prior to installation of an alternate trainer. Alternate trainers shall not conduct WEAP training prior to CPM authorization.

PAL-6 The project owner shall ensure that the PRS and PRM(s) monitor, consistent with the PRMMP, all construction-related grading and excavation in areas where potential fossil-bearing materials were identified, both at the site and along any constructed linear facilities associated with the project. If the PRS determines full-time monitoring is not necessary in locations that were identified as potentially fossil bearing in the PRMMP, the project owner shall notify and seek the concurrence with the CPM.

The project owner shall ensure that the PRS and PRM(s) have the authority to stop or redirect construction if paleontological resources are encountered. The project owner shall ensure that there is no interference with monitoring activities unless directed by the PRS. Monitoring activities shall be conducted as follows:

Any change of monitoring from the accepted schedule in the PRMMP shall be proposed in a letter or email from the PRS and the project owner to the CPM prior to the change in monitoring and be included in the MCR. The letter or email shall include the justification for the change in monitoring and be submitted to the CPM for review and approval.

The project owner shall ensure that the PRM(s) keep a daily monitoring log of paleontological resource activities; copies of these logs shall be submitted with the MCR. The name and contact information of PRM(s) and PRS who were making field observations shall be included in the daily log. The PRS may

informally discuss paleontological resource monitoring and mitigation activities with the CPM at any time.

The project owner shall ensure that the PRS notifies the CPM within 24 hours of the occurrence of any incidents of non-compliance with any paleontological resources COCs. The PRS shall recommend corrective action to resolve the issues or achieve compliance with the COCs.

For any significant paleontological resources encountered, either the project owner or the PRS shall notify the CPM within 24 hours. If the resources are encountered on a weekend or holiday, notification shall occur on the morning of the next business day. In the event construction has been stopped because of a paleontological find, such notification shall be provided as soon as practical, but not later than 24 hours after a stop work order has been issued.

For excavations planned in material that is classified as having a moderate to high paleontological sensitivity prior to construction additional precautions may be required. Should excavation methods be proposed that would preclude effective monitoring and examination of paleontological resources encountered during excavation, appropriate mitigation involving education of the public about the lost resources shall be proposed in the PRMMP.

The project owner shall ensure that the PRS prepares a summary of monitoring and other paleontological activities to be included in each MCR. The summary shall include the name(s) of the PRS or PRM(s) active during the month, general descriptions of training and monitored construction activities, and general locations of excavations, grading, and other activities. A section of the report shall include the geologic units or subunits encountered, descriptions of samplings within each unit, and a list of identified fossils.

Negative findings, when no fossils are identified, shall also be reported. A final section of the report shall address any issues or concerns about the project relating to palaeontologic monitoring, including any incidents of non-compliance or any changes to the CPM-approved monitoring plan. If no monitoring took place during the month, the report shall include an explanation in the summary as to why monitoring was not conducted.

Verification: A copy of the daily monitoring log of paleontological resource activities shall be included in the MCR.

The project owner shall ensure that the PRS submits the summary of monitoring and paleontological activities in the MCR. When feasible, the CPM shall be notified 15 days in advance of any proposed changes in monitoring different from that identified in the PRMMP, which require concurrence between the PRS

and CPM. If there is any unforeseen change in monitoring, the notice shall be given as soon as possible prior to implementation of the change.

PAL-7 The project owner shall ensure preparation of a paleontological resources report (PRR) by the designated PRS. The PRR shall be prepared following the completion of ground-disturbing activities. The PRR shall include an analysis of the collected fossil materials and related information and shall be submitted to the CPM for approval.

The report shall include, but not be limited to, a description and inventory of recovered fossil materials, a map showing the location of paleontological resources encountered and the PRS's description of sensitivity and significance of those resources, and notes regarding if and how the fossil material was curated in accordance with COC **PAL-3**.

Any portions of this report that involve any independent judgment or analysis of the earth's crust, and the rocks and other materials which compose it, must be done by or under the responsible charge of a California licensed Professional Geologist.

Verification: Within 90 days after completion of ground-disturbing activities, including landscaping, the project owner shall submit the PRR under confidential cover to the CPM for review.

PAL-8 The project owner, through the designated PRS, shall ensure that all components of the PRMMP are adequately performed, including collection of fossil material, preparation of fossil material for analysis, analysis of fossils, identification and inventory of fossils, preparation of fossils for curation, and delivery for curation of all significant paleontological resource materials encountered and collected during project construction. The project owner shall pay all curation fees charged by the museum for fossil material collected and curated because of paleontological mitigation. The project owner shall also provide the curator with documentation showing the project owner irrevocably and unconditionally donates, gives, and assigns permanent, absolute, and unconditional ownership of the fossil material.

Verification: Within 60 days after the submittal of the PRR, the project owner shall submit documentation to the CPM identifying the entity that would be responsible for curating collected specimens. This documentation shall also show that fees were paid for curation and the owner relinquished control and ownership of all fossil material.

5.6.7 References

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5.7 Hazards, Hazardous Materials, Hazardous Waste, and Wildfire

Testimony of Alvin J. Greenberg

This section describes the hazards, hazardous materials, hazardous waste, and wildfire characteristics of the proposed project, evaluates the type of significance of impacts that could occur because of the proposed project, and identifies measures to avoid or reduce any impacts to less than significant.

5.7.1 Environmental Setting

Existing Conditions

The Willow Rock Energy Storage Center (WRESC, or Willow Rock) would be on approximately 88.6 acres of private land immediately north of Dawn Road and between State Route (SR) 14 and Sierra Highway within unincorporated, southeastern Kern County, California. Energy from this project would be delivered to Southern California Edison's Whirlwind Substation southwest of the WRESC at the intersection of 170th Street W and Rosamond Boulevard, via a new approximately 19-mile 230-kilovolt (kV) generation-tie (gen-tie) line. The WRESC would be capable of operating on a 24-hour basis, 365 days a year with an approximately 50-year lifespan (ESHD 2024i).

The project area includes an Operations & Maintenance (O&M) building, compressed air power generators, heat exchangers, pressure vessels, piping, tubing, an underground cavern, a water-compensating reservoir, pumps, a new switchyard, and the right-of-way associated with the gen-tie (transmission) line. It also includes the land around the site allocated for potential temporary staging and laydown area or the construction of a permanent architectural berm constructed from the material excavated during cavern construction. This analysis does not include the connection to the Southern California Edison's (SCE's) Whirlwind Substation as that is a pre-existing substation.

The California Department of Forestry and Fire Protection (CAL FIRE) has not assigned a Fire Hazard Severity Zone (FHSZ) rating for the area encompassing the WRESC and the gen-tie line (ESHD 2024h). The WRESC Site does not fall within a State Responsibility Area (SRA).

Hazardous Materials

Hazardous materials are defined by federal and state regulations that aim to protect public health and the environment. Hazardous materials have certain chemical, physical, or infectious properties that cause them to be considered hazardous. For purposes of this section, the term "hazardous materials" refers to both hazardous substances and hazardous wastes. Under federal and state laws, any material, including wastes, may be considered hazardous if it is specifically listed by statute as such or if it is toxic (causes adverse human health effects), ignitable (has the ability to burn), corrosive (causes

severe burns or damage to materials), or reactive (causes explosions or generates toxic gases). Hazardous substances are defined in the federal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 101(14), and also in the California Health and Safety Code Health and Safety Code - HSC § 25501 (n)(1), which provides the following definition: *A hazardous material is a substance or combination of substances which, "because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment, or a material specified in an ordinance adopted pursuant to paragraph (3)."*

The WRESC project would involve limited transport, storage, use, and disposal of hazardous materials during construction, operation and maintenance, and decommissioning activities. The amounts of hazardous materials used and hazardous waste produced during construction, operations, and decommissioning are far less than those found at other types of energy production projects, thus reducing the risks posed by hazardous materials and wastes on workers and the public. As an example, no chemicals that would require either adherence to the California Accidental Release Prevention Program (CalARP Program) or the CAL OSHA Process Safety Management Program would be used on this site (ESHD 2024h).

Examples of hazardous materials that may be used during construction, operation and maintenance, and decommissioning activities would include unleaded gasoline, diesel fuel, oil, lubricants (motor oil, transmission fluid, and hydraulic fluid), solvents, adhesives, paint materials, and explosives. Operation and maintenance of the project would not require as many hazardous materials as construction or decommissioning and would include mostly water treatment chemicals. All hazardous materials would be transported, stored, handled, and used in accordance with applicable laws, ordinances, regulations, and standards (LORS). A summary of hazardous materials that could be used for the project during construction, operation, and maintenance is presented in **Table 5.7-1.**

Project Hazardous Materials Use. Storage locations for the hazardous materials that would be used during construction and operations are described in **Table 5.7-1**. Hazardous materials that would be used during construction and operations are summarized in **Table 5.7-2**, including trade names, chemical names, Chemical Abstract Service (CAS) numbers, maximum quantities on-site, reportable quantities (RQ), CalARP threshold planning quantities (TPQ), and status as Proposition 65 chemicals (chemicals known to be carcinogenic or cause reproductive problems in humans) (ESHD 2024h). Health hazards, toxicity, flammability, and chemical incompatibility information are summarized for these materials in **Table 5.7-3**.

TABLE 5.7-1 USE AND LOCATION OF HAZARDOUS MATERIALS

Chemical Name	Use/Purpose	Quantity	Storage Location	State	Type of Storage Container	Project Phase
Diesel (dyed and clear)	Vehicle use and emergency generator	8,000 gallons (dyed), 2,000 gallons (clear)	Onsite	Liquid	Aboveground storage tanks (ASTs)	Construction and/or O&M
Deisel Exhaust Fluid (DEF)	Construction Vehicle Maintenance Fluids	250-gallon tote		Liquid		
ChemTreat BL 1280	Thermal Management System Water Treatment	70 gallons/ 180 gallons	Onsite	Liquid	Continuously onsite	Construction and/or O&M
ChemTreat BL 1559	Thermal Management System Water Treatment	30 gallons/ 180 gallons	Onsite, tight, closed container, cool, and locked	Liquid	Continuously Onsite	Construction and/or O&M
ChemTreat CL 2900	Cooling Water Treatment	8,400 gallons/ 660 gallons	Onsite	Liquid	Continuously Onsite	Construction and/or O&M
ChemTreat CL 2150	Slimicide	5,200 gallons/ 660 gallons	Onsite, store locked	Liquid	Continuously Onsite	Construction and/or O&M
Sodium Hypochlorite	Oxidant Wash, Chlorination, Pre-chlorination	180 gallons/ 180 gallons	Onsite	Liquid	Continuously Onsite	Construction and/or O&M
Adhesives	Construction and O&M	NA	O&M Building	Liquid, Solid	Bottles	Construction and/or O&M
Sealants	Construction and O&M	NA	O&M Building	Liquid	Bottles	Construction and/or O&M
Hydraulic fluids	O&M		Transformers	Liquid	Cans, ASTs	O&M
Gasoline	Fueling Equipment	2000 gallons		Liquid	Cans	Construction

TABLE 5.7-1 USE AND LOCATION OF HAZARDOUS MATERIALS

Chemical Name	Use/Purpose	Quantity	Storage Location	State	Type of Storage Container	Project Phase
Lubricants	Construction and O&M	NA	NA	Liquid	Cans, ASTs	Construction and/or O&M
Explosives	Cavern construction	NA	Magazines on the surface	Solid	Metal, wood, or masonry as per 8 CCR § 5252	Cavern Construction
Caps and detonators	Cavern Construction	NA	Separate magazines on the surface	Solid	Metal, wood, or masonry as per 8 CCR § 5252	Cavern Construction

Source: Hydrostor and Kiewit 2024

TABLE 5.7-2 CHEMICAL INVENTORY, DESCRIPTION OF HAZARDOUS MATERIALS ON-SITE AND REPORTABLE QUANTITIES

Trade Name	Chemical Name	CAS Number	Maximum Quantity On-site	CERCLA SARA RQ[a]	RQ of Material as Used On-site[b]	EHS TPQ [c]	Federal/ State Regulated Substance TQ[d]	Prop 65
ChemTreat BL 1280	Diemethyl-hydroxidylamine and hydroquinone	3710-84-7, 123-31-9	180 gallons	100 lbs	157 gallons	500 or 10,000	See note [e] / 500 or 10,000 lbs	No
ChemTreat BL 1559	Cyclohexylamine. Methoxypropylamine	108-91-8, 5332- 73-0	180 gallons	See note [e]	See note [e]	10,000	15,000 lbs / 10,000 lbs	No
ChemTreat CL 2900	Sodium Molybdate	7631-95-0	8,400 gallons	See note [e]	See note [e]	See note [e]	See note [e] / See note [e]	No
ChemTreat CL 2150	5-chloro-2-methyl-4-isothiazolin-3-one, 2-methyl-4-isothiazolin-3-one	26172-55-4, 2682-20-4	5,200 gallons	See note [e]	See note [e]	See note [e]	See note [e] / See note [e]	No
Sodium Hypochlorite	Hypochlorous Acid	7681-52-9	180 gallons	100 lbs	See note [e]	See note [e]	See note [e] / See note [e]	No
Diesel Fuel	Diesel Fuel	68476-34-6	11,800 gallons	See note [e]	25 gallons	See note [e]	See note [e] / See note [e]	Yes
Hydraulic fluid (FR3 natural ester fluid)	FR3	None	427,380 gallons	42 gallons[e]	42 gallons[e]	--	--	No

Notes:
a RQs are for a pure chemical, per CERCLA SARA (ref. 40 Code of Federal Regulations (CFR) Section 302, Table 302.4). Releases equal to or greater than the RQ must be reported. Under California law, any amount that has a realistic potential to adversely affect the environment and human health or safety must be reported.
b Applicated calculated RQ for materials as used onsite. Because some of the hazardous materials are mixtures that contain only a percentage of an RQ, the RQ of the mixture can be different than for a pure chemical. For example, if a material only contains 10 percent of a reportable chemical and the RQ is 100 lbs., the RQ for that material would be (100 lbs.)/(10 percent) = 1,000 lbs.
c EHS TPQ (ref. 40 CFR Part 355, Appendix A). If quantities of EHS materials equal to or greater than the TPQ are handled or stored on-site, they must be registered with the local Administering Agency (i.e., Kern County Public Health Department – CUPA/Hazardous Materials Handling Program).
d TQ is from Title 19 CCR Section 2770.5 (state) or Title 40 CFR Section 68.130 (federal).
e No reporting requirements. The chemical has no listed threshold under this requirement. NA: not available
f Source from California Office of Environmental Health Hazard Assessment, The Proposition 65 List
g These extremely hazardous substances are solids. The lesser quantity listed applies only if in powdered form and with a particle size of less than 100 microns; or if handled in solution or in molten form; or the substance has a National Fire Protection Association rating for reactivity of 2, 3, or 4. Otherwise, a 10,000-lb threshold applies. The exemption in Section 2770.2(b)(1)(B) regarding portions of a process where these regulated substances are handled at partial pressures below 10 millimeters of mercury does not apply to these substances.
ºC = degrees Celsius
ºF = degrees Fahrenheit
CAS: Chemical Abstract Service CCR: California Code of Regulations
CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act CFR: Code of Federal Regulations
EHS: Extremely Hazardous Substances Lbs: pounds
Prop 65: Proposition 65 RQ: Reportable Quantity
SARA: Superfund Amendments and Reauthorization Act TPQ: Threshold Planning Quantity
TQ: Threshold Quantity
RQ: Reportable Quantity
TPQ: Threshold Planning Quantity
WRESC: Willow Rock Energy Sorge Center
NA: Not Available
Source: Hydrostor and Kiewit 2024

TABLE 5.7-3 TOXICITY, REACTIVITY, AND FLAMMABILITY OF HAZARDOUS SUBSTANCES STORED ON-SITE

Hazardous Material	Physical Description	Health Hazard/Toxicity	Reactivity and Incompatibilities	Flammability
ChemTreat BL 1280	Liquid, straw-colored, clear	Acute health hazard: eye and skin irritation. Acute toxicity if inhaled or ingested.	None	Not flammable
ChemTreat BL 1559	Liquid, clear, colorless	Corrosive, acute toxicity, health hazard.	Acids, strong oxidizing agents, aluminum	Flammable
ChemTreat CL 2900	Liquid, clear, colorless	May be harmful in contact with skin. May be harmful if inhaled. Harmful if swallowed.	None	Not flammable
ChemTreat CL 2150	Liquid, green, clear	Causes skin irritation. May cause an allergic skin reaction. Causes serious eye irritation.	Strong oxidizers, strong bases	Not flammable
Sodium Hypochlorite	Liquid, clear/pale greenish-yellow	Causes severe burns to the mouth and throat (mist). May release toxic and irritating chlorine gas. Causes burns to the mouth and throat. Causes severe skin burns. Causes serious eye damage.	May be corrosive to metals. Reacts violently with acids and oxidizing agents, such as oxygen, hydrogen peroxide, sulfuric and nitric acids, and permanganates. Reducing agents, such as hydrogen, sodium borohydride, sulfur dioxide, thiosulphates, hydrazine, phosphites, carbon, and oxalic, formic, and ascorbic acid. Organic material, such as wood, paper, gasoline, diesel, solvents, and some glycol-based heat transfer fluids. Metals, such as aluminum, steel, and brass.	Not flammable

TABLE 5.7-3 TOXICITY, REACTIVITY, AND FLAMMABILITY OF HAZARDOUS SUBSTANCES STORED ON-SITE

Hazardous Material	Physical Description	Health Hazard/Toxicity	Reactivity and Incompatibilities	Flammability
Diesel Fuel	Liquid, straw, clear	Flammable liquid and vapor. Harmful if inhaled. Causes skin irritation. Suspected of causing cancer. Suspected of damaging fertility or injuring an unborn child. May cause damage to organs (blood, thymus, liver) through prolonged or repeated exposure. May be fatal if swallowed and entering airways.	None	Flammable
Paint	Refer to individual chemical labels	Refer to individual chemical labels	Refer to individual chemical labels	Refer to individual chemical labels
Sealants	Refer to individual chemical labels	Refer to individual chemical labels	Refer to individual chemical labels	Refer to individual chemical labels
Hydraulic fluid (FR3 natural ester fluid)	Light green liquid	Minimal irritation or no effect	Strong oxidizers, Strong Alkali	Combustible
Gasoline	Transparent to light yellow liquid	Carcinogenic, may cause irritation to skin, nose, throat, and lungs	Strong oxidizers	Flammable
Coolant	Refer to individual chemical labels	Refer to individual chemical labels	Refer to individual chemical labels	Refer to individual chemical labels
Lubricants	Refer to individual chemical labels	Refer to individual chemical labels	Refer to individual chemical labels	Refer to individual chemical labels

Notes:
a In accordance with Caltrans regulations, under 49 CFR Section 173: flammable liquids have a flash point less than or equal to 141°F; combustible liquids have a flash point greater than 141°F
Source: Hydrostor and Kiewit 2024

Hazardous wastes produced during both construction and operations would be considerably less that the amounts of non-hazardous wastes produced by the project, as shown in Tables 5.14-1 and 5.14-2 (ESHD 2024h). By far, the greatest amount of hazardous waste generated during both construction and operations would consist of used lubricating and insulating oil from machinery, transformers, small leaks and spills, oil-spill rags and sorbents, and filters. These hazardous wastes would not be stored onsite for more than 90 days and would be removed from the site by licensed and registered hazardous wastes haulers.

Environmental Contamination. Existing and past land use activities are commonly used as indicators of sites or areas where hazardous material storage and use may have occurred or where potential environmental contamination may exist. For example, many historic and current industrial sites have soil or groundwater contaminated by hazardous substances. Other hazardous materials sources include leaking underground tanks in commercial and rural areas, contaminated surface runoff from polluted sites, and contaminated groundwater plumes.

As discussed in the supplemental application section 5.6, Land Use (ESHD 2024h), the immediate vicinity is dominated by undeveloped or empty lots of land. The nearest residence is approximately two miles west of the site and no schools or medical facilities are present within a 3-mile radius of the WRESC Site. Further details on the land use are included in **Section 5.8, Land Use, Agricultural and Forestry**.

As is typical for any development where land disturbance is expected, a Phase I Environmental Site Assessment (ESA) was conducted and revealed no evidence of recognized environmental conditions (REC) (GA 2021y). The Phase I ESA (report dated July 27, 2021) was not conducted in accordance with the current methods prescribed by the American Society for Testing and Materials (ASTM) document entitled "*Standard Practice for Environmental Site Assessments: Phase 1 Environmental Site Assessment Process (Designation: E 1527-21)*" which the US EPA adopted in March 2022, but was conducted in accordance with the then-current standard ASTM E 1527-13. Staff concludes that the differences between the older and updated versions do not affect the validity of the assessment.

At staff's request, the applicant conducted a limited Phase I ESA along the gen-tie corridor (WSP 2024bb). This report examined the potential for existing RECs along the preferred 19-mile route by examining the Phase I ESAs prepared for other industrial/commercial properties along the route for any indication of environmental contamination. It found none existed.

Hazardous Waste Sites. The State Water Resources Control Board (SWRCB) GeoTracker database was searched for evidence of known contamination within the vicinity of the WRESC Project. The closest identified cleanup site is approximately 2.6 miles southeast of the Project Boundary near the intersection of Lode Starr Road and Willow Springs Road, within Edwards Air Force Base. The cleanup site status is open for verification monitoring (SWRCB 2023). The SWRCB assigns the status of open for

verification monitoring to sites in which "remediation phases are essentially complete, and a monitoring/sampling program is occurring to confirm successful completion of cleanup at the site" (SWRCB 2023).

An examination of the California Environmental Protection Agency Cortese List Data Resources (Cortese List) showed that no Cortese List sites are within a 2.5-mile radius of the site (SAFC vol 1 part A). Thus, it is highly unlikely that any impacts will result from Cortese-listed properties.

Government Code section 65962.5 was originally enacted in 1985 and established a list of contaminated sites; a site's presence on the list may have bearing on the local permitting process, as well as on compliance with CEQA. Although originally just a single list, the term now refers to a group of lists that can be accessed in various locations. For those requesting a copy of the Cortese List, the California Environmental Protection Agency (CalEPA) now refers users to the following data resources:

- *List of Hazardous Waste and Substances sites from the Department of Toxic Substances Control (DTSC) EnviroStor database*
- *List of Leaking Underground Storage Tanks from the State Water Board's GeoTracker database*
- *List of solid waste disposal sites identified by Water Board with waste constituents above hazardous waste levels outside the waste management unit*
- *List of "active" Cease and Desist Orders and Cleanup Abatement Orders*
- *List of hazardous waste facilities subject to corrective action pursuant to Section 25187.5 of Health and Safety Code, identified by DTSC.*

Applicant's review of these sources determined that there are no sites currently on the Cortese List within 1,000 feet of the WRESC site. The closest listed site is Osage Industries, approximately 3.04 miles west from the center of the proposed site which was remediated and found to have no groundwater plume. Thus, it is highly unlikely that any impacts will result from Cortese-listed properties or that the WRESC site would present a significant hazard to the public or the environment.

Land Use and Sensitive Receptors. The WRESC is about 3.5 miles north of Rosamond, California and the immediate vicinity is undeveloped or empty lots of land. The nearest residence is approximately two miles west of the WRESC site. No schools or medical facilities are present within a three-mile radius of the WRESC site. A small landing airport is 2.61 miles northwest of the WRESC site, and a few businesses are present southwest of the WRESC site in the area surrounding Rosamond Boulevard (ESHD 2024h). Further details are included in **Section 5.8, Land Use Agriculture and Forestry**.

No sensitive receptors, including schools, hospitals, daycare facilities, emergency response facilities, and long-term health care facilities, are within a 0.5-mile radius of

the WRESC site. No residences are within close proximity of the WRESC Site, with undeveloped parcels dominating the surrounding area.

Airports. The WRESC site is approximately 3.75 miles northwest of the closest runway edge at Rosamond Skypark (ESHD 2024h, section 5.6.2.2.5 Community Airport).

Schools. The nearest school is Rare Earth High School, approximately 3.7 miles southwest of the site. The proposed transportation route for delivery of hazardous materials and regulated materials to the WRESC would avoid the school, if possible. Transportation permits will be obtained for all heavy and oversize loads, as required by jurisdictional agencies. Proposed transportation routes for hazardous material deliveries are discussed in **Section 5.14, Transportation**.

Emergency Evacuation Routes. Kern County has published its 2020 update to the Kern Multi-Jurisdiction Hazard Mitigation Plan which was also approved by the Federal Emergency Management Agency on April 9, 2021 (Kern County 2020). Approximately 62 other jurisdictions participated in the plan to reduce losses resulting from natural disasters. The WRESC has stated that it would adhere to all safety practices addressed in the plan (ESHD 2024g, section 5.5.2.6).

Wildfire

Fire Hazard Mapping

CAL FIRE Hazard Severity Zones. The California Department of Forestry and Fire Protection (CAL FIRE) identifies, and maps areas of significant fire hazards based on fire history, existing and potential fuel (natural vegetation), predicted flame length, blowing embers, terrain, typical fire weather for the area, and other relevant factors. The maps identify this information as a series of Fire Hazard Severity Zones (FHSZ), which are progressively ranked as un-zoned, moderate, high, and very high zones. (CAL FIRE 2024).

Wildland FHSZ in California are divided into State, local, or federal government responsibility areas. State Responsibility Areas (SRA) are locations where the financial responsibility of preventing and suppressing fires falls primarily on the State. The WRESC Site does not fall within a State Responsibility Area (SRA); the closest SRA is one mile west of the SCE Whirlwind Substation, which is at the end of the gen-tie line, approximately 19 miles southwest of the WRESC Site.

California Public Utilities Commission (CPUC) High Fire-Threat District Map. The CPUC has adopted over the last two decades a series of fire safety rules which includes the preparation of Fire-Threat and High Fire-Threat District (HFTD) Maps and the identification, evaluation, and adoption of more fire-safety regulations for the HFTDs (CPUC 2024). Areas mapped as high fire threat are required (under CPUC General Orders 95, 165, and 166) to have increased patrols along overhead lines, increased vegetation clearances and frequency of vegetation clearance, increased inspections of aerial communications facilities, and increased maintenance and repairs

to correct fire hazards. The HFTD maps identify three tiers of fire threat/risk: Tier 1 zones near communities, roads, and utility lines, and are a direct threat to public safety; Tier 2 fire-threat areas outline areas where there is a higher risk (including likelihood and potential impacts on people and property) from utility related wildfires; and Tier 3 fire-threat areas outline areas where there is an extreme risk (including likelihood and potential impacts on people and property) from utility related wildfires. The WRESC Site is not in a CPUC Fire Threat District. The nearest CPUC Fire Threat District is about 0.75 miles west of the nearest transmission line.

Fire Management Plans. CAL FIRE requires counties within the state to develop fire protection management plans that address potential threats of wildland fires. The Kern County Wildland Fire Management Plan identifies federal, State, and local responsibility areas for the entire County to facilitate coordination efforts for fire protection services. The WRESC will falls within CAL FIRE's Kern County Management Unit and thus be covered by the Kern County Unit Fire Management Plan (KCFD 2023a).

Fire History. The WRESC and gen-tie line would be in the Kern County Fire Department (KCFD) Tehachapi Management Area. Historically, many larger fires have originated in this area; however, residential development has reduced the number of large fires in recent years. Most fires in the county have been relatively small (i.e., 300 acres or less), and just 10 percent have been greater than 300 acres in area.

Most fires in Kern County occur from May to September, when temperatures are high and hot and dry winds are most frequent. However, fire seasons are increasing in length due to climate change, which results in warmer spring and summer temperatures, decreased snowpack, and earlier spring snow melt. In its Community Wildfire Prevention Plan, Kern County has identified focus areas in the Tehachapi Mountains with historical fire risk within the Tehachapi Management Area. The WRESC and its connecting gen-tie lines would not be within a focus area. The closest focus area is approximately 13 miles northwest of the proposed WRESC Site and approximately 8 miles northwest of the nearest transmission line. The community of Rosamond has been identified as a Community at Risk by the California Fire Alliance. The KCFD has performed fuel-reduction activities on thousands of acres in and around Communities at Risk (Kern County 2022).

Regulatory

Laws, ordinances, regulations, and standards (LORS) related to hazardous materials, hazardous waste, aviation safety, hazards, and wildfire are summarized below. Details regarding federal, state, and local LORS that apply to the project are included. Staff's analysis of project compliance with these LORS is presented in **Table 5.7-4** Conformance with Applicable LORS.

Federal

Resource Conservation and Recovery Act. The Resource Conservation and Recovery Act (RCRA) (42 U.S.C. § 6901 et seq.) authorizes the EPA to control

hazardous waste from “cradle to grave” (generation, transportation, treatment, storage, and disposal). The EPA approved California’s RCRA program, referred to as the Hazardous Waste Control Law (Health and Safety Code § 25100 et seq.) in 1992.

Toxic Substances Control Act. The Toxic Substances Control Act (TSCA) (15 U.S.C. § 2601 2692) authorizes the EPA to require reporting, record-keeping, testing requirements, and restrictions related to chemical substances and/or mixtures. It also addresses production, importation, use, and disposal of specific chemicals, such as poly-chlorinated biphenyls (PCBs), asbestos-containing materials, lead-based paint, and petroleum.

Comprehensive Environmental Response, Compensation, and Liability Act. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 U.S.C. § 9601 et seq), including the Superfund program, provides broad federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment.

The Superfund Amendments and Reauthorization Act (SARA) amends CERCLA and governs hazardous substances. One of the most important parts of SARA is Title III, otherwise known as the Emergency Planning and Community Right-to-Know Act, which requires states to establish a process for developing local chemical emergency preparedness programs and to receive and disseminate information on hazardous substances present at facilities in local communities. The law provides primarily for planning, reporting, and notification concerning hazardous substances present and accidental releases.

Department of Transportation. The United States Department of Transportation (DOT) is the primary federal agency responsible for regulating the proper handling and storage of hazardous materials during transportation (Title 49 CFR §§ 171-177 and 350-399).

Clean Water Act. The Clean Water Act (CWA) is the principal federal statute protecting navigable waters and adjoining shorelines from pollution. The law was enacted with the intent of restoring and maintaining the chemical, physical, and biological integrity of the waters of the United States. Since its enactment, the CWA has formed the foundation for regulations detailing specific requirements for pollution prevention and response measures. The EPA implements provisions of the CWA through a variety of regulations, including the National Contingency Plan, and the Oil Pollution and Prevention Regulations. Implementation of the CWA is the responsibility of each state.

As part of the CWA, the EPA oversees and enforces the Spill Prevention, Control, and Countermeasure Plans because the regulations describe the requirements for facilities to prepare, amend, and implement SPCC Plans. A facility is subject to SPCC regulations if the total above ground oil storage capacity exceeds 1,320 gallons, or the underground oil storage capacity exceeds 42,000 gallons, and if, due to its location, the

facility could reasonably be expected to discharge oil into or upon the "navigable waters" of the United States.

Federal Aviation Administration. The Federal Aviation Administration (FAA) Part 77—Safe, Efficient Use, And Preservation of The Navigable Airspace (49 CFR Part 77) establishes standards and notification requirements for objects that may impact navigable airspace. Non-department of defense airports and navigable airspace are under the jurisdiction of the FAA. This regulation includes standards involving obstructions to air navigation, such as utility transmission lines in excess of 200 feet above ground level.

Hazardous Materials Transportation Act. DOT, in conjunction with the EPA, is responsible for enforcement and implementation of federal laws and regulations pertaining to safe storage and transportation of hazardous materials under the Hazardous Materials Transportation Act (HMTA) 49 U.S.C. 5101-5128. DOT regulations implementing the Act (49 CFR parts 171-180), regulate the transportation of hazardous materials, types of material defined as hazardous, and the marking of vehicles transporting hazardous materials. This also includes regulations relevant to the storage of explosives, as well as the packaging, labeling, materials compatibility, driver qualificators, and safety of transported explosives.

Bureau of Alcohol Tobacco Firearms and Explosives (ATF) and Mine Safety and Health Administration (MSHA). ATF is a law enforcement agency in the United States' Department of Justice that protects the communities from violent criminals, criminal organizations, the illegal use and trafficking of firearms, the illegal use and storage of explosives, acts of arson and bombings, acts of terrorism, and the illegal diversion of alcohol and tobacco products. ATF partners with communities, industries, law enforcement, and public safety agencies to safeguard the public we serve through information sharing, training, research, and use of technology.

State

California Environmental Protection Agency. The California Environmental Protection Agency (CalEPA), created in 1991, unified California's environmental authority in a single cabinet-level agency and brought the California Air Resources Board (CARB), SWRCB, RWQCBs, Integrated Waste Management Board, DTSC, Office of Environmental Health Hazard Assessment, and Department of Pesticide Regulation under one agency. These agencies under the CalEPA "umbrella" provide protection of human health and the environment and ensure the coordinated deployment of state resources. Their mission is to restore, protect and enhance the environment, to ensure public health, environmental quality, and economic vitality.

The California Hazardous Waste Control Law (HWCL). CalEPA administers the California Hazardous Waste Control Law to regulate hazardous wastes. The Hazardous Waste Control Law lists 791 chemicals and about 300 common materials that may be hazardous; establishes criteria for identifying, storing and labeling hazardous wastes;

prescribes management controls; establishes permit requirements for treatment, storage, disposal and transportation of hazardous waste; and identifies some hazardous wastes that cannot be disposed of in landfills.

Department of Toxic Substances Control. DTSC is a department of CalEPA and is the primary agency in California that regulates hazardous waste, clean-ups existing contamination, and looks for ways to reduce the hazardous waste produced in California. DTSC regulates hazardous waste in California primarily under the authority of HWCL. The HWCL and implementing regulations establish criteria for identifying, packaging, and labeling hazardous wastes; prescribe management of hazardous waste; establish permit requirements for hazardous waste treatment, storage, disposal, and transportation; and identify hazardous waste that cannot be disposed of in landfills.

Porter-Cologne Water Quality Act. This state law provides a comprehensive water quality management system for the protection of California waters. The act designates the SWRCB as the ultimate authority over State water rights and water quality policy and also established nine RWQCBs to oversee water quality on a day-to-day basis at the local and regional level. The RWQCBs have the responsibility of granting NPDES permits and setting waste discharge requirements for stormwater runoff from construction sites.

Unified Hazardous Waste and Hazardous Materials Management Regulatory Program. Regulations implementing a Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Unified Program) address six elements: hazardous waste generators and hazardous waste onsite treatment; underground storage tanks; aboveground storage tanks; hazardous materials release response plans and inventories; risk management and prevention programs; and Unified Fire Code hazardous materials management plans and inventories (Health and Safety Code, § 25404 et seq.). The Unified Program requires CalEPA to certify local government agencies, known as Certified Unified Program Agencies (CUPAs) as able to implement all the required environmental programs and to consolidate, coordinate and make them consistent within their jurisdiction. State partner agencies involved in the implementation of the Unified Program and providing technical assistance to CUPAs include CalEPA, CAL FIRE, DTSC, and SWRCB. The CUPA for the project area is the Kern County Public Health Services Department, HazMat Program.

California Division of Occupational Safety and Health Administration. The California Occupational Safety and Health Administration (CAL OSHA) is the primary agency responsible for worker safety. They oversee the handling and use of hazardous substances (Cal. Code Regs., tit. 8, §§ 5139-5223), and the protection of workers exposed to wildfire smoke (Cal. Code Regs., tit. 8, § 5141.1). Cal/OSHA standards are generally more stringent than federal regulations. Under Sections 337-339, employers are required to monitor worker exposure to listed hazardous substances and notify workers of exposure. The regulations under Sections 337-339 specify requirements for employee training, availability of safety equipment, accident-prevention programs, and hazardous substance exposure warnings. Section 5141.1 requires identification or

harmful exposures, a system for communicating wildfire smoke hazards, and training and instruction about wildfire smoke hazards.

California Public Utilities Commission. The California Public Utilities Commission (CPUC) regulates private investor-owned utilities in the state of California. The following CPUC General Orders are applicable to the project:

- **General Order 95.** CPUC General Order 95 applies to construction and reconstruction of overhead electric lines. General Order 95 includes Rules which apply to overhead electric lines in Tier 2 or Tier 3 HFTDs, which include corrective actions, maintenance, increased inspection, vegetation management to establish clearances, and establishment of minimum vertical, horizontal, and radial clearances of wires from other wires.
- **General Order 165.** General Order 165 establishes requirements for the inspection of electric distribution and transmission facilities that are not contained within a substation. A "Patrol" inspection, defined as a simple visual inspection of utility equipment and structures that is designed to identify obvious structural problems and hazards, must be performed at least once per year for each piece of equipment and structure. "Detailed" inspections, where individual pieces of equipment and structures are carefully examined, are required every 5 years for all overhead conductor and cables, transformers, switching/protective devices, and regulators/capacitors. A utility subject to this General Order must submit an annual report of its inspections by July 1 of each year for the previous year.
- **General Order 166.** General Order 166 requires that Investor-Owned Utilities (IOUs) develop a Fire Prevention Plan, which describes measures that the electric utility will implement to mitigate the threat of power line fires. Under General Order 166 the IOUs are required to outline a plan to mitigate power line fires when wind conditions exceed the structural design standards of the line during a Red Flag Warning in a high fire threat area. IOUs are also required to prepare an emergency response plan. Further, utilities are required to report annually to the CPUC regarding compliance with General Order 166.

Defensible Space and the Fire Safe Regulations. State law requires a minimum clearance (defensible space) of 100-feet around structures (Pub. Res. Code §§ 4290, 4291). Implementing regulations (the "Fire Safe Regulations") provide related requirements to be implemented in a SRA including road standards for fire equipment access (Cal. Code Regs., tit. 14, § 1273 et seq.); standards for signs identifying streets, roads, and buildings (Cal. Code Regs., tit. 14, § 1274 et seq.); requirements for minimum private water supply reserves for emergency fire use (Cal. Code Regs., tit. 14, § 1275 et seq.); and requirements for fuel breaks such as defensible space and greenbelts (Cal. Code Regs., tit. 14, §§ 1272, 1276 et seq.).

California Public Resources Code – Fire Protection. The California Public Resources Code (PRC) Division 4, Part 2 – Protection of Forest, Range, and Forage

Lands includes prohibited activities, fire safety and prevention provisions that apply to SRAs, forested areas, timber harvesting areas, and high fire danger areas.

Department of California Highway Patrol. The Department of California Highway Patrol is the primary agency responsible for enforcing the regulations related to the transport of hazardous materials on California roads and highways (Cal. Code Regs., tit. 13, §§ 1160-1167).

Hazardous Materials Release Response Plans and Inventory Law. The California Hazardous Materials Release Response Plan and Inventory Law of 1985 (Business Plan Act, Health and Safety Code § 25500 et seq.) requires businesses that store or use hazardous materials to prepare a Hazardous Materials Business Plan (HMBP) and submit it to the CUPA. An HMBP includes details of a facility and business conducted at the site, an inventory of hazardous materials that are handled and stored on-site, an emergency response plan, and a safety and emergency response training program for new employees with an annual refresher course.

California Accidental Release Prevention Program. Under the California Accidental Release Prevention Program (CalARP) regulations, facilities that store extremely hazardous substances or regulated substances above the threshold quantities must register with the CalARP Program and submit a Risk Management Plan (RMP).

Aboveground Petroleum Storage Act Program. The aboveground petroleum storage act (ASPA) program requires tank facilities storing greater than 1,320 gallons of petroleum to develop and implement the SPCC Plan requirements (CFR 2023). A tank facility is any tank or tanks that are aboveground, including connected piping, that contain petroleum and are used by an owner or operator at a single location or site, is in secondary containment, and it is used to hold oil. The CUPA regulates businesses storing petroleum in aboveground containers or tanks (California Health & Safety Code, Chapter 6.67, Sections 25270-25270.13).

Health and Safety Code Section 25500. Requires local governments to regulate local business storage of hazardous materials in excess of certain quantities. The law also requires that entities storing hazardous materials be prepared to respond to releases. Those using and storing hazardous materials are required to submit an HMBP to the California Environmental Reporting System (CERS) online database to be reviewed and approved by their local CUPA.

Proposition 65. This California law requires the state to identify chemicals that cause cancer and reproductive toxicity, contains requirements for informing the public of the presence of these chemicals, and prohibits discharge of the chemicals into sources of drinking water. Lists of the chemicals of concern are published and updated periodically by California's Office of Environmental Health Hazard Assessment. The most recent list was published January 3, 2025.

Local

Kern County and Incorporated Cities Hazardous Waste Management Plan. This plan was adopted in May 1991 and has been added as an amendment to the Kern County General Plan. The plan also applies to incorporated cities state and federal lands.

Kern County Public Health Services Department - Hazardous Materials Program. This is the designated CUPA for Kern County. The WRESC Project is subject to the requirements of the HMBP program, Aboveground Petroleum Storage Tank Program, and Hazardous Waste Programs administered and inspected by the CUPA.

Kern County General Plan: The Kern County's Hazardous Materials Program requirements concerning storage and handling of hazardous materials and wastes is applicable to this project including the Safety Element (sections 4.1-4.10, section 4.6 Wildland and Urban Fire, section 4.7 Kern County Emergency Plan, and section 4.9 Hazardous Materials.

Kern County Community Wildfire Protection Plan. The 2022 Kern County Community Wildfire Protection Plan (CWPP) addresses hazards and risks of wildland fire throughout Kern County and makes recommendations for fuel reduction projects, public outreach and education, structural ignitability reduction, and fire response capabilities. The WRESC would adhere to all applicable provisions included in the CWPP.

Cumulative

Cumulative projects are identified as past projects, current projects, or reasonably foreseeable future projects that, when viewed in connection with the proposed Project, cause its effect(s) on hazards, hazardous materials, hazardous waste, and wildfire to be potentially significant. A master list of cumulative projects within the study area is provided in staff's assessment **Appendix A, Table A-1** and **Figure A-1.**

The geographic extent for the analysis of cumulative impacts related to hazards, hazardous materials, and hazardous waste is limited to the immediate vicinity surrounding the project. Project hazards, hazardous materials, and hazardous waste impacts are usually limited to the project site and immediately adjacent areas. Similar impacts of other past, present, and reasonably foreseeable future projects that would have the potential to occur would also be limited to their respective project sites and immediately adjacent properties. The closest projects in the cumulative scenario are 1.3, 1.8, and 2.5 miles distant from the project site and the WRESC Site is not in or adjacent to a CPUC Fire Threat District or CALFIRE Wildfire Fire Hazard Severity Zone. Therefore, staff does not find a cumulative impact of hazardous materials, hazardous waste, or wildfire exists for this project.

5.7.2 Environmental Impacts

HAZARDS, HAZARDOUS MATERIALS, AND WILDFIRE	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☒	☐	☐
Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☒	☐	☐
Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
Would the project be on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code, section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☒	☐	☐
For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☐	☐	☒
Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
Would the project expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	☐	☐	☐	☒
If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:	☐	☐	☐	☒
i. Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
ii. Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to,	☐	☐	☐	☒

HAZARDS, HAZARDOUS MATERIALS, AND WILDFIRE	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?				
iii. Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☒	☐
iv. Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	☒

Environmental checklist established by CCR, tit. 14, Div. 6, Ch. 3, Appendix G, hazards and hazardous materials and wildfire.

5.7.2.1 Methodology and Thresholds of Significance

In addition to the above environmental checklist, staff used the following methodology and thresholds of significance to evaluate the project.

Methodology

Hazards, Hazardous Materials, and Hazardous Waste. The hazardous materials analyzed include those potentially existing on the site and those that would be used or generated as part of project construction, and operations and maintenance. Potential existing hazards were assessed based on review of information online and in state hazard databases and maps for the project area including:

- State Water Resources Control Board (SWRCB) GeoTracker.
- DTSC EnviroStor (DTSC 2024).

Some hazardous materials would be used on a short-term basis during construction and decommissioning. Others would be stored onsite for use during operations and maintenance. Therefore, this analysis examines the choice and amount of chemicals to be used, how the project would use the chemicals, how they would be transported to the facility, and how the project plans to store the materials onsite.

The project is required to provide documentation of the nature of any existing or future releases of hazardous materials that would become hazardous waste from construction or operation. Potential or existing releases or contamination would be influenced by site specific factors including, but not limited to, the concentration of the contaminant in question, the proposed use of the contaminated area, and any potential pathways for worker and general public exposure.

Wildfire. Data on fire hazard potential in the project area and area wildfire history are used to help determine the potential for damaging impacts to occur as a result of a project-caused wildfire or project impacts on existing wildfire. Additionally, fire suppression information in the project description, and the availability and proximity of water sources for fire containment and suppression were included in the assessment.

To identify and assess potential impacts related to wildfire staff reviewed publicly available information, including the following:

- CAL FIRE – Fire Hazard Severity Zones Maps.
- CAL FIRE – Historical Fire Perimeters Web map.
- CPUC – High Fire-Threat District Map zones.

Thresholds of Significance

A threshold of significance is the line at which a project's environmental impact becomes severe enough that mitigation is required to reduce that impact below the significance line. Impact categories based on the CEQA Environmental Checklist, Appendix G, of the CEQA Guidelines are considered to evaluate if the relevant project impacts are to a degree requiring mitigation.

A threshold of significance may be an identifiable quantitative, qualitative or performance level of a particular environmental effect, and the non-compliance there with means the effect will normally be determined to be significant by the agency.

5.7.2.2 Direct and Indirect Impacts

a. Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or hazardous waste?

Construction

Less Than Significant with Mitigation Incorporated. Construction would involve the use of hazardous materials, as identified in **Table 5.7-1** and elaborated upon in **Table 5.7-2**, and **Table 5.7-3**. Hazardous materials used and stored on-site during construction would be securely stored in appropriate containers in compliance with 40 CFR Part 262, 40 CFR 1910.12, and 8 CCR § 5192. Engineered double-hull fuel tanks and temporary containment berms and spill kits would also be used to help contain any spills during the construction of the project.

Hazardous materials would be transported on an intermittent basis to the site as needed by construction. Transportation of hazardous materials would occur with DOT-approved personnel and trucking/transport equipment.

Due to the proposed construction timeline, staff proposes Condition of Certification (COC) **HAZ-1** to ensure that the project provides an accurate list of hazardous

materials used and stored on the site during construction and a spill control and clean-up plan (SPCC Plan). This would ensure that hazardous materials are identified appropriately given the prolonged construction timeline.

Hazardous waste would be generated during construction of the project. Construction-related hazardous wastes may include waste paint, spent solvents, waste cleaners, waste oil, oily rags, spent batteries, excavation dewatering water, flushing and cleaning fluids, and welding materials. Hazardous wastes in the form of dusts and airborne particulates could also be generated during cavern construction depending upon the levels of metals and inorganic substances (e.g., hexavalent chromium or silica) that occurs naturally in the subsurface soils and rock. The spoils from the cavern construction would be routinely sampled and analyzed as per proposed COC **WORKER SAFETY-1** to determine if these wastes meet the statutory definition of hazardous. Hazardous wastes would be accumulated according to Title 22 CCR requirements for satellite waste accumulation. They would be stored in appropriately segregated storage areas surrounded by berms to contain leaks and spills. The bermed areas would be sized to hold the full contents of the largest single container and, if outdoors and not roofed, would be sized for an additional volume for the rainfall associated with a 25-year, 24-hour storm event. If indoors, the containment would be sized for an additional volume equivalent to 20 minutes of the design flow of any fire protection water. These areas would be inspected weekly.

Hazardous wastes would be collected by a registered hazardous waste transporter using a hazardous waste manifest. Wastes would be transported to authorized hazardous waste management facilities. Copies of manifests, reports, waste analyses, and other documents would be kept on-site and would remain accessible for inspection for at least 3 years. Employees would be trained in hazardous waste procedures, spill contingencies, and waste minimization. Contractors and workers would be educated about waste sorting, appropriate recycling storage areas, and how to reduce landfill waste. Procedures would be developed to reduce the quantity of hazardous waste generated. Nonhazardous materials would be used instead of hazardous materials whenever practical, and wastes would be recycled whenever practical. Handling of hazardous wastes in this way would minimize the quantity of waste deposited into landfills: waste lubricating oil would be recovered and recycled by a waste oil recycling contractor and spent oil filters and oily rags would be recycled. Construction materials would be sorted on-site throughout construction and transported to appropriate waste management facilities. Recyclable materials would be separated from non-recyclable items and stored until they could be transported to a designated recycling facility. Recycling would be in accordance with applicable California state requirements. Wooden construction waste (such as wood from wood pallets) would be sold, recycled, or chipped and composted. Other compostable materials, such as vegetation, may also be composted off-site.

Hazardous waste would be stored on-site for less than 90 days and transported by a licensed and registered hazardous waste transporter to an authorized treatment,

storage, and disposal facility. Hazardous wastes would likely be sent to the California Class I landfills Kettleman Hills Facility and/or Clean Harbors Buttonwillow Landfill or an out-of-state landfill.

The project owner would have to obtain a site-specific EPA identification number and hazardous waste generator classification for the project. Hazardous waste generated at the project site would be stored on-site in accordance with accumulation time limits detailed in California Code of Regulations, title 22, section 66262.34 before off-site disposal, treatment, or recycling. Staff proposes COC **HAZ-3** to ensure that the project has obtained the project's EPA identification number before the start of construction, reports the number to the Compliance Project Manager (CPM), and notifies the CPM of new or revised numbers.

The application indicates a security plan would be prepared and implemented for the project, but the security plan details were minimal. The application included a mitigation measure for a private security system with which local law enforcement could integrate and coordinate. The system would have active surveillance on-site or remote. Also, the application indicated that the O&M building would house security monitoring equipment including camera feeds. CEC staff concurs that the above referenced security elements are needed to ensure the protection of California's electrical infrastructure from vandalism or domestic/foreign attacks. Staff proposes COC **HAZ-4** to require the project owner to create and implement an approved construction security plan to ensure a minimum level of security for the site.

Operation

Less Than Significant Impact with Mitigation Incorporated. Operation would involve the use of hazardous materials, as identified in **Table 5.7-1** and elaborated upon in **Table 5.7-2**, and **Table 5.7-3**. Hazardous materials used and stored on-site during operation would be securely stored in appropriate containers in compliance with 40 CFR Part 262, 40 CFR 1910.12, and California Code of Regulations, title 8, section 5192.

Hazardous materials would be transported to the site as needed for operations. Transportation of hazardous materials would occur with DOT-approved personnel and trucking/transport equipment. Due to the selected routes for hazardous material delivery and the distance from sensitive receptors during operation, effects on sensitive receptors will be less than significant.

Project operation and maintenance activities would transport, use, and store a limited variety of hazardous materials. **Table 5.7-1** presents the hazardous materials that would likely be used and stored on the project and their anticipated uses. The project site would prepare the HMBP prior to operation based on the hazardous materials for each respective location. The preparation of the HMBP would list the hazardous materials and their location which ensures that first responders are prepared to respond to any incidents that could occur at the project site. The SPCC would lay out the proper procedures to help prevent a discharge of petroleum products, as well as control a

discharge should one occur at the project site. Therefore, CEC staff proposes COC **HAZ-1** which would require the submission of the HMBP and SPCC for operations at the project site to the Kern County Public Health Services Department - Hazardous Materials Program, the CUPA for the project area, for review and comment and to the CPM for review and approval.

There is the potential for the project to increase the quantities or change the types of hazardous materials that are used at the project site. New or increased amounts of hazardous materials could require new LORS requirements for the project site. Therefore, staff proposes COC **HAZ-2** which would require the project owner to notify and seek approval from the CPM before changing the quantity of or using a new hazardous material onsite. This would ensure that any new or the change in the amount of a hazardous material introduced to the project site would comply with applicable LORS.

As indicated under the construction phase discussion above, the application indicates a security plan would be prepared. Staff concurs that security elements are needed to ensure the protection of California's electrical infrastructure from vandalism or domestic/foreign attacks. Therefore, staff proposes COC **HAZ-5** which would require the project owner to create an operations security plan to ensure a minimum level of security for the project.

With the implementation of COCs **HAZ-1**, **HAZ-2**, and **HAZ-5**, the impacts of operation of the WRESC facility would be reduced to less than significant.

b. Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Construction

Less Than Significant with Mitigation Incorporated. As discussed above in criterion "a", project construction activities and operations would involve the transportation, use and storage of hazardous materials, and generation of hazardous wastes at the project site. Several hazardous materials would be used in construction activities. Potentially, the improper use and storage of hazardous materials could lead to leaks and spills. However, most spills and leaks would be limited and easily cleaned up with spill kits due to the small quantities involved. In addition, hazardous materials would use temporary secondary containment to lower the risk of a release to the environment. The underground cavern construction's use of explosives and hazardous materials are discussed in greater detail in staff's assessment **Section 4.4, Worker Safety and Fire Protection.** Hazardous wastes would be brought to the surface and managed the same as surface-generated hazardous wastes.

Staff reviewed the project details for storage, collection, disposal and waste minimization during construction, which are listed above in criterion "a" that would be developed to reduce the potential for incidents involving hazardous materials and concluded that implementation would be adequate to ensure that hazardous materials handling would comply with applicable LORS. Therefore, hazardous materials would be stored, used, and cleaned up in compliance with LORS. Additionally, staff proposed COCs **HAZ-3** requiring EPA hazardous waste ID number, and **WORKER SAFETY-1** would include construction worker health and safety programs and procedures to protect workers from exposure to hazardous materials and hazardous waste. For more information refer to **Section 4.4, Worker Safety and Fire Protection**.

Operation

Less Than Significant with Mitigation Incorporated. Staff reviewed the project details for storage, collection, disposal and waste minimization during operations, which are similar to those listed above in criterion "a" for operation of the project and concluded that implementation would be adequate to ensure that hazardous materials handling would comply with applicable LORS. Operation of the project would require less hazardous materials and generate less hazardous waste than during construction, and implementation of best management practices and compliance with LORS, would reduce the potential for incidents involving hazardous materials and wastes. Due to the selected routes for hazardous material delivery and the distance from sensitive receptors during operation, effects on sensitive receptors would be less than significant. Therefore, hazardous materials would be stored, used, and cleaned up in compliance with LORS. Additionally, staff proposed COCs **HAZ-3** requiring EPA hazardous waste ID number, and **WORKER SAFETY-2** would include operations worker health and safety programs and procedures to protect workers from exposure to hazardous materials and waste. For more information refer to **Section 4.4, Worker Safety and Fire Protection**.

c. Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

Construction and Operation

No Impact. There are no schools located or proposed within one-quarter mile of the facility and Gen-tie line. In addition, no acutely hazardous materials (as listed in California Code of Regulations, tit. 8, § 5189 Appendix A) would be used during project construction and operations. Therefore, project construction and operation would not result in hazardous materials impacts to existing or proposed schools.

d. Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code, section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

Construction and Operation

Less Than Significant with Mitigation Incorporated. The DTSC and SWRCB compile and update lists of hazardous material sites pursuant to Government Code section 65962.5. The project site is not included on the databases maintained by the DTSC's EnviroStor (DTSC 2024) or the SWRCB's Geotracker (SWRCB 2024) as the location of any hazardous material sites. Further examination using the DTSC's and SWRCB's databases show that there are no hazardous material sites on the Cortese list within 1,000 feet of these project components (Cal EPA 2024a).

Unknown Environmental Contamination. There is the possibility that ground disturbing activities would have the potential to encounter impacted groundwater and/or soil. An implementation of a Soil Management Plan (SMP) would ensure that any impacted groundwater and/or soil would not endanger workers or the public. A SMP provides procedures and protocols for the proper management of unknown impacts to soil or undocumented subsurface features potentially encountered at the project site during grading and construction activities. The information provided in the SMP would be used to address proper handling, assessment, and disposal of any impacted soil or subsurface features that are encountered during grading. Soil that would be transported offsite must be adequately characterized and disposed of at a facility that is permitted and approved by the disposal contractor to receive such material. Likewise, any soil imported to the property must be either from a virgin quarry or certified as determined by analysis to be "clean" in accordance with applicable state LORS prior to arriving at the project site. Staff concurs that that ground disturbing activities would have the potential to encounter impacted groundwater and/or soil. Therefore, staff proposes **HAZ-6** which would require the submission of a SMP to the Kern County CUPA, for review and comment, and to the CPM for review and approval prior to the start of any ground disturbing activities.

If during excavations for transmission line support structures or undergrounding of the line suspected contaminated soils were found, adoption of proposed COCs **HAZ-7** and **HAZ-8** would implement controls and investigations to ensure that any hazardous wastes were remediated and workers protected. This would also apply if unknow areas of contamination were to be found on the site. An environmental professional with sufficient experience in hazardous waste management would have the expertise to determine whether additional investigations are needed to identify the extent of contamination and to ensure proper handling and disposal contaminated soil and groundwater. Proposed COC **HAZ-7** which would require that an experienced and qualified environmental professional would be available for consultation if contamination is discovered during ground disturbing activities at the site or along the Gen-time line. The resume of the environmental professional shall reflect experience in remedial investigations and feasibility studies. Staff proposes **HAZ-8** requiring the environmental professional to inspect the site, including the Gen-tie line, determine what would be required to characterize the nature and extent of contamination, and provide a report to representatives of the Kern County HazMat Compliance Program and the CPM on findings and the recommended course of action. Related activities would specifically

include soil removal, dust suppression, and worker exposure prevention by means of wearing personal protective equipment. Any contaminated soils and/or groundwater identified would be removed and disposed of according to the appropriate local, state, and federal laws under the oversight of the agency taking lead jurisdiction.

Any contaminated soils and/or groundwater identified would be removed and disposed of according to the appropriate local, state, and federal laws under the oversight of the CEC. Staff proposes COCs **HAZ-6, HAZ-7, and HAZ-8** for construction activities to ensure that any impacts from unknown environmental contamination would be less than significant.

e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?

Construction and Operation

No Impact. As stated above, a small landing airport is 2.61 miles northwest of the site and 3.75 miles southeast of Rosamond Skypark airport. These distances demonstrate that this project is far from any airport land use plan or existing airport. Therefore the project construction and operation would not result in excessive noise levels or safety hazards to public or private airports.

f. Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Construction and Operation

*No Impact. The Kern County Multi-Jurisdictional Hazard Mitigation Plan was developed to "*guide County and City Officials, Special District Managers, School District Administrators, and Water and Wastewater District Managers in protecting the people and property within the County from the effects of natural disasters and hazard events. This plan …… serves as a tool to direct County resources to achieve optimum results with available administrative, technical, and financial resources." *(Kern County 2020). The plan does not specifically map emergency evacuation or access routes; therefore the project site is not within an area designated as an emergency access route for any community. The project has stated that it would adhere to all safety practices addressed in the plan, as well as the safety element of the Kern County Master Plan (ESHD 2024h). The project is not anticipated to have impacts on the Kern Multi-Jurisdiction Hazard Mitigation Plan or the Kern County Master Plan. Therefore, the project construction and operation would not impair the implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan.*

g. Would the project expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

Construction and Operation

No Impact. While fire risk may be slightly elevated during construction and operation of the WRESC like the construction of any project, the project would address these risks by complying with all applicable laws, ordinances, and regulations and implementing best management practices and engineering controls described by the applicant. Proper planning and mitigation measures would avoid and minimize potential for accidental wildfire ignition, particularly during construction of the Gen-tie line. Additionally, the project would conduct an emergency response planning session to address public health concerns regarding wildfire risk. Therefore, the risk of wildland fires is not significant at the project site or along the Gen-tie line.

h. If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:

i. Substantially impair an adopted emergency response plan or emergency evacuation plan?

Construction and Operation

No Impact. Based on staff's analysis in "f" and "g" above, plus that the WRESC and associated facilities (e.g., Gen-tie line) would not be within or very near a very high FHSZ and therefore are not subject to any FHSZ (ESHD 2024h), and therefore would not impact or impair an emergency response or evacuation plan.

ii. Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

Construction and Operation

No Impact. Based on staff's analysis in "g" and "h" above, risk of wildland fires is not significant at the project site or along the Gen-tie line and the lad is flat with insignificant sloping.

iii. Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?

Construction and Operation

Less Than Significant Impact. Based on the analysis in "g", "h", and "I" above, the project would not exacerbate fire risk and impact of wildfire along the gen-tie line would be less than significant.

iv. Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

Construction and Operation

No Impact. The project site and gen-tie line would not be on slopes that could expose people or structures to downslope or downstream flooding, landslides, post-fire slope instability or drainage changes in the event of a wildland fire. Therefore, the facility components would have no impact on people or structures.

5.7.2.3 Cumulative Impacts

Construction and Operation

Less Than Significant Impact. Based on the analysis below, the project would not result in a cumulatively considerable impact on hazards, hazardous materials/waste and wildfire.

The cumulative effect of hazards such as aviation, emergency evacuation and the transportation, use, and storage of hazardous materials impacts would be limited to the project site and immediately adjacent areas. No cumulative projects were identified at or immediately adjacent to the project, therefore there are no projects with the potential to combine cumulatively with the project relative to Hazards and Hazardous Materials.

The cumulative effect of wildfire would be limited because the project site is not in or near an SRA or lands classified as a very high FHSZ, and not on land classified by the CPUC as having a fire threat. The combined wildfire risk from the project and projects from the cumulative project list would not be cumulatively considerable and thus would have a less than significant impact.

5.7.3 Project Conformance with Applicable LORS

Table 5.7-5 details staff's determination of conformance with applicable local, state, and federal LORS to hazards and hazardous materials, including any proposed Conditions of Certification (COCs), where applicable, to ensure the jurisdictional components of the project would comply with LORS. **Table 5.7-6** details staff's determination of conformance with applicable local, state, and federal LORS to wildfire, including any proposed COCs, where applicable to ensure the jurisdictional components would comply with LORS. As shown in both of these tables, staff concludes that with implementation of specific COCs, the project would be consistent with all applicable

LORS. The subsection below, "Staff Proposed Conditions of Certification," contains the full text or the referenced COCs.

TABLE 5.7-4 CONFORMANCE WITH LORS APPLICABLE TO HAZARDS AND HAZARDOUS MATERIALS/WASTE

Applicable LORS	Conformance and Basis for Determination
Federal	
Section 302, EPCRA (Public Law 99-499 42 USC 110222) and Hazardous Chemical Reporting: Community Right-to-Know (40 CFR 370). Requires one-time notification if EHS are stored in excess of TPQs.	**Yes. HAZ-1** and **HAZ-2** requires the owner to prepare an HMBP and SPCC Plan prior to the start of operations and not use any hazardous material not on that list unless approved in advance by the CPM. HMBPs would be prepared for the project and submitted to Kern County Public Health Services Department - Hazardous Materials Program (the CUPA), uploaded to CERS, and to the CPM for approval.
Section 304, EPCRA (Public Law 99-499, 42 USC 11002) and Emergency Planning and Notification (40 CFR 355). Requires notification when there is a release of hazardous material in excess of its RQ.	**Yes. HAZ-1** and **HAZ-2** requires the owner to prepare an HMBP and SPCC Plan prior to the start of operations. Any releases of hazardous materials at the project facility in excess of its RQ would follow the notification procedures described in the HMBP.
Hazardous Waste Storage Requirements (40 CFR Part 262). Includes provisions for securing hazardous waste storage areas to prevent unauthorized access and potential release of hazardous materials.	**Yes. HAZ-1** and **HAZ-2** requires the owner to prepare the HMBP and SPCC Plan prior to the start of operations and not use any hazardous material not on that list unless approved in advance by the CPM. The HMBP would include information regarding the secure storage of hazardous waste and materials. **HAZ-3** requires the owner to obtain appropriate hazardous waste permits. **HAZ-4** requires the owner to prepare a site-specific construction security plan and **HAZ-5** an operations security plan.
Section 311, EPCRA (Public Law 99-499, 42 USC 11021) and Hazardous Chemical Reporting: Community Right-to-Know (40 CFR 370). Requires that SDSs for all hazardous materials or a list of all hazardous materials be submitted to the State Emergency Response Commission Local Emergency Planning Committee (LEPC), and Kern County Public Health Services Department - Hazardous Materials Program	**Yes. HAZ-1** requires the owner to prepare an HMBP and SPCC Plan prior to the start of operations. The HMBP would include a list of hazardous materials for submission to the State Emergency Response Commission LEPC and Kern County Public Health Services Department - Hazardous Materials Program
Section 313, EPCRA (Public Law 99-499, 42 USC 11023) and Toxic Chemical Release Reporting: Community Right-to-Know (40 CFR 372). Requires annual reporting of releases of hazardous materials.	**Yes. HAZ-1** requires the owner to prepare an HMBP and SPCC Plan prior to the start of operations. **HAZ-6, -7,** and **-8** also would require the implementation of a soils management plan and the reporting and remediation of any hazardous wastes found onsite or along the Gen-tie line route soils. Any releases of hazardous materials at the project facility would follow the notification procedures described in the HMBP.
Section 311, CWA (Public Law 92-500, 33 USC 1251 et seq.) and Oil Pollution Prevention (40	**Yes. HAZ-1** requires the owner to prepare an HMBP and SPCC Plan prior to the start of

TABLE 5.7-4 CONFORMANCE WITH LORS APPLICABLE TO HAZARDS AND HAZARDOUS MATERIALS/WASTE

Applicable LORS	Conformance and Basis for Determination
CFR 112). Requires preparation of an SPCC plan if the total oil and petroleum storage (including ASTs, oil-filled equipment, and drums) is greater than 1,320 gallons or if the oil or oil products stored in USTs exceeds 42,000 gallons.	operations. An SPCC plan would be prepared for the project facility if cumulative storage of oil and oil products on-site is greater than 1,320 gallons and/or storage of oil and oil products in USTs is greater than 42,000 gallons.
U.S. Department of Transportation Regulations, 49 CFR 171-177. Governs the transportation of hazardous materials, including the marking of transportation vehicles.	**Yes. HAZ-1** requires the owner to prepare an HMBP and SPCC Plan prior to the start of operations. The project HMBP would describe transportation requirements for hazardous materials stored at the project facility.
Hazardous Waste Operations and Emergency Response (49 CFR Section 1910.12). Specifies the operational and emergency response requirements related to the use, generations, and storage of hazardous materials.	**Yes. HAZ-1** requires the owner to prepare an HMBP and SPCC Plan prior to the start of operations. The project HMBP would describe operational and emergency response requirements related to the use, generation, and secure storage of hazardous materials.
Resource Conservation and Recovery Act (RCRA), Title 42, Chapter 82. Regulates transportation, treatment, storage, and disposal of hazardous waste.	**Yes. HAZ-1** requires the owner to prepare an HMBP and SPCC Plan prior to the start of operations. The HMBP would establish procedures related to the transportation, treatment, storage, and disposal of hazardous waste.
Toxic Substances Control Act (TSCA), Title 15, Chapter 53. The TSCA addresses the production, importation, use, and disposal of specific chemicals.	**Yes. HAZ-1** requires the owner to prepare an HMBP and SPCC Plan prior to the start of operations. The HMBP would establish procedures for the use of hazardous materials.
Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Title 42, Chapter 103. Provides procedures to respond to releases and threatened releases of hazardous substances, pollutants, and/or contaminants.	**Yes. HAZ-1** requires the owner to prepare an HMBP and SPCC Plan prior to the start of operations. See Impact discussion item b).
State	
Cal. Code Regs.,, tit. 8, §§ 339; 3200 et seq., 5139 et seq. and 5160 et seq. Lists hazardous chemicals under the Hazardous Substance Information and Training Act; addresses control of hazardous substances; and addresses hot, flammable, poisonous, corrosive, and irritant substances.	**Yes. HAZ-1** requires the owner to prepare an HMBP and SPCC Plan prior to the start of operations. The HMBP would describe hazardous material handling requirements related to the control of hazardous substances, including hot, flammable, poisonous, corrosive, and irritant substances.
Health and Safety Code, Section 25500 et seq. (HMBP). Requires preparation of an HMBP if hazardous materials are handled or stored in excess of threshold quantities.	**Yes. HAZ-1** requires the owner to prepare an HMBP and SPCC Plan prior to the start of operations. An HMBP would be prepared for the project and submitted to Kern County Public Health Services Department - Hazardous Materials Program
Health and Safety Code, Section 25270.13 (Aboveground Petroleum Storage Act). Requires preparation of an SPCC plan if oil is stored in a single AST with capacity greater than 660 gallons or if the total petroleum storage (including ASTs,	**Yes. HAZ-1** requires the owner to prepare an HMBP and SPCC Plan prior to the start of operations. An SPCC plan would be prepared for the project and implemented if cumulative storage of oil and oil products on-site is greater than 1,320 gallons.

TABLE 5.7-4 CONFORMANCE WITH LORS APPLICABLE TO HAZARDS AND HAZARDOUS MATERIALS/WASTE

Applicable LORS	Conformance and Basis for Determination
oil-filled equipment, and drums) is greater than 1,320 gallons.	
Health and Safety Code, Section 25249.5 through 25249.13 (Safe Drinking Water and Toxics Enforcement Act) (Proposition 65). Requires warning to persons exposed to a list of carcinogenic and reproductive toxins and protection of drinking water from the same toxins.	**Yes.** The project facility would be appropriately labeled for any chemicals stored onsite that are on the Proposition 65 list.
Health and Safety Code, Section 25100 through 25259 (HWCL). Establishes the management requirements for hazardous waste storage, treatment, and transportation.	**Yes. HAZ-1** requires the owner to prepare an HMBP and SPCC Plan prior to the start of operations. The HMBP would include details about the storage and transportation of hazardous materials and waste.
CVC Section 32000 – 32053. Regulates the transportation of hazardous materials, including licensing and notification of hauling routes.	**Yes.** Transportation of hazardous materials to and from the project facility would follow all licensing and notification requirements. See also **TRANS-3** and **-4**
Health and Safety Code, Section 25280 through 25299 (Underground Storage of Hazardous Substances). Regulates the construction, maintenance, testing, and use of USTs for the storage of hazardous substances.	**Yes.** The project facility is not expected to have any USTs therefore a UST monitoring plan is not required for the facility.
Title 24 (California Fire Code). Requires the preparation of a Hazardous Materials Management Plan (HMMP) and Hazardous Materials Inventory Statement (HMIS) or an HMBP that includes the required information.	**Yes. HAZ-1** requires the owner to prepare an HMBP and SPCC Plan prior to the start of operations. The project facility would prepare an HMBP that would include details that satisfy the requirements of the HMMP and HMIS.
California Code of Regs., Title 22 (Hazardous Waste Management). Establishes management requirements for hazardous waste, including standards applicable to generators and transporters of hazardous waste.	**Yes. HAZ-1** requires the owner to prepare an HMBP and SPCC Plan prior to the start of operations. The project HMBP would include details regarding hazardous waste generation and transportation. Includes manifest recordkeeping requirements.
Health and Safety Code, Hazardous Materials Release Response Plans and Inventory Law, Division 20, Chapter 6.95. Regulates the release or accidental release of hazardous materials.	**Yes.** See impact criterion "b". **HAZ-6, -7**, and **-8** also would require a soils management plan and the reporting and remediation of any hazardous wastes found onsite or in the soils along the Gen-tie line route.
Local	
Kern County Code of Ordinances ch. 8.04 Regulates the construction, maintenance, testing, and use of USTs for the storage of hazardous substances	**Yes.** The project facility is not expected to have any USTs therefore a UST monitoring plan is not required for the facility.
Kern County Code of Ordinances ch. 8.04 Notification requirements for known or suspected release of hazardous materials to the air or soil and also may result in discharges into stormwater.	**Yes. HAZ-1** requires the owner to prepare an HMBP and SPCC Plan prior to the start of operations. The project HMBP would include procedures for notification if there is a known or suspected release of a hazardous substance and

TABLE 5.7-4 CONFORMANCE WITH LORS APPLICABLE TO HAZARDS AND HAZARDOUS MATERIALS/WASTE	
Applicable LORS	**Conformance and Basis for Determination**
	the SPCC Plan which may result in discharges into stormwater.
Kern County General Plan Requires facilities that handle hazardous materials or wastes to be designed, constructed, and operated in accordance with all applicable laws and regulations.	**Yes.** The project would comply with all local, state, and federal regulations for hazardous materials handling, storage, and transportation.

TABLE 5.7-5 CONFORMANCE WITH LORS APPLICABLE TO WILDFIRE	
Applicable LORS	**Conformance and Basis for Determination**
State	
Cal. Code of Regs., tit. 8 § 1920, et seq. Regulations for fire protection systems.	**Yes.** A Fire Prevention Plan would be required by COCs **WORKER SAFETY-1** & **WORKER SAFETY-2**.
Requirements for fire protection. Cal. Code of Regs., tit. 8, §§ 6150, et seq.; 6151, et seq.; 6165, et seq.; 6170, et seq.; § 6175, et seq.; 6183, et seq.; 6184, et seq.	**Yes.** A Fire Prevention Plan would be required by COCs **WORKER SAFETY-1** & **WORKER SAFETY-2.**
Cal. Code of Regs., tit. 24 (California Fire Code). Establishes best practices for fire safety and prevention. Requires the preparation of a Hazardous Materials Management Plan (HMMP) and Hazardous Materials Inventory Statement (HMIS) or an HMBP that includes the required information.	**Yes. HAZ-1** requires the owner to prepare an HMBP and SPCC Plan prior to the start of operations. The project facility would prepare an HMBP that would include details that satisfy the requirements of the HMMP and HMIS.
Public Resource Code Sections 4427, 4428, and4431. Outlines fire safety and wildfire protection standards in conjunction with building, construction, and development in SRAs.	**Yes.** A Fire Prevention Plan would be required by COCs **WORKER SAFETY-1** & **WORKER SAFETY-2**. The project would include preparation and implementation of a Fire Prevention Plan during construction and O&M activities that would be consistent with these General Plan policies.
Local	
January 2004 Revised Update of the Kern County General Plan Update of the Kern County General Plan section 4.9 Human Health and Risk of Upset and section 4.11 on public services policy.	**Yes. HAZ-1, -2,** and **-3** plus **WORKER SAFETY-1** & **WORKER SAFETY-2** would require adherence to these policies regarding hazardous materials, hazardous waste, and fire prevention.
Kern County Code of Ordinances Chapter 17.32. Adopts the California Fire Code.	**Yes.** The project would be consistent with the requirements set forth in the Kern County ordinance.
Kern County Ordinance Chapter 17.34 - WILDLAND-URBAN INTERFACE CODE provides minimum uniform standards for basic emergency access, perimeter wildfire protection measures, signing and building numbering, private water supply reserves for emergency fire use and vegetation modification.	**Yes.** The project would be consistent with the requirements set forth in the Kern County ordinance.

5.7.4 Comments and Responses on the Preliminary Staff Assessment

Response to Comments from the Applicant (TN 264316)

Comment on page 5.7-34, COC HAZ-3 – Please revise text as follows:

"The project owner shall report new or temporary hazardous waste generator **EPA** identification numbers from the **California Department of Toxic Substances Control** EPA prior to generating any hazardous waste during demolition, construction, or operations."

Staff Response: Staff agrees that revisions are needed to clarify this requirement.

Comment on page 5.7-34, COC HAZ-5, first paragraph – Please revise text as follows:

"The project owner shall also prepare site-specific security plan for the ~~commissioning and~~ operational phases that would be available to the CPM for review and approval.

Staff Response: Staff agrees to the revision based upon the applicant's clarification. Staff also makes the following revisions to **HAZ-5: "**The project owner shall also prepare a site-specific security plan for the ~~commissioning and~~ operational phases that would be available to the CPM for review and approval. The project owner shall implement site security measures that address physical site security and hazardous materials storage. The level of security to be implemented shall not be less than that described below as per ~~the latest version of~~ the NERC Security Guideline for the Electricity Sector (**Security Guideline for the Electricity Sub-sector: Physical Security Response. Approved by CIPC on October 28, 2013**) **or more recent if and when available.**

Response to Comment from California Unions for Reliable Energy (CURE) (TN 264343)

Comment on Page 8 of CURE comments: Several of the Conditions of Certification ("COC") in the PSA impermissibly defer the preparation of plans, reports, and/or studies as mitigation for the Project's significant environmental effects until after certification and without specific performance standards. The PSA also defers to other agencies to analyze the impacts or identify mitigation measures for the Project. The following measures are improperly deferred until after the Commission has certified the Project:

COC HAZ-1: this condition requires the Project owner to prepare a Hazardous Materials Business Plan and a Spill Prevention Control and Countermeasure Plan, one of each for construction and operations at least 60 days prior to the start of construction and 60 days prior to the start of operations.

COC HAZ-6: this condition requires the Project owner to prepare a Soils Management Plan at least 45 days prior to any ground disturbance.

Staff Response: See global response to comments on deferred mitigation in **Section 9 Compliance Conditions and Compliance Monitoring Plan**.

5.7.5 Conclusions and Recommendations

As discussed above, with implementation of the applicant's best practices, design features, and staff's proposed COCs, the project would have a less than significant impact related to hazards, hazardous materials, hazardous waste, and wildfire and would conform with applicable LORS. Staff recommends adopting the COCs as detailed in subsection 5.7.6 Proposed Conditions of Certification below.

5.7.6 Proposed Conditions of Certification

The following proposed COCs include measures to ensure conformance with applicable LORS and to mitigate environmental impacts. Staff makes these recommendations to supplement, expand, and clarify the applicant's proposed Best Practices, Design Features, and mitigation measures. The conditions below are enforceable as part of the CEC's certificate for the portions of the project constituting the site, laydown areas, and the Gen-tie transmission line.

HAZ-1 The project owner shall prepare a Hazardous Materials Business Plan (HMBP) and a Spill Prevention Control and Countermeasure (SPCC) Plan, one of each for construction and one of each for operations, and provide these plans to the Kern County Public Health Services Department - Hazardous Materials Program (the CUPA), for review and comment and to the Compliance Project Manager (CPM) for review and approval.

Verification: At least 60 days prior to the start of construction and 60 days prior to the start of operation, the project owner shall prepare and submit the respective HMBP and SPCC Plan to the Kern County Public Health Services Department - Hazardous Materials Program, for review and comment and to the CPM for review and approval. The project owner shall also provide the CPM with a copy of the transmittal letter to the Kern County HazMat Compliance Program requesting review and comment.

At least 30 days prior to the start of construction and 30 days prior to the start of operation, the project owner shall provide copies of any comment letters received from the Kern County Public Health Services Department - Hazardous Materials Program along with any changes to the respective HMBP and SPCC plans for CPM review and approval. After CPM review and approval, the project owner shall provide complete copies of the final respective HMBP and SPCC Plan to the Kern County Public Health Services Department - Hazardous Materials Program, sending copies of the correspondence to the CPM.

HAZ-2 After the start of project operation, the project owner shall not use or change the quantity of hazardous materials that would require a change in the project's HMBP unless approved in advance by the CPM.

Verification: At least 30 days prior to changing the quantity of or using a new hazardous material onsite, the project owner shall notify and seek approval from the CPM. The project owner shall provide to the CPM, in the Annual Compliance Report, the HMBP's list of hazardous materials and quantities contained at the facility.

HAZ-3 The project owner shall report new or temporary hazardous waste generator numbers issued by the **USEPA** or **California Department of Toxic Substances Control (DTSC) to the CPM** ~~hazardous waste ID numbers is issued by either the U.S. Environmental Protection Agency (federal ID numbers) or by DTSC (California State ID numbers). identification numbers from the to EPA~~ prior to generating any hazardous waste during demolition, construction, or operations.

Verification: The project owner shall keep a copy of the identification number(s) on file at the project site and provide documentation of the hazardous waste generation and notification and receipt of the number to the CPM in the next scheduled Monthly Compliance Report after receipt of the number. Submittal of the notification and issued number documentation to the CPM is only needed once, unless there is a change in ownership, operation, waste generation, or waste characteristics that requires a new notification to EPA. Documentation of any new or revised hazardous waste generation notifications or changes in identification number shall be provided to the CPM 30 days before the change occurs.

HAZ-4 Prior to commencing construction, a site-specific Construction Site Security Plan for the construction phase shall be prepared and made available to the CPM for review and approval.

The Construction Site Security Plan shall include the following:

1. perimeter security consisting of fencing enclosing the construction area;
2. security guards during hours when construction personnel are not present at the site;
3. site access control consisting of a check-in procedure or tag system for construction personnel and visitors;
4. written standard procedures for employees, contractors, and vendors when encountering suspicious objects or packages on site or off site;
5. protocol for contacting law enforcement and the CPM in the event of suspicious activity, incident, or emergency; and
6. evacuation procedures.

Verification: At least 30 days prior to commencing construction, the project owner shall notify the CPM that a site-specific Construction Security Plan is available for review and approval.

HAZ-5 The project owner shall also prepare a site-specific security plan for the ~~commissioning and~~ operational phase~~s~~ that would be available to the CPM for review and approval. The project owner shall implement site security measures that address physical site security and hazardous materials storage. The level of security to be implemented shall not be less than that described below as per ~~the latest version of~~ the NERC Security Guideline for the Electricity Sector (**Security Guideline for the Electricity Sub-sector: Physical Security Response. Approved by CIPC on October 28, 2013**) **or more recent if and when available.**

The Operation Security Plan shall include the following:

1. permanent full perimeter fence or wall, at least eight feet high and topped with barbed wire or the equivalent (and with slats or other methods to restrict visibility if a fence is selected);
2. main entrance security gate, either hand operated or motorized;
3. evacuation procedures;
4. protocol for contacting law enforcement and the CPM in the event of suspicious activity or emergency;
5. written standard procedures for employees, contractors, and vendors when encountering suspicious objects or packages on site or off site;
    A. a statement (refer to sample, **Attachment A**), signed by the project owner certifying that background investigations have been conducted on all project personnel. Background investigations shall be restricted to determine the accuracy of employee identity and employment history and shall be conducted in accordance with state and federal laws regarding security and privacy;
    B. a statement(s) (refer to sample, **Attachment B**), signed by the contractor or authorized representative(s) for any permanent contractors or other technical contractors (as determined by the CPM after consultation with the project owner), that are present at any time on the site to repair, maintain, investigate, or conduct any other technical duties involving critical components (as determined by the CPM after consultation with the project owner) certifying that background investigations have been conducted on contractors who visit the project site;
6. site access controls for employees, contractors, vendors, and visitors;

7. a statement(s) (refer to sample, **Attachment C**), signed by the owners or authorized representative of hazardous materials transport vendors, certifying that they have prepared and implemented security plans in compliance with 49 CFR 172.880, and that they have conducted employee background investigations in accordance with 49 CFR Part 1572, subparts A and B;
8. closed circuit TV (CCTV) monitoring system, recordable, and viewable in the O&M building (or remotely) with cameras able to pan, tilt, and zoom, have low-light capability, and able to view 100 percent of the perimeter fence, and outside entrances to the site for the surface facilities (pumps, pressure vessels, heat exchangers, electrical generators, and O&M building; and,
9. additional measures to ensure adequate perimeter security consisting of either:
   A. perimeter breach detection or onsite motion detector capabilities; and
   B. security guard(s) present 24 hours per day, seven days per week; or
   C. facility personnel on site 24 hours per day, seven days per week.

The project owner shall fully implement the security plans and obtain CPM approval of any substantive modifications to those security plans. The CPM may authorize modifications to these measures, or may require additional measures such as protective barriers for critical facility components, or additional guidance provided by the U.S. Department of Homeland Security, the U.S. Department of Energy, or the North American Electrical Reliability Corporation (NERC), after consultation with both appropriate law enforcement agencies and the project owner.

Verification: At least 30 days prior to the initial receipt of hazardous materials onsite, the project owner shall notify the CPM that a site-specific operations site security plan is available for review and approval. In the annual compliance report, the project owner shall include signed statements similar to Attachments A and B that all current project employees and appropriate contractor background investigations have been performed, and that updated certification statements have been appended to the operations security plan. In the annual compliance report, the project owner shall include a signed statement similar to Attachment C that the operations security plan includes all current hazardous materials transport vendor certifications for security plans and employee background investigations.

HAZ-6 The project owner shall prepare and submit to the CPM a Soils Management Plan (SMP) prior to any ground disturbing activities. The SMP shall be prepared/approved by an environmental professional, a California Registered Civil Engineer, or a California Registered Geologist with sufficient experience in hazardous waste management. The purpose of the SMP is to establish appropriate management practices and procedures for handling impacted soil

and/or groundwater or other materials that may be encountered during construction activities to ensure worker protection from toxicant exposure. The SMP shall be updated as needed to reflect changes in laws, regulations, or site conditions. All ground disturbing activities at the site and potential disposal of contaminated soil and/or groundwater shall be conducted in accordance with the SMP. Where actions are required in accordance with the SMP, an SMP summary report, which includes all analytical data and other findings, shall be submitted once the earthwork has been completed.

Topics covered by the SMP shall include, but not be limited to:

1. Land use history including description and locations of any known contamination.
2. The nature and extent of any previous investigations and remediation at the site.
3. The nature and extent of any unremediated contamination at the proposed site.
4. A listing and description of institutional controls such as the county's excavation ordinance and other local, state, and federal regulations and laws that would apply to the project.
5. Names and positions of individuals involved with site management and their specific roles.
6. An earthwork schedule.
7. A description of protocols for the investigation and evaluation of any previously unidentified contamination that may be encountered in time. The protocol shall be for temporary and permanent controls that may be required to reduce exposure to onsite workers, visitors, and the public.
8. A site-specific Health and Safety Plan (HSP) to be implemented by all contractors and subcontractors at the site. The HSPs shall be specific to each of the contractors' or subcontractors' scopes of work. The HSPs shall be prepared by a Certified Industrial Hygienist and would protect onsite workers by including engineering controls, personal protective equipment, monitoring, and security to prevent unauthorized entry and to reduce construction related hazards. The HSPs shall address the possibility of encountering subsurface chemical contamination and include procedures to protect workers and the public. The HSPs shall be updated as needed if site conditions change significantly, such as discovery of contaminated soil or groundwater. Copies of the approved HSPs shall be kept at the project site.
9. Hazardous waste determination and disposal procedures for known and previously unidentified contamination.

10. Requirements for site-specific techniques at the site to minimize dust, manage stockpiles, run-on and run-off controls, waste disposal procedures, etc.
11. Copies of relevant permits or closures from regulatory agencies.

Verification: At least 45 days prior to any ground disturbance, the project owner shall submit the SMP to the Kern County Public Health Services Department - Hazardous Materials Program for review and comment and to the CPM for review and approval. An SMP summary shall be submitted to the CPM within 30 days of completion of any ground disturbance.

HAZ-7 The project owner shall provide the resume of an experienced and qualified environmental professional who shall be available for consultation during site characterization (if needed), demolition, excavation, and grading activities, to the CPM for review and approval. The resume shall reflect experience in remedial investigation and feasibility studies. The environmental professional performing the interviews and site reconnaissance shall possess sufficient education, training, and experience to assess the nature, history, and setting of the subject property/area and shall review and interpret the information used to form the basis of the findings, opinion and conclusions in the report.

The qualified person shall be given full authority by the project owner to oversee any earth moving activities that have the potential to disturb contaminated soil and/or groundwater.

Verification: At least 30 days prior to the start of site mobilization, the project owner shall submit the resume to the CPM for review and approval.

HAZ-8 If suspected contaminated soil and/or groundwater is identified during site characterization, demolition, excavation, or grading at either the proposed site or linear facilities (as evidenced by discoloration, odor, detection by handheld instruments, or other signs), the qualified environmental professional shall inspect the site, determine the need for sampling to confirm the nature and extent of contamination, and provide a written report to the project owner, the Kern County Public Health Services Department - Hazardous Materials Program and the CPM stating the recommended course of action.

Depending on the nature and extent of contamination, the environmental professional shall have the authority to temporarily suspend construction activity at that location for the protection of workers or the public. If, in the opinion of the environmental professional, significant remediation may be required, the project owner shall contact the CPM and representatives of the Kern County Public Health Services Department - Hazardous Materials Program and possible oversight.

Verification: The project owner shall submit any final reports filed by the environmental professional to the CPM within 5 days of their receipt. The project owner shall notify the CPM within 24 hours of any orders issued to halt construction.

SAMPLE CERTIFICATION (Attachment A)

Affidavit of Compliance for Project Owners

I,_____
(Name of person signing affidavit) (Title)

do hereby certify that background investigations to ascertain the accuracy of the identity and employment history of all employees of

_____
(Company name)

for employment at

_____
(Project name and location)

have been conducted as required by the California Energy Commission Decision for the above-named project.

_____
(Signature of officer or agent)

Dated this _____ day of _____, 20 _____.

THIS AFFIDAVIT OF COMPLIANCE SHALL BE APPENDED TO THE PROJECT SECURITY PLAN AND SHALL BE RETAINED AT ALL TIMES AT THE PROJECT SITE FOR REVIEW BY THE CALIFORNIA ENERGY COMMISSION COMPLIANCE PROJECT MANAGER.

SAMPLE CERTIFICATION (Attachment B)

Affidavit of Compliance for Contractors

I,_____
(Name of person signing affidavit) (Title)

do hereby certify that background investigations to ascertain the accuracy of the identity and employment history of all employees of

_____
(Company name)

for contract work at

_____
(Project name and location)

have been conducted as required by the California Energy Commission Decision for the above-named project.

_____
(Signature of officer or agent)

Dated this _____ day of _____, 20 _____.

THIS AFFIDAVIT OF COMPLIANCE SHALL BE APPENDED TO THE PROJECT SECURITY PLAN AND SHALL BE RETAINED AT ALL TIMES AT THE PROJECT SITE FOR REVIEW BY THE CALIFORNIA ENERGY COMMISSION COMPLIANCE PROJECT MANAGER.

SAMPLE CERTIFICATION (Attachment C)

Affidavit of Compliance for Hazardous Materials Transport Vendors

I,_____
(Name of person signing affidavit) (Title)

do hereby certify that the below-named company has prepared and implemented security plans in conformity with 49 CFR 172.880 and has conducted employee background investigations in conformity with 49 CFR 172, subparts A and B,

_____
(Company name)

for hazardous materials delivery to

_____
(Project name and location)

as required by the California Energy Commission Decision for the above-named project.

_____
(Signature of officer or agent)

Dated this _____ day of _____, 20 _____.

THIS AFFIDAVIT OF COMPLIANCE SHALL BE APPENDED TO THE PROJECT SECURITY PLAN AND SHALL BE RETAINED AT ALL TIMES AT THE PROJECT SITE FOR REVIEW BY THE CALIFORNIA ENERGY COMMISSION COMPLIANCE PROJECT MANAGER.

5.7.7 References

CAL FIRE 2023 – California Department of Forestry and Fire Protection. Fire Hazard Severity Zones in State Responsibility Area. Last updated September 29, 2023. Accessed online at: https://calfire-forestry.maps.arcgis.com/apps/webappviewer/index.html?id=988d431a42b242b29d89597ab693d008

CAL FIRE 2024 – California Department of Forestry and Fire Protection. California Historical Fire Perimeters Web map. Accessed online at: https://www.fire.ca.gov/what-we-do/fire-resource-assessment-program/fire-perimeters

Cal EPA 2024a – California Environmental Protection Agency. Cortese List Data Resources. Accessed online at: https://calepa.ca.gov/sitecleanup/corteselist/

Cal EPA 2024b – California Environmental Protection Agency. List of solid waste disposal sites identified by the SWRCB with waste constituents above hazardous waste levels outside the waste management unit. Accessed online at: https://calepa.ca.gov/wp-content/uploads/sites/6/2016/10/SiteCleanup-CorteseList-CurrentList.pdf

CPUC 2024 – California Public Utilities Commission. CPUC High Fire Threat District (HFTD) Rule Making and Maps. Accessed online at: https://www.cpuc.ca.gov/industries-and-topics/wildfires/fire-threat-maps-and-fire-safety-rulemaking

DTSC 2024 – Department of Toxic Substances Control. EnviroStor. Accessed online at: https://www.envirostor.dtsc.ca.gov/public/

ESHD 2024g – Ellison Schneider Harris & Donlan LLP (TN 254804). Willow Rock Energy Storage Center Supplemental AFC Volume II - Appendix 54A – Part I, dated March 1, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-AFC-02

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GA 2021y – Golder Associates (TN 240768-13). Appendix 5.14A, Phase 1, dated December 1, 2021. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-AFC-02

Kern County 2020 – Kern Multi-Jurisdiction Hazard Mitigation Plan (MJHMP). Accessed online at: https://mitigatehazards.com/county-of-kern/kern-hmp-docs/

Kern County 2022 – Community Wildfire Protection Plan. Accessed online at: https://kerncountyfire.org/wp-content/uploads/Kern CWPP_final_combined_11March2022.pdf

SWRCB 2024 – State Water Resources Control Board. GeoTracker. Accessed online at: https://geotracker.waterboards.ca.gov/

WSP 2024bb – Williams Sale Partnership (TN 259736). Willow Rock Data Request Set 4 Response, dated October 28, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-AFC-02

5.8 Land Use, Agriculture, and Forestry

Testimony of Andrea Koch

5.8.1 Environmental Setting

Existing Conditions

The Willow Rock Energy Storage Center (WRESC, or project) is a proposed 520-megawatt (MW) gross facility that would use advanced compressed air energy storage technology. The proposed WRESC site is in the unincorporated area of Kern County, approximately four miles north of the community of Rosamond, on the western portion of Assessor's Parcel Number (APN) 431-022-13. The property is an approximately 112-acre undeveloped site bounded on the north and west by vacant, undeveloped property, on the east by Sierra Highway, and on the south by Dawn Road. Additional parcels adjacent to the WRESC site on the north and west sides may be used for project activities including temporary parking, construction laydown, or construction of an architectural berm. See **Land Use Figure 1** for a depiction of these parcels. The area surrounding the project site is mostly undeveloped, with a few sparsely scattered residences, the closest one being approximately 0.8 miles northwest of the WRESC site (ESHD 2024i; ESHD 2024j).

A new approximately 19-mile-long generation tie (gen-tie) line would connect the WRESC to Southern California Edison's (SCE's) Whirlwind Substation at the intersection of 170th Street West and Rosamond Boulevard, southwest of the WRESC. Energy stored at the WRESC would be delivered to SCE's Whirlwind Substation via this gen-tie line. The applicant has proposed six gen-tie route options that would either be within County-designated roadway easements or would cross existing roadways, privately owned vacant lands, or lands managed by the federal Bureau of Land Management (BLM) (ESHD 2024h).

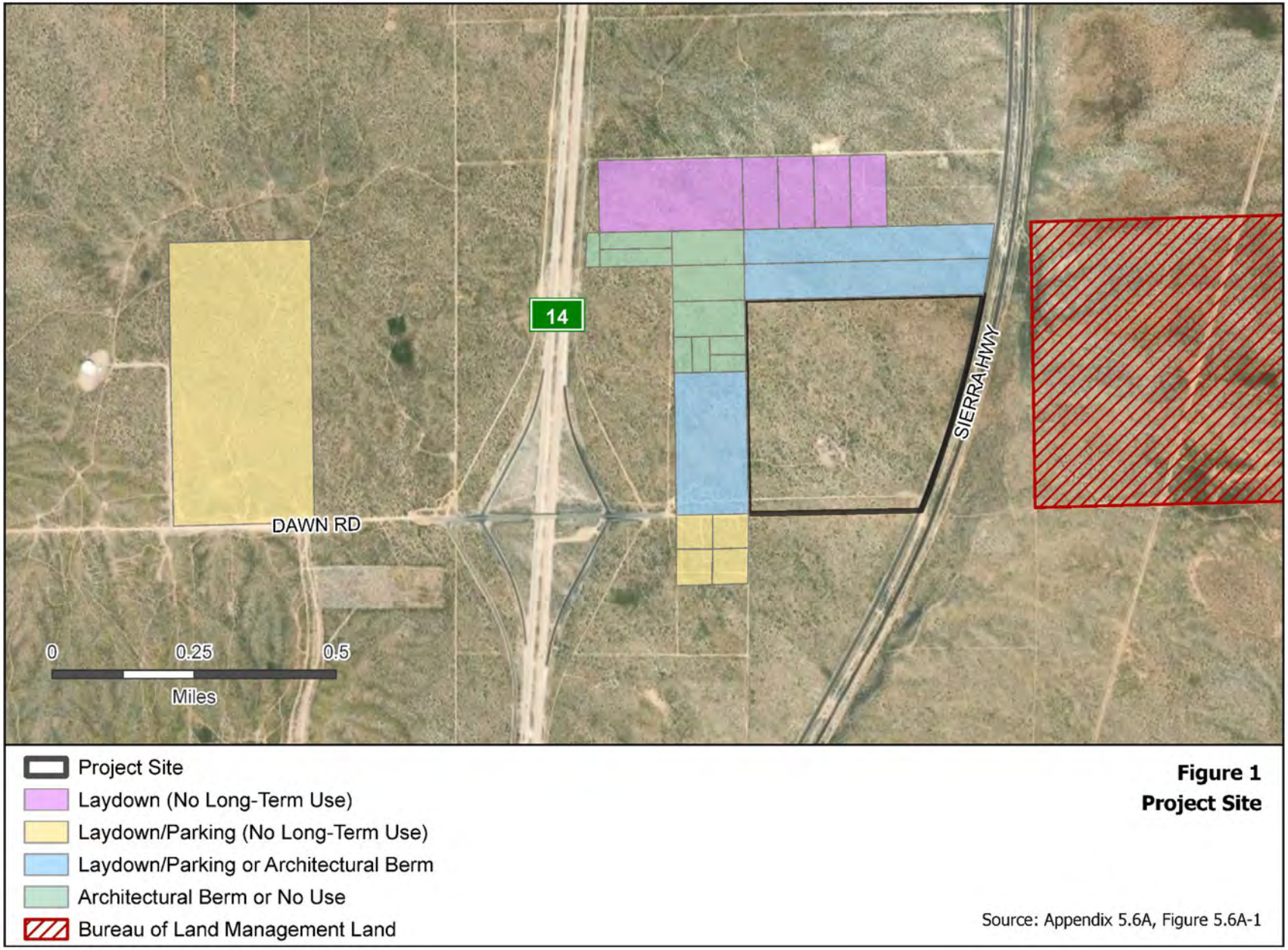

Figure 1
Project Site

Source: Appendix 5.6A, Figure 5.6A-1

Maps from the California Department of Conservation (DOC) show that there is no Important Farmland in the project area (DOC 2022a). According to Section 21060.1 of the California Public Resources Code, "Agricultural Land" means Prime Farmland, Farmland of Statewide Importance, or Unique Farmland. Most of the land in the project area is categorized as "Other Land", specifically "Nonagricultural or Natural Vegetation" by DOC (DOC 2024a). DOC defines Nonagricultural or Natural Vegetation as "Heavily wooded, rocky/barren areas, riparian and wetland areas, grassland areas which do not qualify as Grazing Land due to their size or land management restrictions, small water bodies and recreational water ski lakes. Constructed wetlands are also included in this category" (DOC 2024b). There are very few active Williamson Act contracts, which preserve agricultural land, in the project area (DOC 2022b). There are a few parcels under a Williamson Act contract south of the gen-tie line along Rosamond Boulevard, and one just west of the Whirlwind Substation with which the gen-tie line connects (DOC 2022b), but project construction and operation would not cross any of these parcels. See **Land Use Figure 2** for DOC land use classifications and the location of Williamson Act parcels.

A privately-owned, public use airport, Rosamond Skypark, is approximately 3.75 miles southwest of the WRESC site at 4000 Knox Avenue in Rosamond. A portion of the proposed gen-tie line passes along Mojave-Tropico Road approximately 0.9 miles west of the nearest runway at the airport. This portion of the gen-tie line is within safety zones of Rosamond Skypark called Zone B2 and Zone C, as designated by the Kern County Airport Land Use Compatibility Plan (ALUCP) (ESHD 2024h; ESHD 2024j; Kern County 2012). See **Land Use Figure 3** for details.

The project site is within military special use airspace areas, and within 4,000 feet of a military installation, Edwards Airforce Base (OPR 2025a; OPR2025b). The closest boundary of Edwards Airforce Base (EAFB) is approximately 0.5 miles east of the proposed WRESC site, although most of EAFB's facilities and runways are 14 miles east of the project (ESHD 2024h).

The CEC certificate is in lieu of state, local or regional permits for use of the project site and related facilities (Pub. Resources Code §§ 25500, 25110, 25119; Cal. Code. Regs., tit. 20, § 1201 (q)). "Related facility" means a thermal powerplant, electric transmission line, or any equipment, structure, or accessory dedicated to and essential to the operation of the thermal powerplant or electric transmission line. These facilities include, but are not limited to, transmission and fuel lines up to the first point of interconnection, water intake and discharge structures and equipment, access roads, storage sites, switchyards, and waste disposal sites (Cal. Code. Regs., tit. 20, § 1201 (q)). The CEC has jurisdiction over the power plant and the gen-tie line from the power plant to the first point of interconnection at the Whirlwind Substation. The offsite project components that are not related facilities (such as temporary laydown and parking yards and the potential architectural berm) would be under the jurisdiction of Kern County.

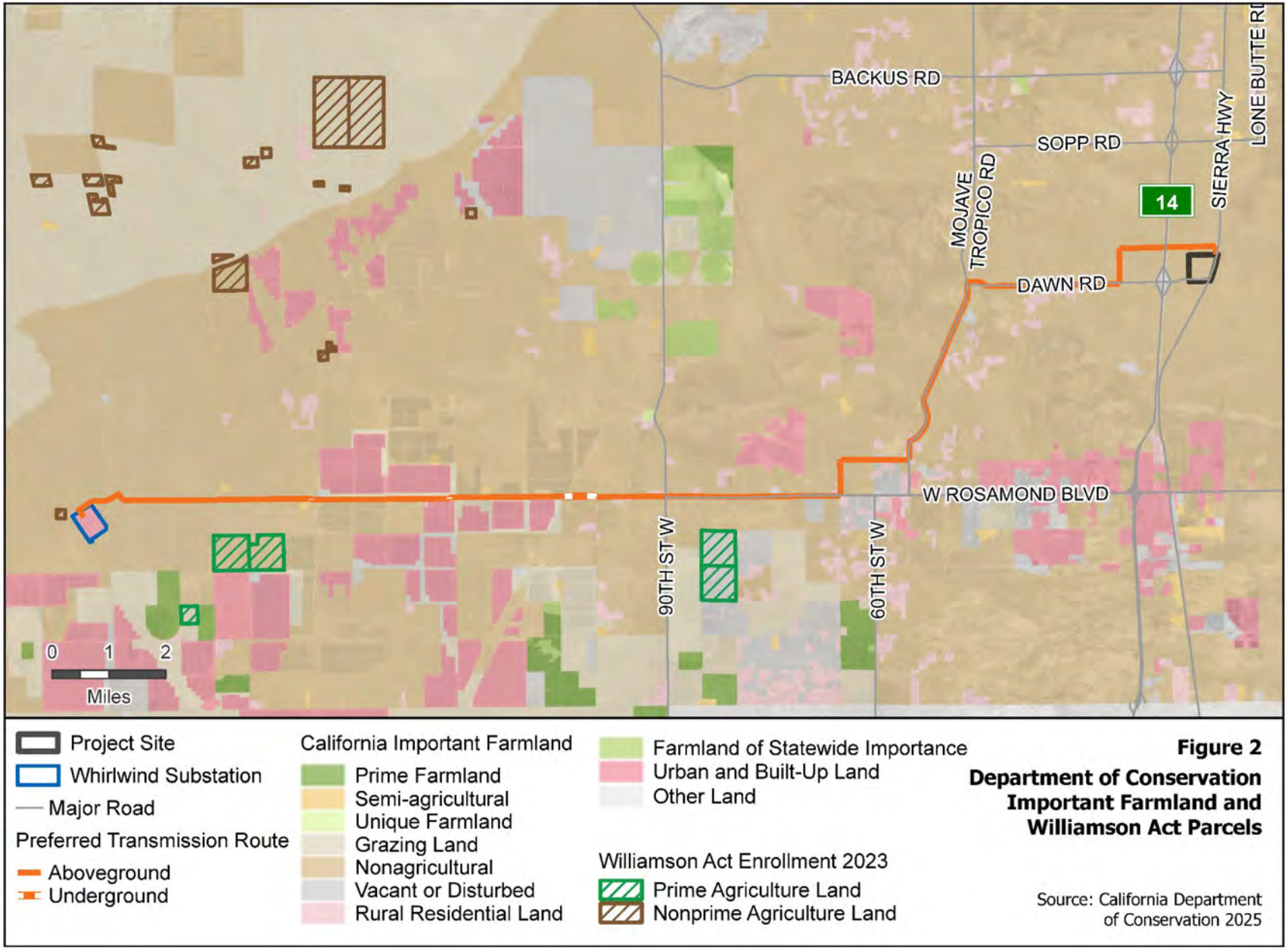

Figure 2
Department of Conservation Important Farmland and Williamson Act Parcels

Source: California Department of Conservation 2025

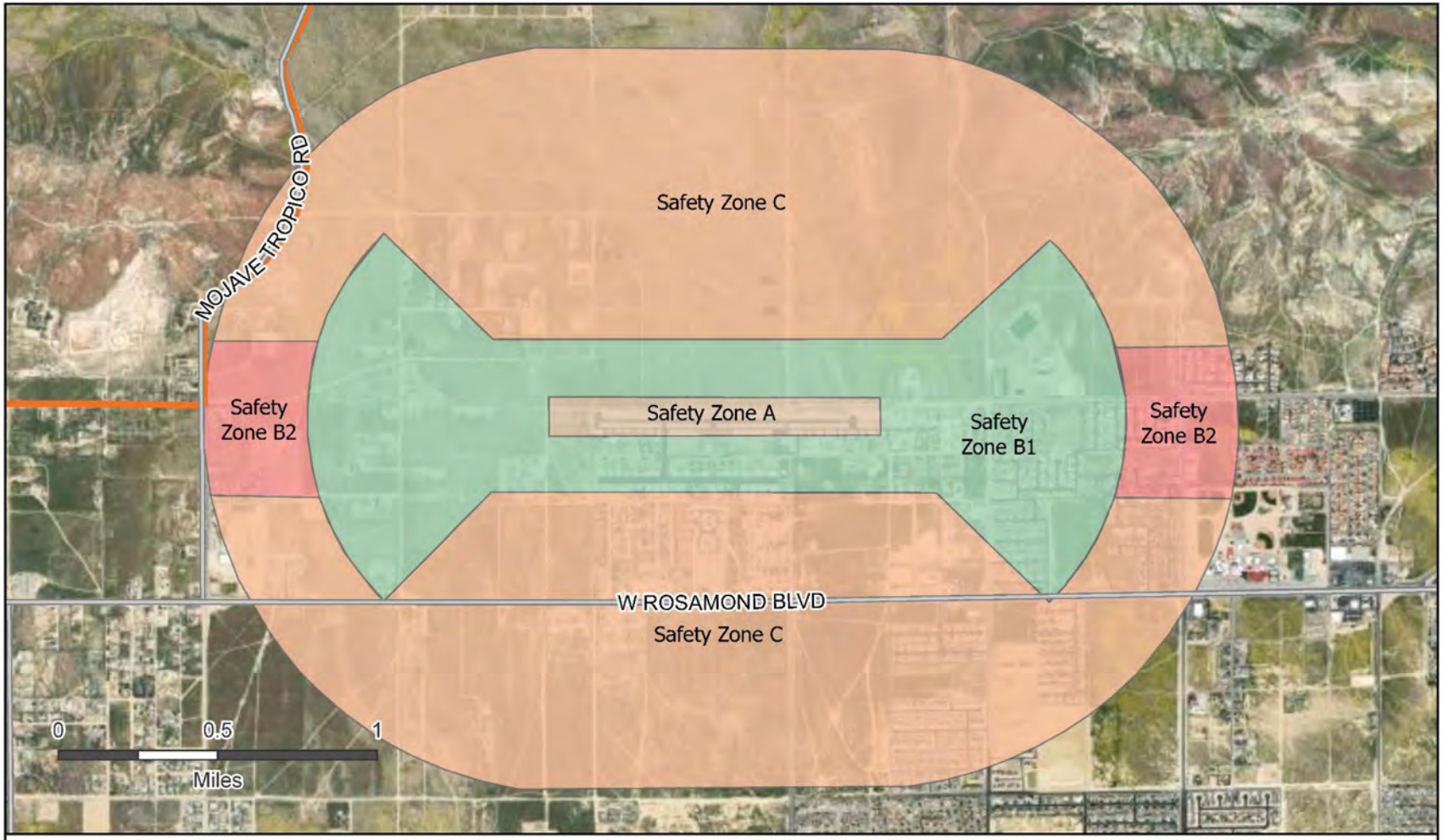

Figure 3
Rosamond Skypark

Source: Appendix 5.6A, Figure 5.6A-7

Regulatory

There are local laws, ordinances, regulations, and standards (LORS) relating to land use and agriculture that would apply to the project. The sources of these LORS are discussed below, and a discussion of consistency with these LORS is found later in **5.8.3 Project Conformance with Applicable LORS**.

Federal

Bureau of Land Management Right-of-Way Grant Requirement. A right-of-way (ROW) grant from the federal BLM is needed for construction of a project on BLM-managed public land (ESHD 2024h; BLM 2024).

Code of Federal Regulations (CFR), Title 14, Part 77.9(b). These regulations provide requirements for when an applicant must notify the Federal Aviation Administration (FAA) of any proposed construction of new structures near an airport.

State

Public Resources Code section 25519.5. This statutory provision requires an applicant to notify the United States Department of Defense (DOD) if a proposed project site or related facility is within 1,000 feet of a military installation, within military special use airspace, or beneath a military low-level flight path. Any comments provided by DOD about potential impacts to military operations must be provided with the application to the CEC.

Local

Kern County General Plan. The Kern County General Plan includes policies relating to land use and agriculture which pertain to the proposed project, discussed later in this section (Kern County 2009).

Kern County Zoning Ordinance. The Kern County Zoning Ordinance includes discussion of allowed uses and development standards for parcels in various zoning districts, including minimum side, front, and rear setbacks, and maximum height, discussed later in this section. These allowed uses and development standards would apply to the project (Kern County 2022).

Kern County Airport Land Use Compatibility Plan. The Kern County ALUCP was adopted by Kern County and the incorporated cities of Bakersfield, California City, Delano, Shafter, Taft, Tehachapi, and Wasco to provide policies for ensuring compatibility between the airports in these areas and their surrounding land uses (Kern County 2012).

Rosamond Specific Plan. Portions of the preferred gen-tie line route and alternative gen-tie route options are within the boundaries of the Rosamond Specific Plan, a document that includes land use policies that apply to areas in southeastern Kern County around the community of Rosamond (Kern County 2010).

Willow Springs Specific Plan. Portions of the preferred gen-tie line route and alternative gen-tie route options are within the boundaries of the Willow Springs Specific Plan, a document that includes land use policies that apply to areas in southern Kern County around the historic community of Willow Springs (Kern County 2008).

Cumulative

There are other pending and approved development projects in the vicinity of the WRESC. Impacts from these projects could potentially combine with impacts from the WRESC to cause significant cumulative impacts. The projects that comprise the cumulative setting for Land Use, Agriculture, and Forestry are the projects listed in **Appendix A, Table A-1**.

5.8.2 Environmental Impacts

LAND USE, AGRICULTURE, AND FORESTRY	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Would the project physically divide an established community?	☐	☐	☐	☒
b. Would the project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☒	☐
In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board.				
c. Would the project Convert Prime Farmland, Unique Farmland, or	☐	☐	☐	☒

LAND USE, AGRICULTURE, AND FORESTRY	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?				
d. Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☒	☐
e. Would the project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code, section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code, section 51104(g))?	☐	☐	☐	☒
f. Would the project result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
g. Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

Environmental checklist established by Cal. Code Regs., tit. 14, Div. 6, Ch. 3, Appendix G, Land Use and Planning and Agriculture and Forestry Resources.

5.8.2.1 Methodology and Thresholds of Significance

Staff evaluated the proposed project according to the provisions in CEQA (Pub. Resources Code § 21000 et. seq.), and the CEQA Guidelines (Cal. Code Regs., tit. 14, § 15000 et. seq.). There are no other applicable methodologies or thresholds of significance applicable to this project.

5.8.2.2 Direct and Indirect Impacts

a. Would the project physically divide an established community?

Construction

No Impact. Construction activities would not physically divide an established community. Construction activities, including development and use of temporary

parking and laydown areas, architectural berm construction, and construction of the project would occur on a maximum of 24 parcels, with 23 of these parcels, including the project parcel, adjacent to one another. The remaining parcel is west of the project across CA-14 and would be used for temporary laydown and parking (ESHD 2024j). These parcels do not serve as links between communities or parts of a community. See **Land Use Figure 1** for the location of these parcels.

Construction of gen-tie lines would often occur along or across roads, including CA-14, but staff's proposed Condition of Certification **TRANS-1** would ensure that road access is maintained. **TRANS-1** would require the project owner to submit and implement a Construction Traffic Management Plan addressing any road or lane closures, maintenance of emergency access, and access to nearby residential and commercial properties. (See **Section 5.14, Transportation** for more information.) **TRANS-1** would ensure that construction activities would not block pedestrian, bicycle, transit, or vehicular movement.

For these reasons, construction activities would not physically divide an established community, and there would be no impact.

Operation

No Impact. The permanent, operational project structures would not physically divide an existing community. The power plant and potential architectural berm would occupy vacant parcels that do not serve as a link between communities or parts of a community. The off-site gen-tie line would mainly parallel roadways such as Dawn Road, Mojave Tropico Road, and Rosamond Boulevard and would not obstruct any roadways, sidewalks, or bikeways. Because the project would not occupy parcels linking communities and would not prevent pedestrian, bike, or vehicular movement between different areas of the community, there would be no impact.

b. Would the project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

Construction

Less Than Significant Impact The parcels proposed for temporary laydown and parking during construction are adjacent to or near the main project site and zoned Limited Agriculture and General Commercial. See **Land Use Figure 4** for a depiction of the project parcels and their zoning designations. There are no references to temporary laydown or temporary parking uses in the Kern County Zoning Code for the Limited Agriculture zoning district or the General Commercial zoning district. In the Kern County Planning and Natural Resources Department's comment letters on the project, Kern County does not indicate any General Plan or Zoning Code inconsistencies resulting from the temporary laydown and parking areas (KCPNRD 2023a; KCPNRD 2024r).

To ensure that temporary laydown and parking areas are consistent with Kern County's regulations, staff has proposed Condition of Certification (COC) **LAND-1**, which requires the project owner to obtain any necessary permits from the Kern County Planning and Natural Resources Department, or other relevant departments, for development of temporary laydown and parking areas, and to comply with the applicable Kern County regulations. **LAND-1** also requires, per the request of the Kern County Planning and Natural Resources Department (KCPNRD 2024r), that the project owner provide them with the location of all properties in unincorporated Kern County accepting excavated rock from the project, and that the project owner obtain the applicable permits.

During construction, temporary concrete batch plants and rock crushing facilities would be used at the project site, which was recently rezoned by the Kern County Board of Supervisors to Exclusive Agriculture (ESHD 2024i, Kern County 2025). If not for the CEC's jurisdiction over the project, these uses would be allowed by Kern County with a CUP in the Exclusive Agriculture zoning district under Section 19.12.030G of the Kern County Zoning Code as "concrete or asphalt batch plant" and "rock, gravel, sand, concrete, aggregate, or soils crushing, processing, or distribution" (Kern County 2022). Staff has determined that the WRESC project would meet Kern County's required CUP findings for approval, as discussed in the next subsection, and would therefore be consistent with Kern County's permitting requirements. To ensure that the temporary rock crushing facilities and concrete batch plants would comply with the Kern County Zoning Code, staff has proposed COC **LAND-2** to require the project owner to submit construction site plans to the Kern County Planning and Natural Resources Department for review and comment.

There would be less than significant environmental impacts from project construction due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. Implementation of **LAND-1** and **LAND-2** would ensure project conformance with Kern County's regulations.

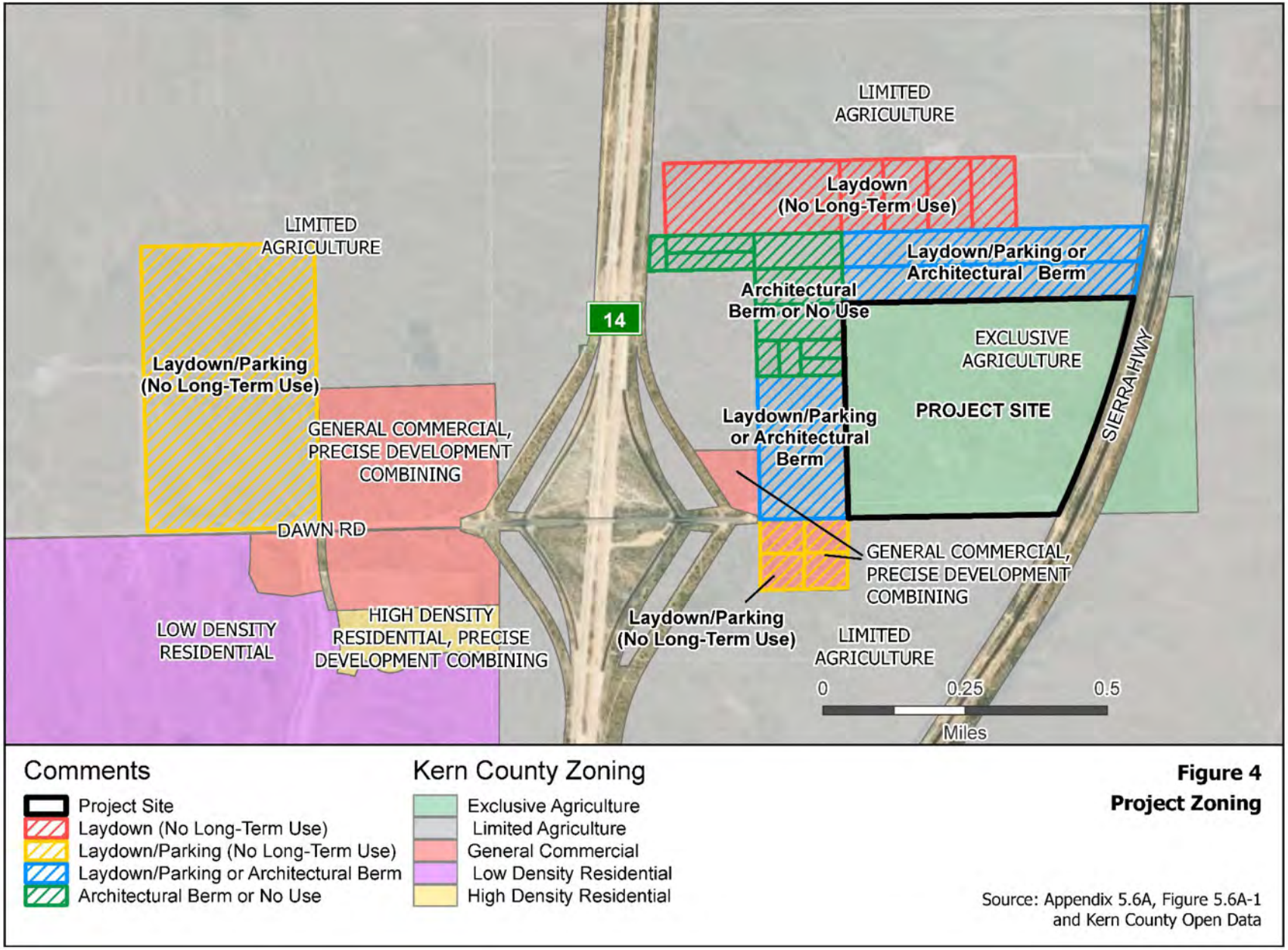

Figure 4
Project Zoning

Source: Appendix 5.6A, Figure 5.6A-1 and Kern County Open Data

Operation

Less Than Significant Impact. Staff has not identified any significant impacts resulting from project operations conflicting with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect, as discussed below. In regard to Public Resources Code section 25515.5, the DOD has not provided any comments on the project. Thus, staff considers operation of the project to be compatible with nearby military facility plans and operations.

Federal

BLM ROW Grant Requirement. The preferred gen-tie line route crosses two federally owned parcels (APN 252-060-04 and APN 252-080-02) managed by BLM, and therefore the applicant must obtain BLM permission in the form of a ROW grant for building on these parcels. To obtain a ROW grant from BLM, an applicant must file an "Application for Transportation and Utility Systems and Facilities on Federal Lands" (SF-299 Form) (ESHD 2024h; BLM 2024). BLM received the applicant's SF-299 Form on August 28, 2024 (WSP 2024y). Through the BLM ROW grant application process, BLM will ensure the project's conformance with BLM regulations and plans. With BLM approval, no impacts from conflicts with BLM-managed public lands would occur. COC **LAND-3** would ensure that the project owner obtains a ROW grant from BLM before proceeding with construction.

Code of Federal Regulations (CFR), Title 14, Part 77.9(b). These regulations provide requirements for when an applicant must notify the FAA of any proposed construction or alteration of structures near an airport. Within 20,000 feet of a public use or military airport with at least one runway more than 3,200 feet in length, FAA notification is required for any construction or alteration which exceeds a 100:1 surface from any point on the runway.

The public use airport nearest to the project is Rosamond Skypark. According to measurements made on Google Earth, the project is approximately 18,400 feet northeast of the closest edge of Rosamond Skypark's nearest runway and any project structures exceeding 184 feet in height, relative to the airport's elevation, would require FAA notification. If the altitude of Rosamond Skypark Airport was the same as the altitude of the project site, no FAA notification would be required, given that the highest project structures would be approximately 100 feet in height, below the 184-foot threshold for notification. However, the altitude of the runway at Rosamond Skypark is approximately 2,415 feet above mean sea level (AMSL) (AIRNAV 2024), and lower than the altitude at the project site, which can be as high as approximately 2,570 feet AMSL, according to Google Earth, in the vicinity of the highest project structures. The higher elevation of the project site, combined with the approximately 100 feet in height of the project's highest structures, would make the height of the tallest project structures exceed the threshold of 184 feet in height relative to the airport's elevation. FAA

notification would be required for the project. Staff proposed COC **LAND-4** to ensure that the project owner submits FAA notification for the project.

Many of the project's approximately 100-foot-tall transmission poles would also require FAA notification, especially the ones closest to Rosamond Skypark. A portion of the proposed gen-tie line passes along Mojave-Tropico Road approximately 0.9 miles west of the nearest runway at the airport. The applicant notified the FAA of the transmission structures by submitting Form FAA 7460-1, "Notice of Proposed Construction or Alteration", for each transmission pole. The FAA issued Determinations of No Hazard for each pole, with a requirement that the project owner notify the FAA within five days after each pole reaches its greatest height (WSP 2024j). COC **LAND-4** would ensure that the project owner satisfies this requirement and also ensures that the project owner would submit new FAA notifications for any new or relocated transmission poles, and for the project itself; therefore, the project would be consistent with the CFR, Title 14, Part 77.9(b).

State

Public Resources Code section 25519.5. This regulation requires an applicant to notify DOD if a proposed project site is within 1,000 feet of a military installation, within military special use airspace, or beneath a military low-level flight path. It also requires that any comments provided by DOD about potential impacts to military operations be provided to the CEC.

The project site is within military special use airspace, so DOD notification is required (OPR 2025a; OPR2025b). On May 23, 2024, the applicant submitted a project notification package to DOD's Military Aviation and Installation Assurance Siting Clearinghouse for an informal review (WSP 2024j). The DOD has made no comments and absent information to the contrary, staff concludes the project conforms with nearby military facility plans and operations.

Local

Kern County General Plan (Kern County 2009). The project site's Kern County General Plan land use designation is 8.5 Resource Management. The General Plan's description of this land use designation is: Primarily open space lands containing important resource values, such as wildlife habitat, scenic values, or watershed recharge areas. These areas may be characterized by physical constraints or may constitute an important watershed recharge area or wildlife habitat or may have value as a buffer between resource areas and urban areas. Other lands with this resource attribute are undeveloped, non-urban areas that do not warrant additional planning within the foreseeable future because of current population (or anticipated increase), marginal physical development, or no subdivision activity (Kern County 2009). The undeveloped, non-urban project site fits this description.

General Plan goals and policies for the Resource Management land use category which support the proposed project are:

Resource Goal 4: Encourage safe and orderly energy development within the County, including research and demonstration projects, and... become actively involved in the decision[s] and actions of other agencies as they affect energy development in Kern County.

Resource Goal 6: Encourage alternative sources of energy, such as solar and wind energy, while protecting the environment.

Resource Policy 16: The County will encourage development of alternative energy sources by tailoring its Zoning and Subdivision Ordinances and building standards to reflect Alternative Energy Guidelines published by the California State Energy Commission.

The project is consistent with the above General Plan Resource Management policies supporting safe and orderly energy development, demonstration projects, and alternative sources of energy. The project, a new advanced compressed air energy storage technology, would provide supplemental power to the grid without using fossil fuels or emitting greenhouse gases (ESHD 2024i). Furthermore, in a report to the Planning Commission, Kern County staff stated that the project is compatible with the General Plan land use designation of 8.5 Resource Management (Kern County 2024a).

Kern County Zoning Ordinance (Kern County 2022). The proposed gen-tie line passes through a variety of base zoning designations and their zoning overlays, including the general base zoning designations of: Estate, Exclusive Agriculture, Limited Agriculture, General Commercial, Neighborhood Commercial, Light Industrial, Open space, Low Density Residential, Platted lands, and Recreation forestry. The gen-tie line is permitted under all these zoning designations as transmission lines and supporting infrastructure (Kern County 2022, Sections 19.16.020D, 19.12.020D, 19.14.020D, 19.32.020D, 19.36.020G, 19.44.020C, 19.18.020E, 19.53.020D, and 19.42.020D) (ESHD 2024h).

A potential architectural berm would be on the north and west sides of the project on parcels zoned Limited Agriculture. The Limited Agriculture zoning district does not address architectural berm land uses. However, the Kern County Planning and Natural Resources Department has stated that they do not support the architectural berm, comprised of excavated materials from the project site, due to flood and potential drainage issues (KCPNRD 2024r).

The main project site was rezoned from Limited Agriculture to Exclusive Agriculture on February 11, 2025 by the Kern County Board of Supervisors (Kern County 2025). The applicant requested this rezone after a recommendation by the Kern County Planning and Natural Resources Department. The rezone was recommended because the Limited Agriculture zoning district is not a compatible zoning district with the site's General Plan land use designation of 8.5 Resource Management, which supports energy storage

projects (KCPNRD 2024r; Kern County 2024a). (The table called "Kern County General Plan Designations and Zone District Consistency Matrix" on page 77 of the General Plan shows that the Exclusive Agriculture zoning district is consistent with the General Plan land use designation of 8.5 Resource Management, while the Limited Agriculture zoning district is not (Kern County 2009).)

Like the Limited Agriculture zoning district, the new Exclusive Agriculture zoning district does not specifically address the newer land use category of energy storage but allows "electrical power generating plants", the listed use closest to the WRESC use, with approval of a CUP (Kern County 2022, Section 19.12.030G). A discussion of Kern County's required CUP findings, and the project's consistency with these findings, can be found below. CEC staff determined that the project meets Kern County's requirements for findings for issuance of a CUP (Kern County 2022, Section 19.104.040).

CUP Findings:

A. The proposed use is consistent with the goals and policies of the applicable General or Specific Plan.

The project is consistent with the goals and policies of the General Plan, and the transmission poles in the Rosamond Specific Plan and Willow Springs Specific Plan areas do not conflict with any specific plan policies.

As discussed earlier under "Kern County General Plan", proposed General Plan goals and policies for the Resource Management land use category which support the proposed project are:

Resource Goal 4: Encourage safe and orderly energy development within the County, including research and demonstration projects, and... become actively involved in the decision[s] and actions of other agencies as they affect energy development in Kern County.

Resource Goal 6: Encourage alternative sources of energy, such as solar and wind energy, while protecting the environment.

Resource Policy 16: The County will encourage development of alternative energy sources by tailoring its Zoning and Subdivision Ordinances and building standards to reflect Alternative Energy Guidelines published by the California State Energy Commission.

The project is consistent with the above General Plan Resource Management policies supporting safe and orderly energy development, demonstration projects, and alternative sources of energy. The project, a new advanced compressed air energy storage technology, would provide supplemental power to the grid without using fossil fuels or emitting greenhouse gases (ESHD 2024i). Furthermore, in a report to the Planning Commission, Kern County staff stated that the project is compatible with the General Plan land use designation of 8.5 Resource Management (Kern County 2024a).

B. The proposed use is consistent with the purpose of the applicable district or districts.

The project applicant obtained a rezone from the Kern County Board of Supervisors to the Exclusive Agriculture designation, as discussed earlier (Kern County 2025). The purpose of the Exclusive Agriculture zoning designation is "to designate areas suitable for agricultural uses and to prevent the encroachment of incompatible uses onto agricultural lands and the premature conversion of such lands to nonagricultural uses. Uses in the (Exclusive Agriculture) District are limited primarily to agricultural uses and other activities compatible with agricultural uses" (Kern County 2022, Section 19.12.010). The project site is not Important Farmland and there are no agricultural uses on or near the property. Even if there were agricultural uses nearby, the site's General Plan designation of 8.5 Resource Management, which is consistent with the Exclusive Agriculture zoning designation, includes energy uses as appropriate uses.

C. The proposed use is listed as a use subject to a conditional use permit in the applicable zoning district or districts or a use determined to be similar to a listed conditional use in accordance with the procedures set out in Sections 19.08.030 through 19.08.080 of this title.

Because the Exclusive Agriculture zoning district is consistent with the site's General Plan land use designation of 8.5 Resource Management, which supports the project, the applicant obtained a rezone of the site to the Exclusive Agriculture designation. The proposed project is similar to the use "electrical power generating plant", which is allowed with a CUP in the Exclusive Agriculture zoning district.

During construction, concrete batch plants and temporary rock crushing facilities would be used at the project site (ESHD 2024i). These uses would be allowed with a CUP in the Exclusive Agriculture zoning district under Section 19.12.030(G) of the Kern County Zoning Code as "concrete or asphalt batch plant" and "rock, gravel, sand, concrete, aggregate, or soils crushing, processing, or distribution" (Kern County 2022).

D. The proposed use meets the minimum requirements of this title applicable to the use.

The required setbacks for the Exclusive Agriculture zoning district are: 55, 70, or 80 feet for the front yard setback depending on the type of road; 5 or 10 feet for the side yard setback, depending on the type of road; and 5 feet for the rear yard setback. The project appears to meet these setbacks. Project review by the Kern County Planning and Natural Resources Department as required by **LAND-2** would ensure that the project would meet the applicable requirements.

There is no height limit for nonresidential project structures such as the proposed project, except in areas of protected military airspace as specified in Section 19.08.160 of the Kern County Zoning Code, where structures over 100 feet require military review (Kern County 2022). The project structures would be 100 feet or less and would not require review pursuant to the Kern County Zoning Code; however, the applicant submitted the project for DOD review, as discussed earlier, in accordance with Public

Resources Code section 25519.5, due to the project's location within military special use airspace. The DOD has not provided any comments on the project. Thus, staff considers operation of the project to be compatible with nearby military facility plans and operations.

E. The proposed use will not be materially detrimental to the health, safety, and welfare of the public or to property and residents in the vicinity.

With removal of the potential architectural berm comprised from excavated materials, as recommended by the Kern County Planning and Natural Resources Department due to potential flooding and drainage issues (KCPNRD 2024r), and approval of the hydrostatic compensation reservoir berm design by the Division of Safety of Dams (DSOD) (as required by Conditions of Certification **WATER-6** and **WATER-7**), the proposed use would not be detrimental to the health, safety, and welfare of the public or to the property and residents in the vicinity. The use would not generate any significant nuisances or hazards. See the remainder of this staff assessment, especially **Section 5.1, Air Quality**, **Section 5.7, Hazards, Hazardous Materials/Waste, and Wildfire**, **Section 5.9, Noise and Vibration**, **Section 5.10, Public Health**, **Section 5.14, Transportation**, **Section 5.16, Water Resources**, and **Section 6, Environmental Justice**. Specifically, see **Section 5.16 Water Resources** for additional discussion of review and approval of the hydrostatic compensation reservoir embankment by the DSOD as required by **WATER-6** and **WATER-7**.

Based on the above discussion of CUP findings, CEC staff has determined that the project would meet the required CUP findings for location in the Exclusive Agriculture zoning district. **LAND-2** would further ensure project compliance with the Kern County Zoning Code through review and comment on the project site plans by the Kern County Planning and Natural Resources Development Department.

Kern County Airport Land Use Compatibility Plan (Kern County 2012). A privately-owned, public use airport, Rosamond Skypark, is approximately 3.75 miles southwest of the WRESC site at 4000 Knox Avenue in Rosamond. A portion of the proposed gen-tie line passes along Mojave-Tropico Road approximately 0.9 miles west of the nearest runway at the airport. This portion of the gen-tie line is within safety zones of Rosamond Skypark called Zone B2 and Zone C, as designated by the Kern County ALUCP (ESHD 2024h; ESHD 2024j; Kern County 2012). Zone B2 is part of the Extended Approach/Departure Zone where aircraft are commonly below 800 feet above ground level (AGL) and where noise levels are high. Zone C is the outer boundary of the common traffic pattern zone for the airport and an area where aircraft are commonly below 1,000 feet AGL. According to the ALUCP, in Zone B2 and Zone C, hazards to flight are prohibited. Transmission infrastructure would not be a hazard to flight unless it was sufficiently tall to obstruct airspace, and the FAA has determined that none of the project's transmission poles would result in airspace obstruction hazards (WSP 2024j). The FAA issued Determinations of No Hazard for each pole, with a requirement that the project owner notify the FAA within five days after each pole reaches its greatest height (WSP 2024j). COC **LAND-4** would ensure the project owner

complies with this requirement and submits new FAA notifications for any new or relocated transmission poles, and for the project itself. **LAND-4** would also ensure compliance with Section 3.3.4 of the ALUCP, which discusses the need for FAA notification for certain structures near an airport.

ALUCP Policy Section 3.3 would apply to the gen-tie line in Zone B2 and indicates that an avigation easement dedicated to Kern County in the name of Rosamond Skypark may be needed to provide the right-of-flight, restrict the height of structures, and allow access for marking structures in accordance with FAA regulations if necessary. COC **LAND-2** would ensure project compliance with this condition. **LAND-2** would require the project owner to develop and submit a site plan to the Kern County Planning and Natural Resources Department for comment to ensure the project incorporates any conditions recommended by the Kern County ALUC.

Section 4.17.3 of the ALUCP discusses circumstances of project notification to Edwards Airforce Base (Kern County 2012). As discussed earlier, on May 23, 2024, the applicant submitted a project notification package to DOD's Military Aviation and Installation Assurance Siting Clearinghouse for an informal review (WSP 2024j), in accordance with Public Resources Code section 25519.5, due to the project's location within military special use airspace (OPR 2025a; OPR 2025b). The DOD has made no comments on the project and absent information to the contrary, staff concludes the project conforms with nearby military facility plans and operations.

Rosamond Specific Plan (Kern County 2010). As discussed earlier, parts of the proposed transmission line and alternative route options are within the boundaries of the Rosamond Specific Plan. Several implementation measures in "Section IV-Airports/Aircraft" of the Rosamond Specific Plan apply to the project, as follows (Kern County 2010):

1. All discretionary actions noted in Section 1.6.1 of the adopted Airport Land Use Compatibility Plan (ALUCP) shall be reviewed for consistency with the ALUCP prior to any action by the County.
2. Proposed discretionary projects within the Edwards Flight Test Center Area of Influence shall be forwarded to that agency for comment prior to action by the County.
3. Compliance with Federal Aviation Administration Part 77 regulations will be ensured during the review of discretionary development projects.

The project would be consistent with these implementation measures. As discussed above, the project is consistent with the ALUCP, and COC **LAND-2** would ensure project compliance with conditions recommended by the ALUCP. It requires the project owner to develop a site plan and submit it to the Kern County Planning and Natural Resources Department for comment, including any condition recommendations related to the ALUCP.

Furthermore, on May 23, 2024, the applicant submitted a project notification package to DOD's Military Aviation and Installation Assurance Siting Clearinghouse for an informal review (WSP 2024j), in accordance with Public Resources Code section 25519.5, due to the project's location within military special use airspace (OPR 2025a; OPR 2025b). DOD has made no comments on the project, and absent information to the contrary, staff concludes the project conforms with nearby military facility plans and operations.

Finally, the applicant notified the FAA of the project's transmission structures by submitting Form FAA 7460-1, "Notice of Proposed Construction or Alteration", for each transmission pole. The FAA issued Determinations of No Hazard for each pole, with a requirement that the project owner notify the FAA within five days after each pole reaches its greatest height. COC **LAND-4** would ensure the project owner complies with this requirement and submits new FAA notifications for any new or relocated transmission poles, and for the project itself.

Willow Springs Specific Plan (Kern County 2008). As discussed earlier, parts of the preferred gen-tie line route and alternative gen-tie route options are within the boundaries of the Willow Springs Specific Plan. There are no policies in the Willow Springs Specific Plan that apply to the project.

As discussed above, project operation would cause less than significant environmental impacts due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.

c. Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?[1]

Construction and Operation

No Impact. Maps from DOC's Farmland Mapping and Monitoring Program (FMMP) show that there is no Prime Farmland, Unique Farmland, or Farmland of Statewide

1 In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board.

Importance (Farmland) in the project area (DOC 2022a). Thus, the project, including its proposed gen-tie lines, would not cross any Farmland.

Most of the land in the project area, including the WRESC site, is categorized as "Other Land", specifically "Nonagricultural and Natural Vegetation" by DOC (DOC 2022a; Department of Conservation 2024a). DOC defines Nonagricultural and Natural Vegetation as "Heavily wooded, rocky/barren areas, riparian and wetland areas, grassland areas which do not qualify as Grazing Land due to their size or land management restrictions, small water bodies and recreational water ski lakes. Constructed wetlands are also included in this category" (Department of Conservation 2024b).

The proposed gen-tie line routes cross a combination of Nonagricultural and Natural Vegetation classifications (discussed above), and a small amount of Rural Residential, Vacant or Disturbed Land, Urban and Built-Up Land, Grazing Land, and Semi-Agricultural and Rural Commercial Land. None of these are defined as Farmland (Prime Farmland, Farmland of Statewide Importance, or Unique Farmland) according to Section 21060.1 of the California Public Resources Code.

For these reasons, there would be no impact to Farmland during construction or operation.

d. Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?

Construction and Operation

Less Than Significant Impact. The main project site parcel was recently rezoned from Limited Agriculture to Exclusive Agriculture to make the zoning designation of the site consistent with the General Plan designation of the site, which is 8.5 Resource Management. The Exclusive Agriculture zoning designation would allow the project as an "electrical power generating plant" with the approval of a CUP (Kern County 2022, Section 19.12.030G). A discussion of Kern County's required CUP findings, and the project's consistency with these findings, can be found earlier in this Land Use section in Section 5.8.2.2(b). CEC staff determined that the project meets Kern County's requirements for findings for issuance of a CUP.

The proposed gen-tie line passes through a variety of zoning designations, mostly residential zoning designations, but also agricultural zoning designations such as Limited Agriculture and Exclusive Agriculture. In all zoning designations, including the Limited Agriculture and Exclusive Agriculture zoning designations, transmission lines and associated infrastructure are an allowed use (Kern County 2022, Sections 19.14.020D and 19.12.020D).

A potential architectural berm would be on the north and west sides of the project on parcels zoned Limited Agriculture. The Limited Agriculture zoning district does not

address architectural berm land uses. However, the Kern County Planning and Natural Resources Department has stated that they do not support the architectural berm, comprised of excavated materials from the project site, due to flood and potential drainage issues (KCPNRD 2024r).

The project and its linears are not on lands under a Williamson Act contract for preservation of agricultural land. There are a few parcels under a Williamson Act contract just south of the gen-tie line along Rosamond Boulevard, and one just west of the Whirlwind Substation with which the gen-tie line connects (DOC 2022b), but project construction and operation would not cross any of these parcels.

With approval of the rezone by the Kern County Board of Supervisors, the project would have less than significant impacts in the area of conflicts with agricultural zoning and Williamson Act contracts. Implementation of **LAND-2**, which would require the project owner to submit site plans for review and comment by the Kern County Planning and Natural Resources Department, would further ensure less than significant impacts from any conflicts with agricultural zoning.

e. Would the project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code, section 12220(g)), timberland (as defined by Public Resources Code, section 4526), or timberland zoned Timberland Production (as defined by Government Code, section 51104(g))?

Construction and Operation

No Impact. The main project site and its offsite components are not on or near forest land, timberland, or timberland zoned Timberland Production.

f. Would the project result in the loss of forest land or conversion of forest land to non-forest use?

Construction and Operation

No Impact. The main project site and its offsite components are not on or near forest land.

g. Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?

Construction and Operation

No Impact. Construction of the project would not induce growth or cause any other changes in the existing environment which could result in conversion of Farmland to

non-agricultural use. There is no forest land in the area or Farmland in the immediate area.

5.8.2.3 Cumulative Impacts

Less Than Significant Impact.

Rosamond Skypark Cumulative Impacts

As discussed earlier, the FAA reviewed and issued Determinations of No Hazard for each of the WRESC's transmission poles, many of which are near Rosamond Skypark. Staff determined that the applicant must also provide notice to the FAA of the main WRESC facility and proposed COC **LAND-4** to ensure FAA notification of this facility. It is expected that the FAA would issue a Determination of No Hazard for the main WRESC facility, due to the project's distance from Rosamond Skypark and the fact that the FAA issued a "Determination of No Hazard" for the project's transmission poles, located much closer to Rosamond Skypark.

The following projects are within 20,000 feet of the runway of Rosamond Skypark and would therefore require FAA notification if they would exceed the heights described in CFR Title 14, Part 77.9(b) and Section 3.3.4 of the Kern County ALUCP. These projects could potentially combine with the WRESC, which requires FAA notification and is also within 20,000 feet of the Rosamond Skypark runway, to cause cumulative land use impacts in the form of obstruction hazards to aircraft. These other nearby projects, also listed in **Appendix A, Table A-1**, are:

(2) Investment Concepts Inc.- CUP for apartment complex- Applied

(3) Dewalt Corporation- Multifamily project- Approved

(4) Investment Concepts Inc.- CUP for apartment complex, zone change to R-3- Approved

(5) Westpark LLC, Howard Field- Hotel- Applied

(6) Halterty Development- Mixed commercial and retail- Approved

(7) BHT Developers, LLC- Auto auction facility- Applied

(10) RE McCollum LLC- Self-storage development plan- Applied

(12) FHK II LLC/Frontier Communities- Rezone to allow single-family home development- Approved

(13) Garo Karakoulian- CUP for auto dismantling and recycling facility- Applied

(14) SSI Rosamond Solar, LLC- Solar array accessory to water treatment facility- Approved

(20) Irvine Camillo- Precise Development Plan for commercial development- Applied

(22) Carl Wood- Precise Development Plan for new retail development- Applied

(23) Walter DeBoer, BRPH- Modification to Precise Development Plan for change of occupancy to manufacturing- Applied

(24) Silvia Valdez- CUP for installation of mobile home greater than 10 years old- Applied

(25) Aaron Rivani by Cindy Parra- Zone classification change from A-1 to R-1- Applied

(26) Kern County Planning Department, Zone change to R-3- Approved

(27) Kern County Planning Department, Zone change to R-3- Approved

(29) Kern County Planning Department, Zone change to R-3- Approved

(30) Kern County Planning Department, Zone change to R-3- Approved

(31) Matthew McCormick, CUP for single-family residence in C-2- Applied

(36) Gettysburg Solar/AV Apollo- Photovoltaic electrical facility with storage- Approved

Most of these projects would not trigger FAA notification, due to a combination of their locations and likely heights. If any of these projects, which are under Kern County's jurisdiction, would require FAA notification, Kern County would ensure the applicants' compliance. The FAA would then conduct a hazard analysis, usually issuing a Determination of No Hazard, sometimes with conditions such as lighting and marking any high points of the development. The FAA's review would include consideration of other nearby potential aviation hazards. This would ensure no significant cumulative impacts from the project and other projects' high structures.

In addition, none of these other projects would be in the Zone B2 safety zone of Rosamond Skypark, where part of the WRESC's gen-tie would be located; therefore, these additional projects would not cause cumulative impacts from exacerbating hazards from tall structures in the B2 safety zone. However, like a portion of the WRESC's gen-tie line, a few of the cumulative projects would be in the Zone C safety zone of Rosamond Skypark. The Zone C safety zone is the area of the airport's common traffic pattern, where aircraft are commonly flying at or below 1,000 feet AGL. Hazards to flight are prohibited in this area (Kern County 2012). The projects in the Zone C safety zone are: (4) a CUP and zone change for an apartment complex; (12) a rezone for a single-family home development, (20) a Precise Development Plan for commercial development, and (25) a zone classification change from A-1 to R-1. These land uses are allowed within Zone C, according to the Kern County ALUCP, and heights of these projects are likely below any height that would create a hazard in the Zone C safety zone. Furthermore, Kern County would ensure that any projects requiring FAA notification due to their heights would be evaluated by the FAA for hazard risk. FAA review of these projects, in addition to FAA review of the WRESC, would further ensure that there would be no significant impacts from hazards to aviation from multiple projects in the Zone C safety zone.

Military Airspace Cumulative Impacts

Most, if not all, of the cumulative projects listed in **Appendix A, Table A-1** would be under military airspace, according to CMLUCA mapping (OPR 2025b). The precise details of the military airspace are not publicly available. However, on May 23, 2024, the applicant submitted a project notification package to DOD's Military Aviation and Installation Assurance Siting Clearinghouse for an informal review (WSP 2024j), in accordance with Public Resources Code section 25519.5, due to the project's location within military special use airspace (OPR 2025a; OPR 2025b). It is expected that DOD would consider cumulative project impacts in its review of the project, since all projects under military airspace must notify DOD. The DOD has made no comments on the project and absent information to the contrary, staff concludes the project would not present any cumulative impacts to military facility plans and operations.

5.8.3 Project Conformance with Applicable LORS

Table 5.8-1 summarizes staff's determination of conformance with applicable local, state and federal LORS, including any proposed conditions of certification, where applicable, to ensure the project would comply with LORS. As shown in this table, staff concludes that with implementation of specific conditions of certification, the proposed project would be consistent with all applicable LORS. The subsection below, "Staff Proposed Conditions of Certification," contains the full text of the referenced conditions of certification.

TABLE 5.8-1 CONFORMANCE WITH APPLICABLE LORS

Applicable LORS	Conformance and Basis For Determination
Federal	
BLM ROW Grant Requirement. The preferred gen-tie line route crosses two federally owned parcels (APN 252-060-04 and APN 252-080-02) managed by BLM (ESHD 2024h). A ROW grant is needed for construction of a project on BLM-managed public land. The project applicant must file an "Application for Transportation and Utility Systems and Facilities on Federal Lands" (SF-299 Form) (ESHD 2024h).	**Yes.** On August 28, 2024, BLM received the applicant's "Application for Transportation and Utility Systems and Facilities on Federal Lands" (WSP 2024y). COC **LAND-3** would ensure the project obtains a BLM ROW grant before moving forward.
Code of Federal Regulations (CFR), Title 14, Part 77.9(b). These regulations provide requirements for when an applicant must notify the FAA of proposed construction of new structures near an airport. The main project site and many of the transmission poles require FAA notification.	**Yes.** The applicant notified the FAA of the transmission poles by submitting Form FAA 7460-1, "Notice of Proposed Construction or Alteration", for each structure. The FAA issued Determinations of No Hazard for each pole, with a requirement that the project owner notify the FAA within 5 days after each pole reaches its greatest height. COC **LAND-4** would ensure the project owner complies with this requirement and submits FAA notifications for any new or relocated transmission poles. COC **LAND-4** would also ensure the project owner submits FAA notification for the approximately 100-foot-tall structures on the main project site.

TABLE 5.8-1 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
State	
Public Resources Code section 25519.5. This provision requires the applicant to notify DOD of the project due to its location within military special use airspace. Any comments provided by DOD about potential impacts to military operations must be submitted to the Energy Commission.	**Yes.** On May 23, 2024, the applicant submitted a project notification package to DOD's Military Aviation and Installation Assurance Siting Clearinghouse for an informal review (WSP 2024j). The DOD has made no comments on the project and absent information to the contrary, staff concludes the project conforms with nearby military facility plans and operations.
Local	
Kern County General Plan	
The WRESC's General Plan land use designation is 8.5 Resource Management. The General Plan's goals and policies for the broader category of Resource areas, which includes the land use designation 8.5 Resource Management, and which support the proposed project, are: Resource Goal 4: Encourage safe and orderly energy development within the County, including research and demonstration projects, and… become actively involved in the decision[s] and actions of other agencies as they affect energy development in Kern County. Resource Goal 6: Encourage alternative sources of energy, such as solar and wind energy, while protecting the environment. Resource Policy 16: The County will encourage development of alternative energy sources by tailoring its Zoning and Subdivision Ordinances and building standards to reflect Alternative Energy Guidelines published by the California State Energy Commission.	**Yes.** The project is consistent with the above General Plan Resource policies supporting safe and orderly energy development, demonstration projects, and alternative sources of energy. The project, a new advanced compressed air energy storage technology, would provide supplemental power to the grid without using fossil fuels or emitting greenhouse gases (ESHD 2024i). Furthermore, in a report to the Planning Commission, Kern County staff stated that the project is compatible with the General Plan land use designation of 8.5 Resource Management (Kern County 2024a).
Kern County Zoning Code (Kern County 2022)	
Construction	
Temporary laydown and parking areas: The parcels proposed for temporary laydown and temporary parking during construction are mostly adjacent to the main project site and zoned Limited Agriculture and General Commercial.	**Yes.** There are no references to temporary laydown or temporary parking uses in the Kern County Zoning Code for the Limited Agriculture zoning district or the General Commercial zoning district. In the Kern County Planning and Natural Resources Department's comment letters on the project, Kern County does not indicate any General Plan or Zoning Code inconsistencies resulting from the temporary laydown and parking areas (KCPNRD 2023a; KCPNRD 2024r). To ensure that temporary laydown and parking areas are consistent with Kern County's regulations, staff has proposed COC **LAND-1**,

TABLE 5.8-1 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
	which requires the project owner to obtain any necessary permits from the Kern County Planning and Natural Resources Department, or other relevant departments, for development of temporary laydown and parking areas, and to comply with all applicable Kern County regulations. **LAND-1** also requires, per the request of the Kern County Planning and Natural Resources Department (KCPNRD 2024r), that the project owner provide them with the location of all properties in unincorporated Kern County accepting excavated rock from the project, and that the project owner obtain the applicable appropriate permits.
Temporary concrete batch plants and rock crushing facilities: During construction, these would be used at the project site, which is zoned Exclusive Agriculture (ESHD 2024i).	**Yes.** These uses would be allowed with a CUP in the Exclusive Agriculture zoning district under Section 19.12.030G of the Kern County Zoning Code as "concrete or asphalt batch plant" and "rock, gravel, sand, concrete, aggregate, or soils crushing, processing, or distribution" (Kern County 2022). Staff has determined that the WRESC project can meet the required CUP findings. Implementation of **LAND-2**, which involves Kern County review of construction site plans, would further ensure consistency.
Operation	
Gen-tie: The proposed gen-tie line passes through a variety of base zoning designations and their zoning overlays, including the general base zoning designations of: Estate, Exclusive Agriculture, Limited Agriculture, General Commercial, Neighborhood Commercial, Light Industrial, Open space, Low Density Residential, Platted lands, and Recreation forestry.	**Yes.** The gen-tie line is permitted under all these zoning designations as transmission lines and supporting infrastructure (Kern County 2022, Sections 19.16.020D, 19.12.020D, 19.14.020D, 19.32.020D, 19.36.020G, 19.44.020C, 19.18.020E, 19.53.020D, and 19.42.020D) (ESHD 2024h).
Architectural berm: A potential architectural berm would be on the north and west sides of the project on parcels zoned Limited Agriculture.	**Yes, with removal of architectural berm from project.** The Limited Agriculture zoning district does not address architectural berms. However, the Kern County Planning and Natural Resources Department has stated that they do not support the potential architectural berm, comprised of excavated materials from the project site, due to flood and potential drainage issues (KCPNRD 2024r).
Main Project Site: The Kern County Board of Supervisors recently rezoned the main project parcel from Limited Agriculture to Exclusive Agriculture, making the zoning designation of the site consistent with the General Plan designation of the site (ESHD 2024h; Kern County 2024a; Kern County 2025).	**Yes.** The Exclusive Agriculture zoning district allows "electrical power generating plants", the listed use closest to the WRESC use, with approval of a CUP (Kern County 2022, Section 19.12.030G). CEC staff determined that the project meets Kern County's requirements for findings for issuance of a CUP (Kern County 2022, Section 19.104.040).

TABLE 5.8-1 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
	Staff proposed COC **LAND-2**, which would involve review of the project's site plans by the Kern County Planning and Natural Resources Department, and would ensure consistency with the Kern County Zoning Code.
Section 19.08.160 requires military review and approval for structures over 100 feet within the military flight area.	**Yes.** The project structures would not exceed 100 feet in height and would not require military review per this regulation. However, military review is required per State regulations (discussed earlier). On May 23, 2024, the applicant submitted a project notification package to DOD's Military Aviation and Installation Assurance Siting Clearinghouse for an informal review (WSP 2024j). The DOD has not provided any comments on the project. Thus, staff considers operation of the project to be compatible with nearby military facility plans and operations.
County of Kern Airport Land Use Compatibility Plan (Kern County 2012)	
A portion of the proposed gen-tie line passes along Mojave-Tropico Road approximately 0.9 miles west of the nearest runway at the Rosamond Skypark airport. This portion of the gen-tie line is within safety zones of Rosamond Skypark called Zone B2 and Zone C, as designated by the Kern County ALUCP (ESHD 2024h; ESHD 2024j; Kern County 2012). Policy Section 3.3 would apply to the gen-tie line in Zone B2 and indicates that an avigation easement dedicated to Kern County in the name of Rosamond Skypark may be needed.	**Yes.** The project is consistent with the uses allowed in Zones B2 and C. COC **LAND-2** would ensure project compliance with the ALUCP. It requires the project owner to develop a site plan and submit it to the Kern County Planning and Natural Resources Department for comment to ensure the project incorporates any conditions recommended by the Kern County ALUC.
Section 3.3.4 of the ALUCP discusses the need for FAA notification for certain structures.	**Yes.** As discussed earlier, the applicant notified the FAA of the transmission structures by submitting Form FAA 7460-1, "Notice of Proposed Construction or Alteration", for each transmission pole. The FAA issued Determinations of No Hazard for each pole, with a requirement that the project owner notify the FAA within 5 days after each pole reaches its greatest height. COC **LAND-4** would ensure the project owner complies with this requirement and submits new FAA notifications for any new or relocated transmission poles, and for the project itself.
Section 4.17.3 of the ALUCP discusses circumstances of project notification of Edwards Airforce Base (Kern County 2012).	**Yes.** As discussed earlier, on May 23, 2024, the applicant submitted a project notification package to DOD's Military Aviation and Installation Assurance Siting Clearinghouse for an informal review (WSP 2024j), in accordance with Public Resources Code section 25519.5, due to the project's location within military special use airspace (OPR 2025a; OPR 2025b). The DOD has made no comments on the project and absent information to the contrary, staff concludes the

TABLE 5.8-1 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
	project conforms with nearby military facility plans and operations.
Rosamond Specific Plan (Kern County 2010)	
Page 33 Implementation Measures: All discretionary actions noted in Section 1.6.1 of the adopted Airport Land Use Compatibility Plan (ALUCP) shall be reviewed for consistency with the ALUCP prior to any action by the County. Proposed discretionary projects within the Edwards Flight Test Center Area of Influence shall be forwarded to that agency for comment prior to action by the County. Compliance with Federal Aviation Administration Part 77 regulations will be ensured during the review of discretionary development projects.	**Yes.** (1) The project has been reviewed by CEC staff and appears to be consistent with the ALUCP. COC **LAND-2** would ensure project compliance with any conditions recommended by the ALUC. It requires the project owner to develop a site plan and submit it to the Kern County Planning and Natural Resources Department for comment to ensure compliance with any conditions related to the ALUCP. (2) On May 23, 2024, the applicant submitted a project notification package to DOD's Military Aviation and Installation Assurance Siting Clearinghouse for an informal review (WSP 2024j), in accordance with Public Resources Code section 25519.5, due to the project's location within military special use airspace (OPR 2025a; OPR 2025b). The DOD has made no comments and absent information to the contrary, staff concludes the project conforms with nearby military facility plans and operations. (3) The applicant notified the FAA of the project's transmission structures by submitting Form FAA 7460-1, "Notice of Proposed Construction or Alteration", for each transmission pole. The FAA issued Determinations of No Hazard for each pole, with a requirement that the project owner notify the FAA within 5 days after each pole reaches its greatest height. COC **LAND-4** would ensure that the project owner complies with this requirement and submits FAA notifications for any new or relocated transmission poles, and for the project itself.

5.8.4 Comments and Responses on the Preliminary Staff Assessment

Applicant's Comments (TN 264316)

TN 264316 Comment 1: Page 5.8-28, COC **LAND-1,** second paragraph – The CEC "stands in the shoes" of Kern County, so there are not required Kern County "permits", given the CEC's preemption; however, it is routine for project owners to pay local fees for permits, ostensibly to cover the costs of the local government's review and comment confirming compliance with local requirements. Please refer to Appendix A: Land Use, Agriculture, and Forestry for suggested revision to COC **LAND-1** text.

Appendix A suggested revisions:

Page 5.8-28, COC **LAND-1**, second paragraph – Please revise text as follows: "Prior to the commencement of construction, the project owner shall ~~obtain any necessary permits from~~ **pay Kern County fees for review and comment and demonstrate compliance with requirements of** the Kern County Planning and Natural Resources Department, or other relevant departments, for development of temporary laydown and parking areas".

Page 5.8-29, COC **LAND-1**, Verification – Please revise text as follows: "At least 30 days prior to development of any temporary laydown and parking areas, the project owner shall provide to the CPM ~~the required approved permits from~~ **documentation showing payment of Kern County fees for review and comment and demonstrating compliance with requirements of** the Kern County Planning and Natural Resources Department, or any other relevant departments".

TN 264316 Comment 1 Staff Response: Kern County has jurisdiction over the offsite temporary laydown and parking areas, so the applicant would need to obtain any required permits from Kern County for use of these sites, as noted in the condition. Therefore, the condition will need to remain as proposed in the PSA.

The CEC certificate is in lieu of state, local or regional permits for use of the project site and related facilities (Pub. Resources Code §§ 25500, 25110, 25119; Cal. Code. Regs., tit. 20, § 1201 (q)). "Related facility" means a thermal powerplant, electric transmission line, or any equipment, structure, or accessory dedicated to and essential to the operation of the thermal powerplant or electric transmission line. These facilities include, but are not limited to, transmission and fuel lines up to the first point of interconnection, water intake and discharge structures and equipment, access roads, storage sites, switchyards, and waste disposal sites (Cal. Code. Regs., tit. 20, § 1201 (q)). The CEC has jurisdiction over the power plant and the gen-tie line from the power plant to the first point of interconnection at the Whirlwind Substation. The offsite project components that are not related facilities (such as temporary laydown and parking yards and the potential architectural berm) would be under the jurisdiction of Kern County.

TN 264316 Comment 2: Page 5.8-29, COC **LAND-2** – Please refer to Appendix A: Land Use, Agriculture, and Forestry for revision to COCs **LAND-2**.

Appendix A suggested revisions:

Page 5.8-29, COC **LAND-2** – Please revise text as follows:

"Prior to any grading or development for the permanent project facilities under CEC jurisdiction (including the WRESC and gen-tie line) the project owner shall develop a construction site plan (including the temporary rock crushing facility and concrete batch plant) and operation site plan and submit it to the Kern County Planning and Natural Resources Department for **review and** comment to ensure compliance with local

regulations, including conditions required by the ALUCP. The project owner shall adhere to CPM-approved site plans during construction and operation, and ensure that local regulations are complied with during construction and operation of the permanent project facilities".

Page 5.8-29, COC **LAND-2**, Verification – Please revise text as follows:

"At least 60 days prior to any grading or development for permanent project facilities under CEC jurisdiction (including the WRESC, gen-tie line, and a potential architectural berm) the project owner shall submit proposed site plans for these facilities to the Kern County Planning and Natural Resources Department for review and comment, and to the CPM for **review and** approval. The project owner shall provide any review comments from Kern County to the CPM at least 30 days prior to any grading or development for these permanent project facilities".

TN 264316 Comment 2 Staff Response: Staff accepted the proposed changes and modified COC **LAND-2** accordingly.

TN 264316 Comment 3: Page 5.8-29, COC **LAND-3** – The BLM will almost certainly issue a ROW grant, but they have discretion to use other forms of entitlement, leases for example. Please refer to Appendix A: Land Use, Agriculture, and Forestry for suggested revision to COC **LAND-3** and COC **LAND-3** Verification texts.

Appendix A suggested revisions:

Page 5.8-29, COC **LAND-3** – Please revise text as follows: "Prior to the commencement of construction **of any linear facilities on BLM land**, the project owner shall obtain a ROW grant **or similar authorization** from the Bureau of Land Management (BLM) for any development on BLM-managed public land".

Page 5.8-29, COC **LAND-3**, Verification – Please revise text as follows: "At least 60 days prior to construction **of any linear facilities on BLM land**, the project owner shall submit to the CPM documentation showing BLM's approval of a ROW grant **or similar authorization** for all development on BLM land. The project owner shall also demonstrate compliance with the BLM's conditions".

TN 264316 Comment 3 Staff Response: Staff accepted the proposed changes and modified COC **LAND-3** accordingly.

TN 264316 Comment 4: Page 5.8-30, COC **LAND-4** – Construction equipment such as cranes can trigger FAA Notification. The construction equipment can trigger such notice due to its height or its location relative to an airport runway (slope analysis). Please refer to Appendix A: Land Use, Agriculture, and Forestry for suggested revision to COC **LAND-4** and COC **LAND-4** Verification texts.

Appendix A suggested revisions:

"Prior to the commencement of construction **of each project feature requiring an FAA No Hazard Determination**, the project owner shall file Form FAA 7460-1, "Notice of Construction or Alteration", for the main project facility **structures, for construction equipment that meets the notice criteria of 14 CFR Part 77**, and for any new or relocated transmission poles that **require and** have not yet received FAA Determinations. The project owner shall comply with all FAA Determinations and requirements, including notification of the FAA within 5 days of when each structure reaches its highest height".

"The project owner shall obtain an FAA Determination of No Hazard prior to construction of the main project facility **structures, erection of construction equipment that meets the notice criteria of 14 CFR Part 77**, and construction of any new or relocated transmission poles that have not yet received Determinations. At least 30 days prior to construction of **structures, erection of construction equipment or new transmission poles subject to the FAA's 7460-1 process**, the project owner shall **for the facilities to be constructed or erected** provide to the CPM copies of all FAA Determinations".

TN 264316 Comment 4 Staff Response: Staff accepted the proposed changes and modified COC **LAND-4** accordingly, with minor modifications in wording.

Kern County Planning and Natural Resources Department Comments (TN 263490)

TN 263490 Staff Response: Although Kern County's comments regarding road dedication are related to Land Use, they are addressed in **Section 5.14, Transportation**, where they also apply.

5.8.5 Conclusions and Recommendations

As discussed above, the project would have a less than significant impact related to land use, agriculture, and forestry and would conform with applicable LORS. Staff recommends adopting the conditions of certification as detailed in subsection "5.8.6 Proposed Conditions of Certification" below.

5.8.6 Proposed Conditions of Certification

LAND-1 Prior to the commencement of construction, the project owner shall provide the Kern County Planning and Natural Resources Department with the location of all properties accepting excavated rock from the project in unincorporated Kern County, including quantity of rock to be accepted. All appropriate permits shall be obtained for the locations identified to stockpile or otherwise utilize the excavated rock.

Prior to the commencement of construction, the project owner shall obtain any necessary permits from the Kern County Planning and Natural Resources

Department, or other relevant departments, for development of temporary laydown and parking areas.

The project owner shall ensure that local regulations are complied with during construction, operation, and restoration of laydown and parking areas.

Verification: At least 30 days prior to development of any temporary laydown and parking areas, the project owner shall provide to the CPM the required approved permits from the Kern County Planning and Natural Resources Department, or any other relevant departments.

LAND-2 Prior to any grading or development for the permanent project facilities under CEC jurisdiction (including the WRESC and gen-tie line) the project owner shall develop a construction site plan (including the temporary rock crushing facility and concrete batch plant) and operation site plan and submit it to the Kern County Planning and Natural Resources Department for review and comment to ensure compliance with local regulations, including conditions required by the ALUCP. The project owner shall adhere to CPM-approved site plans during construction and operation and ensure that local regulations are complied with during construction and operation of the permanent project facilities.

Verification: At least 60 days prior to any grading or development for permanent project facilities under CEC jurisdiction (including the WRESC, gen-tie line, and a potential architectural berm) the project owner shall submit proposed site plans for these facilities to the Kern County Planning and Natural Resources Department for review and comment, and to the CPM for review and approval. The project owner shall provide any review comments from Kern County to the CPM at least 30 days prior to any grading or development for these permanent project facilities.

LAND-3 Prior to the commencement of construction of any linear facilities on BLM land, the project owner shall obtain a ROW grant or similar authorization from the Bureau of Land Management (BLM) for any development on BLM-managed public land.

Verification: At least 60 days prior to construction of any linear facilities on BLM land, the project owner shall submit to the CPM documentation showing BLM's approval of a ROW grant or similar authorization for all development on BLM land. The project owner shall also demonstrate compliance with the BLM's conditions.

LAND-4 Prior to the commencement of construction of each project feature requiring an FAA No Hazard Determination, the project owner shall file Form FAA 7460-1, "Notice of Construction or Alteration", for the main project facility structures, for construction equipment that meets the notice criteria of 14 CFR Part 77, and for any new or relocated transmission poles that require and have not yet received

FAA Determinations. The project owner shall comply with all FAA Determinations and requirements, including notification of the FAA within 5 days of when each structure reaches its highest height.

Verification: The project owner shall obtain an FAA Determination of No Hazard prior to construction of the main project facility structures, erection of construction equipment that meets the notice criteria of 14 CFR Part 77, or construction of any new or relocated transmission poles that require and have not yet received Determinations. At least 30 days prior to construction of the main project facility structures, erection of construction equipment, or construction of new transmission poles subject to the FAA's 7460-1 process, the project owner shall provide to the CPM copies of all FAA Determinations for the facilities to be constructed or erected.

5.8.7 References

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5.9 Noise and Vibration

Testimony of Ardalan Raisi Sofi

5.9.1 Environmental Setting

Existing Conditions

The Willow Rock Energy Storage Center (WRESC or project) area consists primarily of exclusive agricultural land use (ESHD 2024h, Section 5.6.3.3.1, and ESHD 2024i). The proposed project site would occupy 88.6 acres on the eastern portion of the 112-acre parcel, which is bisected by Sierra Highway (ESHD 2024h, Section 6.4.1.1, and WSP 2025g, Section 2.0).

The project is in the Mojave Desert region of Kern County (ESHD 2024i, Section 5.4.1.1). It lies near the intersection of two major transportation routes, State Route 14 (SR-14) and Sierra Highway (ESHD 2024h, Section 5.7.2.1). The nearest residential receptor, represented by Noise Sensitive Area-1 (NSA-1), is located approximately 4,200 feet to the northwest of the project site (ESHD 2024i, Section 1.2, ESHD 2024h, Section 5.7.2.2). The predominant ambient noise sources are traffic on SR-14 and Sierra Highway (ESHD 2024h, Section 5.7.2.2).

A 25-hour long-term ambient noise monitoring survey was conducted from May 22nd to May 24th, 2023, at Continuous Monitoring Location-6 (CML-6), which is located within the project site (ESHD 2024h, Section 5.7.2.2). Furthermore, a 25-hour long-term ambient noise monitoring survey was conducted from May 24th to May 25th, 2023, at CML-1, which is adjacent to NSA-1. The day-night average ambient sound levels (L_{dn}[1]) measured, over a 24-hour period, at both CML-1 and CML-6 were approximately 56 decibels on the A-weighted scale (dBA) L_{dn}. The average ambient sound levels measured at CML-1 and CML-6 during daytime hours (7:00 A.M. to 10:00 P.M.) were approximately 50 and 49 dBA L_{eq}[2], respectively. During nighttime hours (10 P.M. to 7 A.M.), the average ambient sound levels measured at CML-1 and CML-6 were approximately 49 and 50 dBA L_{eq}, respectively (ESHD 2024h, Section 5.7.2.2, Tables 5.7-5 and 5.7-6).

In addition, short-term noise measurements were conducted at four locations near residential receptors around the project area from May 22nd to May 25th, 2023. The measurements were taken during both daytime and nighttime hours at intervals of 15 minutes each. The short-term noise levels during daytime hours ranged from 43 dBA L_{eq} located west of the project site along 30th Street SW, represented by Monitoring Location-5 (ML-5), to 53 dBA L_{eq} located north of the project site along Sopp Road, represented by ML-2. The short-term noise levels during nighttime hours ranged from

1 L_{dn} is day-night average sound level, which is the 24-hour average sound pressure level calculated with a 10 dBA penalty added to nighttime hours (10 P.M. to 7 A.M.).

2 L_{eq} is a measurement of average energy level intensity of noise over a given period of time.

36 dBA L_{eq} at ML-5, to 47 dBA L_{eq} at ML-2. ML-5 is adjacent to residential receptor NSA-7, and ML-2 is adjacent to residential receptor NSA-4 (ESHD 2024h, Section 5.7.2.2, Table 5.7-4).

Regulatory

Federal

Occupational Safety and Health Act (OSHA). The Department of Labor, Occupational Safety and Health Administration (OSHA) has adopted regulations (29 C.F.R. Section 1910.95) designed to protect workers against the effects of occupational noise exposure. These regulations list permissible noise exposure levels as a function of the amount of time during which the worker is exposed. The regulations further specify a hearing conservation program that involves monitoring the noise to which workers are exposed, assuring that workers are made aware of overexposure to noise, and periodically testing the workers' hearing to detect any degradation.

State

Cal-OSHA. Cal-OSHA has promulgated Occupational Noise Exposure Regulations (Cal. Code Regs., tit. 8, Sections 5095-5099) that set employee noise exposure limits. These standards are equivalent to the federal OSHA standards.

Local

Kern County General Plan Noise Element. The Kern County General Plan Noise Element establishes noise control standards to protect public health, minimize economic impacts, and reduce noise-related annoyance. It identifies sensitive receptors, including residential areas, schools, hospitals, parks, and churches, and outlines specific performance standards for new developments. The General Plan limits outdoor noise levels in sensitive areas to 65 dBA L_{dn}. Furthermore, the Noise Element emphasizes compatibility between new developments and existing noise levels, particularly in areas near significant noise sources such as airports, highways, and railroads. It also encourages the use of sound barriers and acoustical insulation to maintain these standards (Kern County 2009).

The General Plan also includes several policies that aim to protect residential and other noise-sensitive uses from exposure to harmful or annoying noise levels. The following are General Plan policies applicable to the project:

Policy-1: Review discretionary industrial, commercial, or other noise-generating land use projects for compatibility with nearby noise-sensitive land uses.

Policy-2: Require noise level criteria applied to all categories of land uses to be consistent with the recommendations of the California Division of Occupational Safety and Health (DOSH).

Policy-5: Prohibit new noise-sensitive land uses in noise-impacted areas unless effective mitigation measures are incorporated into the project design. Such mitigation

shall be designed to reduce noise to 65 dBA L_{dn} or less in outdoor activity areas.

Policy-7: Employ the best available methods of noise control.

Kern County Municipal Code. Chapter 8.36 (Noise Control) of the Kern County Municipal Code regulates noise levels in unincorporated areas by prohibiting certain activities that generate disruptive sounds. Section 8.36.020 of the General Plan prohibits the operation of public address systems (e.g., loudspeakers, amplifiers, or megaphones) that produce loud noises beyond the confines of permanent buildings or on public property in a way that produces "loud and raucous" noise. The ordinance further restricts sound equipment use to specified distances and hours, prohibiting sounds audible beyond 150 feet from the source on public property, beyond 150 feet from the property line on private property, and up to 1,000 feet during permitted short-term events between 8:00 A.M. and midnight (Kern County 2024).

Additionally, Section 8.36.020 of the Municipal Code restricts construction noise near residential areas to specific hours: construction noise that is audible within 150 feet of the site is prohibited between 9:00 P.M. and 6:00 A.M. on weekdays and between 9:00 P.M. and 8:00 A.M. on weekends if the site is within 1,000 feet of an occupied residential dwelling. Exemptions to this restriction may be granted by the development services agency director or a designated representative for a limited time and for good cause. Additionally, emergency work is exempt from this restriction.

Chapter 19.80 (Special Development Standards) of the Kern County Municipal Code includes specific noise control requirements for commercial and industrial developments near residential areas. Section 19.80.030 mandates that non-mobile noise sources from commercial and industrial uses, except those in Heavy Industrial (M-3) districts, located within 500 feet of residential zones, must not exceed an average noise level of 65 dBA during the daytime (7:00 A.M. to 10:00 P.M.) and must not exceed 65 dBA or increase ambient noise levels by 5 dBA or more at night (10:00 P.M. to 7:00 A.M.). In consultation with the Kern County Department of Environmental Health Services, the planning director may authorize deviations and require noise attenuation measures if necessary.

Cumulative

Section 15130 of the CEQA Guidelines (Cal. Code Regs., tit. 14) requires a discussion of cumulative environmental impacts. Cumulative impacts are two or more individual impacts that, when considered together, are considerable or that compound or increase other environmental impacts. The CEQA Guidelines require that the discussion reflect the severity of the impacts and the likelihood of their occurrence but need not provide as much detail as the discussion of the impacts attributable to the project alone.

Pursuant to CEQA, a cumulative impacts analysis can be performed by either 1) summarizing growth projections in an adopted general plan or in a prior certified environmental document, or 2) compiling a list of past, present, and probable future

projects producing related or cumulative impacts. The second method has been utilized for the purposes of this staff assessment.

However, WRESC would have no cumulative noise impacts with past, present, or probable future projects, because there are no other projects located within a distance where their noise could combine with that of the WRESC to create a cumulative impact (this distance is typically one mile).

5.9.2 Environmental Impacts

NOISE AND VIBRATION	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☒	☐	☐
b. Would the project result in generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Environmental checklist established by Cal. Code Regs., tit. 14, Div. 6, Ch. 3, Appendix G, noise.

5.9.2.1 Methodology and Thresholds of Significance

The construction and operation of any power plant and large industrial facilities create noise, or undesired sound. The character and loudness of this noise, the times of day or night that it occurs, and the proximity of the facility to sensitive receptors (humans) combine to determine whether the facility would meet applicable noise control laws and ordinances, and whether it would cause significant adverse environmental impacts.

In addition, vibration may be produced as a result of construction practices, such as controlled detonations or pile driving. The ground-borne energy of vibration has the potential to cause structural damage and annoyance to humans.

In addition to the above environmental checklist, staff used the following methodology and thresholds of significance to evaluate the project.

Methodology

The California Environmental Quality Act (CEQA) Guidelines state that a project would normally be considered to have a significant impact if noise levels conflict with adopted environmental standards or plans (County's noise level threshold), or if noise levels generated by the project would substantially increase existing ambient noise levels at noise-sensitive receivers on a permanent or temporary basis.

Thresholds of Significance

Generally, an increase of 3 dBA is noticeable and an increase of 5 dBA is distinct. An increase of 5 dBA is considered less than significant, particularly if the resulting noise level does not exceed established community noise standard. (CEQA §15064.7; Federal Highway Administration [FHWA]). CEQA §15064.7 (c) allows adopting thresholds recommended by other public agencies or experts—supporting the use of established noise criteria like +5 dBA in quieter environments. FHWA guideline states that a 5 dBA increase is "discernible but not substantial" (FHWA 2024j). It further explains that a 5 dBA increase is considered a discernible change, while larger increases (10–15 dBA) are regarded as substantial, potentially doubling perceived loudness. FHWA directs states to define "substantial increase" anywhere in the 5–15 dBA range.

The CEC has jurisdiction over dozens of power generating facilities. In most cases, Commission decisions have required that operational noise from projects not exceed ambient noise levels by more than 5 dBA. They also typically require a post-construction noise survey to verify compliance with this standard. Notably, no project with operational noise increases of 5 dBA or less above ambient has ever triggered a community complaint.

Other factors, such as the frequency of occurrence of the noise and time of day/night it occurs, are also commonly considered in determining if such an increase is clearly significant or not.

There are no adopted thresholds for an increase in dBA level to be considered a significant impact for construction activities. Noise due to construction activities are considered to be less than significant if the construction activity is temporary and the use of heavy equipment and noisy activities is limited to daytime hours. However, an increase of 10 dBA or more during the day can be perceived as noisy (triggering a community reaction) and warrant additional measures to address the noise levels. An increase of 10 dBA corresponds to a doubling of loudness or dBA level and is generally considered to be the starting point at which significant noise impacts may occur (triggering a community reaction). It is very difficult to identify the exact level of noise resulting from construction because it fluctuates based on many factors over the course of a week, day, or even hour. It also depends on other factors, such as intervening structures, land topography and land cover. For example, intervening structures block or impede sound waves, and undulating topography and land roughness would play a role in attenuating the propagation of noise waves. Therefore, performance standards

(i.e., a complaint and redress process) are ultimately used as a backstop measure to address any impacts that are perceived by the community.

Kern County General Plan Noise Element and Municipal Code establish noise level thresholds and noise limitations for new projects.

In September 2013, the California Department of Transportation (Caltrans) released the Transportation and Construction Vibration Guidance Manual. This manual includes the Federal Transit Administration's (FTA) methods and findings. The Caltrans manual states that for construction activities that generate vibration, the threshold of human response begins at a peak particle velocity (PPV) of 0.16 inch per second (in/sec). This is characterized by Caltrans as a "distinctly perceptible" event with an incident range of transient to continuous (Caltrans 2013). A level of 0.20 in/sec has been found to be annoying to people in buildings and can pose a risk of architectural damage to buildings.

5.9.2.2 Direct and Indirect Impacts

a. Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Construction

Less Than Significant Impact with Mitigation Incorporated. The Kern County General Plan does not establish noise level thresholds for construction activities. However, the County's Municipal Code limits construction noise near residential areas to certain hours. Specifically, construction noise that can be heard within 150 feet of the site is prohibited between 9:00 PM and 6:00 AM on weekdays, and between 9:00 PM and 8:00 AM on weekends, if the site is located within 1,000 feet of an occupied residential dwelling (Kern County 2024). The project has proposed that construction activities would occur from 7 A.M. to 9 P.M. on weekdays and 8 A.M. to 9 P.M. on weekends when within 1,000 feet of an occupied residential dwelling (ESHD 2024h, Section 5.7.5.3).

Construction activities for the project would occur in several phases and take approximately 60 months to complete (WSP 2025g, Section 2.1.20.1). The construction phases include:

- grading
- reservoir excavation
- air and water shafts drilling and excavation
- above ground equipment installation
- cavern construction

- generation-tie (gen-tie) line and associated access road construction

For certain tasks, such as cavern work located further from sensitive receptors (more than 5,000 feet), construction may operate up to 24 hours a day as needed for critical activities (limited activities that cannot be interrupted).

Pile driving is anticipated to be used during surface work (ESHD 2024h, Section 5.7.3.2). Moreover, the project would utilize controlled detonations to excavate the underground storage cavern. Controlled detonations are scheduled every 10 to 12 hours, beginning at a depth of approximately 60 feet and extending to approximately 2,000 feet below ground surface (WSP 2025g, Section 2.1.11, and WSP 2025s, Section 5.9). Controlled detonation activities are not continuous and are scheduled to occur twice per day during daytime hours.

Construction activities would likely utilize equipment that could generate noise levels that exceed ambient noise, such as rollers, cranes, telehandlers, front-end loader, hopper, and pile driver hammer. Construction equipment typically produces noise levels between 64 dBA (i.e., conveyor) and 128 dBA (pile driver hammer) at 50 feet.

The loudest construction activities would take place during shafts drilling and excavation, and above ground equipment installation construction phases. The daytime construction noise during these phases would involve various types of heavy machinery, such as pile drivers and excavators (ESHD 2024h, Section 5.7.3.2). In contrast, nighttime construction noise would be significantly reduced, as only essential equipment would operate to support 24-hour cavern work.

As mentioned above, the nearest residential receptor to the project site, located at NSA-1, is approximately 4,200 feet from the project site, and would be just over a mile from the loudest construction activities. At NSA-1, noise levels during the loudest construction phases, including pile driving but excluding short duration controlled detonations (addressed separately below), would reach 46 dBA (ESHD 2024h, Section 5.7.3.2). The average ambient noise level at NSA-1 is 50 dBA L_{eq} during the daytime hours. Therefore, noise generated during the loudest construction phases would be below both the ambient noise level and the County standard for noise sensitive areas.

Cavern work is proposed to be conducted 24 hours a day for a period of time with an estimated eight pieces of surface equipment operating at night to support that underground work. Modeling was conducted for expected surface work during daytime and at night. The sources were modeled using an expected operational usage factor and do not include any periodic startup or shutdown noises. The nighttime construction noise contour shows that construction noise level during nighttime hours at NSA-1 would be 33 dBA, which is substantially lower than the average nighttime ambient sound level of 49 dBA L_{eq} at this location.

Furthermore, each controlled detonation event for underground cavern excavation would last only a few seconds. Typically, controlled detonation produces a maximum

noise level of 130 dBA at ground surface at a distance of 3 feet. Considering the controlled detonation event would begin at a depth of 60 feet below ground surface, the projected noise levels at the closest residence 5,400 feet away, NSA-1, would be approximately 65 dBA. This is 15 dBA above the ambient noise level of 50 dBA L_{eq} during daytime hours (when a controlled detonation would occur) at NSA-1 (ESHD 2024h, Section 5.7.3.2.2.2). The impact would be less than significant because the controlled detonation activities would occur during the day and on an infrequent basis for short durations.

The gen-tie line and associated access road construction would likely utilize heavy equipment that would generate noise. Portions of the gen-tie line would be within the vicinity of nearby residences. In general, construction noise from both the access road and gen-tie line construction could reach approximately 80 dBA at 50 feet. However, the equipment would not operate continuously, nor would all equipment operate simultaneously. Furthermore, access road and gen-tie line construction would occur during the daytime and would be short-term, intermittent, and temporary. For example, the construction activities at each pole location would usually take one or two days (Fulton-Fitch 2015). Construction equipment would also be equipped with adequate mufflers to minimize noise levels (ESHD 2024h, Section 5.7.5.3). Therefore, the noise levels from the gen-tie line and associated access road construction would be less than significant.

To address construction related noise impacts that might be perceived noisy by the surrounding community, staff proposes COCs **NOISE-1** through **NOISE-3**, **NOISE-5**, and **NOISE-6**. These conditions would provide the public with notification of construction, and noise complaint and redress process (**NOISE-1** and **NOISE-2**), would require construction workers and employees noise protection (**NOISE-3** and **NOISE-5**), and would place restrictions on construction activities (**NOISE-6**).

With implementation of COCs **NOISE-1** through **NOISE-3**, **NOISE-5** and **NOISE-6**, project construction activities would not result in generation of a substantial increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies and would not create a significant adverse noise impact.

Operation

Less Than Significant Impact with Mitigation Incorporated. The proposed project and its linear facilities would consist of aboveground energy storage infrastructure (including air turbines, compressors, transformers, and pump motors), an underground cavern at a depth of approximately 2,000 to 2,500 feet, water supply systems, and administration buildings (WSP 2025g, Section 2.1.4, and ESHD 2024h, Section 6.1 and 6.2).

The County's General Plan, along with the County Municipal Code establish noise level standards to control noise impact. The General Plan identifies sensitive receptors and

limits outdoor noise in sensitive areas to 65 dBA L_{dn}. It also includes policies to promote compatibility between new development and existing noise levels (Kern County 2009).

According to the County's Municipal Code (Chapter 19.80), non-mobile noise sources from commercial and industrial uses within 500 feet of residential zones must not exceed 65 dBA during daytime hours or increase ambient noise by more than 5 dBA at night. However, since the nearest residence is located approximately 5,400 feet away from the project's operational equipment, this noise restriction would not be applicable to the project.

Concurrent operation of all major noise-producing equipment, including low-pressure compressors, transformers, and pump motors, would result in a combined operational noise level of 50 dBA at NSA-1. This would not exceed the daytime ambient noise level of 50 dBA L_{eq} but exceeds the nighttime ambient noise level of 49 dBA L_{eq} by 1 dBA (not discernible). The operational noise level of 50 dBA at NSA-1 would also be below the General Plan's threshold of 65 dBA for daytime and 55 dBA for nighttime.

NSA-7 is farther away from the highway where ambient noise levels are lower than NSA-1. The closest measured ambient noise to NSA-7 are short-term measurements at ML-5. However, these 15-minute measurements at ML-5, representing NSA-7, do not represent ambient noise well because they don't capture long-term variability. To better estimate long-term ambient noise at NSA-7, it is appropriate to extrapolate the average long-term data from CML-1 and CML-6, which are farther from NSA-7 than ML-5 but provide continuous monitoring results.

To estimate this, the average L_{eq} noise levels at CML-1 and CML-6 were compared to the short-term ML-5 measurements during both daytime and nighttime hours. At 08:56 and 22:22, ML-5 recorded 43 and 36 dBA L_{eq}, respectively. At 09:00, CML-1 and CML-6 recorded 51 and 47 dBA L_{eq}, respectively. At 22:00, CML-1 and CML-6 recorded 45 and 48 dBA L_{eq}, respectively. The average of the two long-term monitoring locations at those times is 49 dBA L_{eq} during daytime and 47 dBA L_{eq} during nighttime.

This shows a 6 dBA difference between daytime short-term and long-term measurements and an 11 dBA difference for nighttime. These differences reflect NSA-7's quieter ambient conditions as it is farther from Highway 14 compared to CML-1 and CML-6.

The 25-hour average ambient noise levels at CML-1 are 50 dBA L_{eq} during daytime and 49 dBA L_{eq} during nighttime hours. At CML-6, they are 49 dBA L_{eq} during daytime and 50 dBA L_{eq} during nighttime hours. Averaging these results gives 50 dBA L_{eq} for both daytime and nighttime periods. Adjusting for the 6 and 11 dBA differences yields an estimated long-term ambient noise level at NSA-7 of approximately 44 dBA L_{eq} during daytime and 39 dBA L_{eq} during nighttime.

Concurrent operation of all major noise-producing equipment would result in a combined operational noise level of 41 dBA at NSA-7 (ESHD 2024h, Section 5.7.3.3.3,

Table 5.7-12). This is below the daytime ambient noise level of 44 dBA L_{eq} but exceeds the nighttime ambient level of 39 dBA L_{eq} by 2 dBA (not discernible). The operational noise level would be below the General Plan's threshold of 65 dBA for daytime and 55 dBA for nighttime. Therefore, the operational noise levels at both NSA-1 and NSA-7 would be less than significant. Project plus ambient noise results in 46 dBA L_{eq} during the daytime; 2 dBA above the ambient level. Project plus ambient noise results in 43 dBA L_{eq} during the night; 4 dBA above the ambient level. This is less than significant.

Furthermore, staff proposes COC **NOISE-4** to ensure the project would not significantly increase the ambient noise level and would comply with the county's noise thresholds. **NOISE-4** would ensure measurement and verification that operational noise performance criteria are met at the project's noise sensitive receptors.

It may be helpful to note that COC **NOISE-4** does not provide a list of specific mitigation measures. There are numerous noise-generating components in a facility of this type, including mechanical equipment, ventilation systems, and other operational infrastructure. Correspondingly, there are dozens of potential mitigation strategies—ranging from equipment-level noise controls to facility layout optimization, air handling design, and the installation of sound barriers such as walls and berms.

However, it would be premature—and potentially ineffective—to prescribe specific noise mitigation measures at this stage, prior to the completion of final engineering and detailed acoustic design. As the project advances through design development and construction, it is common for modifications to occur that may alter equipment specifications, facility layout, or material choices. These changes could render a prescriptive list of measures inaccurate or obsolete.

For this reason, staff typically does not include fixed lists of operational noise mitigation measures in the noise COCs. Instead, staff emphasizes performance-based standards and post-construction verification requirements to ensure compliance. This approach is consistent with how the CEC has addressed operational noise in the majority of its past jurisdictional power plant projects.

With implementation of COC **NOISE-4,** project operations would not result in generation of a substantial increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or municipal code, or applicable standards of other agencies and would not create a significant adverse noise impact.

b. Would the project result in generation of excessive groundborne vibration or groundborne noise levels?

Construction

Less Than Significant Impact. The primary source of vibration during the construction process would be controlled detonation activities. These controlled detonations would

be used to excavate the underground cavern required for compressed air storage beginning at a depth of approximately 60 feet and extending to approximately 2,000 feet. This analysis relies on the vibration thresholds identified by Caltrans to determine the significance of vibration impacts related to adverse human reactions. The threshold of human response begins at a PPV of 0.16 in/sec. Caltrans characterizes this as a "distinctly perceptible" event (Caltrans 2013). A level of 0.20 in/sec has been found to be annoying to people in buildings and can pose a risk of architectural damage to buildings.

Jackhammers can cause a groundborne vibration rate of 0.035 in/sec at 25 feet (less than the threshold of human response), and underground controlled detonation can cause a groundborne vibration of 0.4 in/sec at 1,280 feet (Caltrans 2013 and ESHD 2024h, Section 5.7.3.2.2.2). However, vibration rates dissipate rapidly with distance. The closest structures to the controlled detonations are the Dawn Road/CA-14 overpass, located approximately 2,500 feet away, and NSA-1 (the nearest residence to the project), located approximately 5,400 feet away from controlled detonation activities. The vibration rate generated by controlled detonations drops from 0.4 in/sec to 0.14 in/sec at the overpass 2,500 feet away. This vibration intensity is lower than the threshold of human response, or 0.16 in/sec. Therefore, vibration impacts from controlled detonations are expected to be less than significant.

The controlled detonation activities would be conducted by a mining company using personnel certified by the federal Bureau of Alcohol, Tobacco, and Firearms. Moreover, as required by California Code of Regulations (CCR) Title 8 (344.20), these controlled detonations would be performed by licensed lead construction personnel (ESHD 2024i, Section, 5.5.2.3.4). All activities would comply with federal OSHA regulations, Cal-OSHA, Mine Safety and Health Administration requirements, and any other applicable LORS (ESHD 2024h, Section 5.7.3.2.2.2).

Moreover, the gen-tie line and associated access road construction would generate construction vibration. Grading activities would include vibration-generating equipment such as rollers and compactors. A roller, which generates a higher level of vibration than a compactor, can cause a groundborne vibration rate of 0.21 in/sec at 25 feet (Caltrans 2013). However, vibration rates dissipate rapidly with distance, and the vibration rate generated by a roller drops from 0.210 in/sec to 0.098 in/sec at a distance of 50 feet from the source, which is below the Caltrans PPV limit of 0.16 in/sec. Therefore, temporary vibration impacts from the access road and gen-tie line construction activities would be less than significant.

Operation

No Impact. Sources of groundborne vibration associated with project operation would include the air turbine, compressors, transformers, and various motors. These pieces of equipment would be well-balanced, as they are designed to produce very low vibration levels (less than the threshold of human response) throughout the life of a project. In most cases, even when there is an imbalance, they could contribute to ground vibration

levels only in the vicinity of the equipment and would be dampened within a short distance. Furthermore, vibration monitoring systems would be installed to ensure the equipment remains balanced (ESHD 2024h, Section 5.7.3.3.4). An imbalance would prompt a system equipment shut down. Therefore, vibration impacts due to project operation would be less than significant.

c. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

Construction and Operation

No Impact. The nearest airport to the project site is the Rosamond Skypark Airport, located approximately 4 miles southwest of the project site. The airport is too far from the project site to result in exposure of people residing or working in the project area to excessive noise levels.

5.9.2.3 Cumulative Impacts

WRESC would have no cumulative noise impacts with past, present, or probable future projects, because there are no other projects located within a distance where their noise could combine with that of the WRESC to create a cumulative impact (this distance is typically one mile).

5.9.3 Applicable LORS and Project Conformance

Table 5.9-1 staff's determination of conformance with applicable local, state and federal LORS, including any proposed Conditions of Certification, where applicable, to ensure the project would comply with LORS. As shown in this table, staff concludes that with implementation of specific conditions of certification, the proposed project would be consistent with all applicable LORS. The subsection below, "Staff Proposed Conditions of Certification," contains the full text of the referenced conditions of certification.

TABLE 5.9-1 CONFORMANCE WITH APPLICABLE LORS

Applicable LORS	Conformance and Basis For Determination
Federal	
Occupational Health and Safety Act (OSHA)	**Yes**. COCs **NOISE-3** and **NOISE-5**
State	
Cal-OSHA	**Yes**. COCs **NOISE-3** and **NOISE-5**
Local	
Kern County General Plan Noise Element	**Yes**. COCs **NOISE-1** through **NOISE-6**
Kern County Municipal Code	**Yes**. COCs **NOISE-1** through **NOISE-6**

5.9.4 Comments and Responses on the Preliminary Staff Assessment

Applicant – TN 264316, p. 1, part 1 of 2

All instances of “blast” and “blasting” have been updated to “controlled detonations” throughout the staff assessment.

Applicant – TN 264316, p. 1, part 2 of 2

The text has been revised to clarify that the WRESC site occupies 88.6 acres on the eastern portion of a 112-acre parcel bisected by Sierra Highway.

Applicant – TN 264316, pp. 17 to 18, part 1 of 3

The commenter suggested revisions to page 5.9-7, paragraph 4:

“Furthermore, each ~~blasting~~ **controlled detonations** event for underground cavern excavation would last only a few seconds. **During shaft construction, the controlled detonation will begin at a depth of 60-ft below ground surface. Therefore, the projected increase in noise from shallow subsurface detonation will be even smaller than 9 dBA at NSA-1** ~~Typically, rock blasting produces a maximum noise level of 130 dBA. considering this level is produce at the ground surface where the shaft would be installed, the projected noise levels at closest residence 5,400 feet away, NSA-1, is approximately 65 dBA. This is 9 dBA above the ambient noise level of 56 dBA L_{dn} at NSA-1 (ESHD 2024h, Section 5.7.3.2.2.2)~~. The impact would be less than significant because the ~~blasting~~ **controlled detonations** activities would occur ~~during the day~~ and on an infrequent basis for short durations”.

Staff acknowledges that controlled detonations would begin at a depth of 60 feet below ground surface and has updated the staff assessment. This would not significantly change the proposed COCs and conclusions in the staff assessment. Also, the application indicated that controlled detonations would occur during the daytime (ESHD 2024h, Section 5.7.3.2.2.2). Therefore, the revised analysis continues to assume that the controlled detonations are daytime-only activity. Furthermore, staff has added a requirement to COC **NOISE-6** to avoid nighttime detonations, consistent with COC **BIO-7**.

Applicant – TN 264316, pp. 17 to 18 and p. A-30, part 2 of 3

The commenter stated the following with regards to COC **NOISE-4**, paragraph 1:

“Page 5.9-12, COC Noise-4, paragraph 1 – Seeks to limit project operations noise to 50 dBA L_{eq} at NSA-1, which is consistent with modeling results in the assessment, but more restrictive than the “ambient + 5 dBA” threshold that would be required for project noise to be considered "not significant" based on applicable guidance. In addition, future noise levels at NSA-1 will include the contribution from project operations plus ambient noise from baseline sources (e.g., road traffic, wind, birds) such that the project noise level at NSA-1 cannot be measured directly in the field.

We recommend that COC NOISE-4, paragraph 1, be modified such that limits are specified in terms of total or cumulative L_{eq} noise levels (i.e., ambient + project operations) since these values can be measured directly in the field. We also recommend that the specific numerical value of the noise limits be adjusted to be "ambient + 5 dBA" such that the effect of project operations noise, as such a level considered not significant. Please refer to Appendix A: Noise and Vibration for suggested revision to COC Noise-4 text.

The commenter suggested revisions to COC **NOISE-4**, paragraph 1:

"The project design and implementation shall include appropriate noise mitigation measures adequate to ensure that noise **levels measured at NSA-1 during operation of the project** ~~due to the operation of the project~~ will not exceed **55 dBA L_{eq} during the daytime period or 54 dBA L_{eq} during the nighttime period**~~50 dBA L_{eq} at NSA-1~~."

An increase of 5 dBA is considered less than significant, particularly if the resulting noise level does not exceed established community noise standards. The 55 and 54 dBA levels also comply with the County's thresholds of 65 dBA for daytime and 55 dBA for nighttime, respectively. Staff has modified COC **NOISE-4** accordingly. However, for NSA-7, the updated COC **NOISE-4**, project plus ambient would raise the ambient by 2 dBA at night and by 4 dBA during the day; also less than significant.

Applicant – TN 264316, pp. 17 to 18 and p. A-30, part 3 of 3

The commenter stated the following with regards to COC **NOISE-6**, paragraph 1:

"COC NOISE-6, paragraph 1 – condition prohibits nighttime construction activities within 1,000 feet of a residence. Should clarify that this is only noisy above-ground construction activities (i.e., underground construction activities can proceed during the nighttime period). Please refer to Appendix A: Noise and Vibration for suggested revision to COC Noise-6 text."

The commenter suggested revisions to COC **NOISE-6**, paragraph 1:

"Heavy equipment operation and noisy construction work relating to any **above-ground construction** project features, including linear facilities and pile driving within 1,000 feet of an occupied residential dwelling, and ~~blasting~~ **controlled detonations** shall be restricted to the times delineated below:

Mondays through Fridays: 6:00 A.M. to 9:00 P.M.

Saturdays and Sundays: 8:00 A.M. to 9:00 P.M."

Staff acknowledges the comment and has made the revision where appropriate. **NOISE-6** does not restrict underground construction related to the cavern to daytime hours as there are no occupied residential dwellings within 1,000 feet of the project site. Also, other below ground construction work, such as the hydrostatic compensation reservoir, that would be constructed below ground but at a shallower depth than the

cavern, would generate noise levels similar to those generated above ground. Thus, specifying that only the above-ground activities are limited to the daytime hours is not appropriate.

The hourly restrictions in COC **NOISE-6** would mitigate any potential noise and vibration impacts to nearby sensitive receptors during nighttime hours, when ambient noise levels are lower and potential disruption to sleep is greater.

Intervenor, California Unions for Reliable Energy (CURE) – TN 264343, p. 35

The commenter states that the PSA's less-than-significant impact conclusion for operational noise is unsupported because the metric for background noise levels, L_{90}, was not assessed.

Staff disagrees with the assertation that staff's impact conclusion is unsupported. As detailed below, staff continues to use the noise metric L_{eq} for the operational noise analysis. The staff's approach is consistent with standard state and federal agency practice. Staff reviewed noise impact assessments for similar projects and noise environments and determined that the noise metrics L_{eq} and L_{dn} are appropriate to characterize ambient and project noise levels.

The noise metric L_{eq}, along with the noise metric L_{dn}, are widely used in noise impact assessments at both the state and federal levels as explained in reference manuals such as the Caltrans Technical Noise Supplement to Traffic Noise Analysis Protocol (September 2013) and the Federal Transit Administration (FTA) Transit Noise and Vibration Impact Assessment Manual (September 2018). For establishing community noise threshold, most local government agencies in California also use either the L_{eq} and/or L_{dn} metrics, rather than the L_{90} metric.

Noise standards (e.g., EPA, WHO) also use L_{eq}-based metrics or L_{dn}, because these align with human perception and annoyance levels (EPA 1974, WHO 1999).

The noise metric L_{90} may be useful to characterize background noise and noise from continuous noise sources. However, the project operation would not significantly contribute to background noise levels due to the project's operational profile (intermittent charging/discharging) and the surrounding noise environment (highway noise).

L_{90} represents the noise level exceeded 90% of the time, essentially capturing the quiet or background sound environment. It's ideal for describing ambient conditions when dominant noise events (i.e., traffic, mechanical equipment hum) are not of primary concern. Power plant noise is usually intermittent—turbine ramp-ups, cooling cycles, or operational fluctuations. L_{90} mostly shows the quieter background noise, so occasional louder sounds get hidden in that average. This means L_{90} is dominated by the low-level readings and doesn't pick up intermittent plant noises. A plant's noise can be very

noticeable during certain times but still show a "normal" or low background level via L_{90}. Consider sudden hums or mechanical changes that people notice but L_{90} hides.

L_{eq} calculates the energy average over time, so it includes all fluctuations, loud or quiet. It's more representative of overall exposure and annoyance because one loud event raises the average.

L_{eq} captures energy-based exposure over a relevant timeframe (e.g., day, evening, night). Since L_{eq} includes louder events and L_{90} does not, comparing the project's operational noise level (represented by the L_{eq} metric) to the ambient L_{90} values would be mismatched—you're comparing an energy-average (project + background) to just the background level, which understates the true impact.

The appropriate approach is to compare the ambient noise at a residential site using L_{eq} over relevant periods (e.g., daytime, nighttime), as staff has done.

Intervenor, CURE – TN 264343, p. 36, part 1 of 3

The commenter states that the PSA does not include operational noise analysis for NSA-7, which is further away from the highway.

Staff has added an operational noise analysis of NSA-7 in section 5.9.2.2 and included the measured ambient noise levels at NSA-7 in section 5.9.1 of the staff assessment. Staff determined that the operational noise level at NSA-7 would be less than significant; therefore, the new information added makes an insignificant modification to the staff assessment.

Intervenor, CURE – TN 264343, p. 36, part 2 of 3

The commenter claims the PSA underestimates operational noise impacts because the applicant's noise model uses a ground absorption factor of 0.5.

While noise modeling software predicts noise accurately, some factors included in the model such as air and ground absorption factors, may sometimes differ from the actual effects in a particular environment. That's precisely the reason staff includes operational noise surveys and verification steps to ensure a project meets noise limits established in the analysis. As evident in this staff assessment, COC **NOISE-4** requires an operational noise survey and requires that in the event the project is noncompliant with the noise level limits established in **NOISE-4**, mitigation measures be implemented to reduce project noise to the level of compliance.

With implementation of **NOISE-4**, the potential increase in operational noise levels would be less than significant. Moreover, the noise complaint process outlined in COC **NOISE-2** would ensure that any potential community noise complaints are addressed.

Intervenor, CURE – TN 264343, p. 36, part 3 of 3

The commenter claims the applicant's noise model assumes only moderate thermal inversions, which may result in an underestimate of the potential noise impacts during stronger inversions.

The applicant's noise modeling included standard meteorological assumptions and accounted for the effects of a moderate thermal inversion. While strong inversions may occur in the region, they are infrequent and typically short in duration and therefore do not represent typical operating conditions. Again, while noise modeling software predicts noise accurately, some factors included in the model may sometimes differ from the actual effects in a particular environment. That's why staff includes operational noise surveys and verification steps to ensure a project meets noise limits established in the analysis (COC **NOISE-4**). Moreover, the noise complaint process outlined in COC **NOISE-2** would ensure that any potential community noise complaints are addressed.

Intervenor, CURE – TN 264343, p. 37, part 1 of 2

The commenter states that the PSA should compare construction noise (i.e. controlled detonation noise) to daytime baseline levels, not the 24-hour L_{dn}.

Staff acknowledges the methodology suggested by the commenter; however, both L_{dn} and L_{eq} are continuous noise metrics. Although staff has reevaluated this impact using the daytime L_{eq} levels, the impact would be similar. Furthermore, the pre-construction notification process required under COC **NOISE-1**, along with the noise complaint process outlined in COC **NOISE-2**, would ensure that nearby residences are informed in advance and potential community noise complaints are addressed. Regardless of which ambient noise metric is used to evaluate controlled detonations' impact, its effect is short-term, and no noise-reducing mitigation is available. Also, COC **NOISE-6** requires that controlled detonation occur during the day and is not permitted to occur at night.

Intervenor, CURE – TN 264343, p. 37, part 2 of 2

The commenter states that the PSA does not evaluate potential noise and vibration impacts from gen-tie line and access road construction, especially where construction would occur close to homes and schools.

Staff included additional analysis and evaluated noise and vibration impacts related to access road and gen-tie line construction in Section 5.9.2.2. Staff determined that the construction noise impacts would be less than significant; therefore, the new information added makes an insignificant modification to the staff assessment. Moreover, staff modified COC **NOISE-6** to incorporate mitigation to reduce construction noise and vibration impacts to nearby sensitive receptors. Furthermore, the pre-construction notification process required under COC **NOISE-1**, along with the noise complaint process outlined in COC **NOISE-2**, would ensure that nearby

residences are informed in advance and potential community noise complaints are addressed.

5.9.5 Conclusions and Recommendations

As discussed above, with implementation of conditions of certification, the project would have a less than significant impact related to noise and vibration and would conform with applicable LORS. Staff recommends adopting the conditions of certification as detailed in subsection "5.9.6 Proposed Conditions of Certification" below.

5.9.6 Proposed Conditions of Certification

NOISE-1 Prior to the start of ground disturbance, the project owner shall notify residences within one mile of the project site and linear facilities, by mail, or by other effective means, of the commencement of project construction. At the same time, the project owner shall establish a telephone number for use by the public to report any undesirable noise conditions associated with the construction, and operation of the project. If the telephone is not staffed 24 hours a day, the project owner shall include an automatic answering feature, with date and time stamp recording, to answer calls when the phone is unattended. This or a similarly effective telephone number shall be posted at the project site during construction where it is visible to passersby. This telephone number shall be maintained until the project has been operational for at least one year.

Verification: At least 15 days prior to ground disturbance, the project owner shall transmit to the compliance project manager (CPM) a statement, signed by the project owner's project manager, stating that the above notification has been performed, and describing the method of that notification. This communication shall also verify that the telephone number has been established and posted at the site and shall provide that telephone number.

NOISE COMPLAINT PROCESS

NOISE-2 Throughout the construction and operation of the project, the project owner shall document, investigate, evaluate, and attempt to resolve all project-related noise complaints.[3] The project owner or its authorized agent shall:

- use the Noise Complaint Resolution Form (shown below), or a functionally equivalent procedure acceptable to the CPM, to document and respond to the noise complaint;
- attempt to contact the person(s) making the noise complaint within 24 hours;
- conduct an investigation to determine the source of noise in the complaint;

3 A project-related noise complaint is a complaint about noise that is caused by the project as opposed to another source. Project related noise may constitute a violation by the project if any noise condition of certification, which is documented by an individual or entity affected by such noise.

- if the noise is project related, take all feasible measures to reduce the source of the noise; and
- submit the Noise Complaint Resolution Form to the CPM documenting the complaint and actions taken. The form shall include: a complaint summary, including the final results of noise reduction efforts and, if obtainable, a signed statement by the complainant that states that the noise problem has been resolved to the complainant's satisfaction.

Verification: Within five days of receiving a noise complaint, the project owner shall file with the CPM the Noise Complaint Resolution Form, that documents the resolution of the complaint. If mitigation is required to resolve the complaint, and the complaint is not resolved within three business days, the project owner shall submit an updated Noise Complaint Resolution Form when the mitigation is implemented.

EMPLOYEE NOISE CONTROL PROGRAM

NOISE-3 The project owner shall submit to the CPM for review and approval a noise control program. The noise control program shall be used to reduce employee exposure to high (above permissible) noise levels during construction in accordance with Title 8, California Code of Regulations, Sections 5095-5099, and Title 29, Code of Federal Regulations, Section 1910.95.

Verification: At least 30 days prior to the start of ground disturbance, the project owner shall submit the noise control program to the CPM for review and approval. The project owner shall make the program available to Cal-OSHA upon request.

OPERATIONAL NOISE RESTRICTIONS

NOISE-4 The project design and implementation shall include appropriate noise mitigation measures adequate to ensure that noise due to the operation of the project will not exceed 55 dBA L_{eq} during daytime hours of 7 A.M. to 10 P.M. and 54 dBA L_{eq} during nighttime hours of 10 p.m. to 7 A.M. at NSA-1.

The project design and implementation shall include appropriate noise mitigation measures adequate to ensure that noise due to the operation of the project plus ambient will not exceed 46 dBA L_{eq} during daytime hours 7 A.M. to 10 P.M. and 43 dBA L_{eq} during nighttime hours of 10 P.M. to 7 A.M. at NSA-7.

No new pure-tone components may be introduced. No single piece of equipment shall be allowed to stand out as a source of noise that draws legitimate complaints.

When the project first achieves a sustained output of 85 percent or greater of rated capacity, the project owner shall conduct a 25-hour community noise survey at NSA-1 and NSA-7 by someone who represents the project owner and is

qualified to conduct noise surveys. This survey during project's operation shall also include measurement of one-third octave band sound pressure levels at the above location to ensure that no new pure-tone noise components have been introduced.

If the results from the noise survey indicate that the power plant noise levels at the affected receptors, NSA-1 and NSA-7, exceed the above value for any given hour during the survey, mitigation measures shall be implemented to reduce noise to a level of compliance with this limit.

If the results from these noise survey indicate that pure tones are present, mitigation measures shall be implemented to eliminate the pure tones.

Verification: The survey shall take place within 45 days of the project first achieving a sustained output of 85 percent or greater. Within 30 days after completing the survey, the project owner shall submit a summary report of the survey to the CPM. Included in the survey report will be a description of any additional mitigation measures necessary to achieve compliance with the above listed noise limits, and a schedule, subject to CPM approval, for implementing these measures. When these measures are in place, the project owner shall repeat the noise survey.

Within 15 days of completion of the new survey, the project owner shall submit to the CPM a summary report of the new noise survey, performed as described above and showing compliance with this condition.

OCCUPATIONAL NOISE SURVEY

NOISE-5 Following the project's attainment of a sustained output that produces the highest noise level, the project owner shall conduct an occupational noise survey to identify any noise hazardous areas within the power plant.

The survey shall be conducted by a qualified person in accordance with the provisions of Title 8, California Code of Regulations, Sections 5095-5099 and Title 29, Code of Federal Regulations, Section 1910.95(g)(3). The survey results shall be used to determine the magnitude of employee noise exposure.

The project owner shall prepare a report of the survey results and, if necessary, identify proposed hazard controls against occupational noise exposures to be employed in order to comply with the above regulations.

Verification: Within 30 days after completing each survey, the project owner shall submit the noise survey report to the CPM. The project owner shall make the report available to Cal-OSHA upon request from Cal-OSHA.

CONSTRUCTION NOISE RESTRICTIONS

NOISE-6 Heavy equipment operation and noisy[4] construction work relating to any project features, including linear facilities and pile driving within 1,000 feet of an occupied residential dwelling, and controlled detonations shall be restricted to the times delineated below:

Mondays through Fridays:	6:00 A.M. to 9:00 P.M.
Saturdays and Sundays:	8:00 A.M. to 9:00 P.M.

Construction work including construction of the access roads to the project site, pile driving, controlled detonations shall be performed in a manner that ensures excessive noise (noise that draws a project-related complaint) is prohibited and the potential for noise complaints is reduced as much as practicable. Haul trucks and other engine-powered equipment shall be equipped with adequate mufflers and other state-required noise attenuation devices. Haul trucks shall be operated in accordance with posted speed limits. Truck engine exhaust brake use (jake braking) shall be limited to emergencies.

Avoid Controlled Detonations at Night. Controlled detonations shall be limited to daylight hours and shall terminate 30 minutes before sunset and shall not resume until 30 minutes after sunrise, unless authorized by the CPM. Sunrise and sunset times are established by the U.S. Naval Observatory Astronomical Applications Department for the geographic area where the project is located. The schedule of controlled detonations shall be provided to the CPM.

Construction activities associated with the gen-tie transmission lines and poles within 1,000 feet of an occupied residence or school shall implement the following measures or other sound attenuating mitigation measures practicable.

- Provide noise-producing equipment with noise-attenuating shields, shrouds or portable barriers or enclosures, and acoustical lining or acoustical paneling;
- Use electric construction equipment instead of diesel-powered and gasoline-powered equipment;
- Conduct truck loading, unloading, and hauling operations so noise is kept to a minimum.

Verification: Prior to ground disturbance, the project owner shall transmit to the CPM a statement acknowledging that the above restrictions will be observed throughout the construction of the project.

4 “Noisy” means noise that has the potential to cause project-related noise complaints (for the definition of “project-related noise complaint”, see the footnote in condition of certification NOISE-2)

EXHIBIT 1 - NOISE COMPLAINT RESOLUTION FORM

Willow Rock Energy Storage Center
(21-AFC-02)

NOISE COMPLAINT LOG NUMBER _____

Complainant's name and address:

Phone number: _____

Date complaint received: _____
Time complaint received: _____

Nature of noise complaint:

Definition of problem after investigation by plant personnel:

Date complainant first contacted: _____

Initial noise level at 3 feet from noise source: _____dBA Date: _____
Initial noise level at complainant's property: _____dBA Date: _____

Final noise levels at 3 feet from noise source: _____dBA Date: _____
Final noise level at complainant's property: _____dBA Date: _____

Description of corrective measures taken:

Complainant's signature: _____ Date: _____

Date installation completed: _____
Date first letter sent to complainant: _____ (copy attached)
Date final letter sent to complainant: _____ (copy attached)

This information is certified to be correct:

Plant Manager's Signature: _____

5.9.7 References

Caltrans 2013 – California Department of Transportation (Caltrans). Technical Noise Supplement to the Caltrans Traffic Noise Analysis Protocol, A Guide for Measuring, Modeling, and Abating Highway Operation and Construction Noise Impacts, Division of Environmental Analysis, Environmental Engineering, September 2013. Report No. CT-HWANP-RT-13069.25.3. Accessed on May 19, 2023. Accessed online at: https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/traffic-noise-protocol-april-2020-a11y.pdf

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EPA 1974 – Environmental Protection Agency, Protective Noise Levels dated March 1974. Accessed on: July 10, 2025. Accessed online https://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=20012HG5.TXT

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Kern 2009 – Kern County General Plan. Accessed on: November 21, 2024. Accessed online at: https://psbweb.kerncounty.com/planning/pdfs/kcgp/KCGP_Complete.pdf

Kern 2024 – Kern County Municipal Code. Accessed on: November 21, 2024. Accessed online at: https://library.municode.com/ca/kern_county/codes/code_of_ordinances?nodeId=TIT8HESA_CH8.36NOCO

WSP 2025g – Williams Sale Partnership (TN 261563). Willow Rock Updated SAFC Project Description - Section 2 Redline, dated February 5, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-AFC-02

WSP 2025s – Williams Sale Partnership (TN 264316). Willow Rock Preliminary Staff Assessment Comments Report, dated June 16, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-AFC-02

WHO 1999 – World Health Organization, Guidelines for Community Noise, dated April 1999. Accessed on: July 10, 2025. Accessed online at: https://www.who.int/publications/i/item/9789289053563

5.10 Public Health

Testimony of Huei-An (Ann) Chu

The purpose of this section of the Final Staff Assessment (FSA) is to determine if emissions of toxic air contaminants (TACs) from the proposed Willow Rock Energy Storage Center (WRESC or project) would have the potential to cause significant adverse public health impacts or to violate standards for the protection of public health. If potentially significant health impacts are identified, staff would identify and recommend mitigation measures necessary to reduce such impacts to insignificant levels.

In addition to the analysis in this **Public Health** section that focuses on potential effects on the public from emissions of TACs, CEC staff addresses the potential impacts of regulated, or criteria, air pollutants in **Section 5.1, Air Quality** of this FSA and assesses the health impacts on public and workers from accidental releases of hazardous materials in the **Section 5.7, Hazards, Hazardous Materials, and Wildfire**. The health and nuisance effects from electric and magnetic fields are discussed in the **Section 5.13, Transmission Line Safety and Nuisance**. Pollutants released from the project's wastewater streams are discussed in the **Section 5.16, Water Resources**. Releases in the form of hazardous and nonhazardous wastes are described in the **Section 5.12, Solid Waste Management**.

5.10.1 Environmental Setting

Existing Conditions

The proposed project would be a nominal 520-megawatt (MW) gross (500 MW net) and 4,160 megawatt-hour (MWh) gross (4,000 MWh net) facility using Hydrostor, Inc.'s (Hydrostor's) proprietary, advanced compressed air energy storage (A-CAES) technology (ESHD 2024h, pg. 5.9-1).

Air would be the dominant pathway for public exposure to chemical substances released by project construction and operation. Emissions to the air would consist primarily of combustion by-products produced by four internal combustion engines driving emergency generators and a fire pump. Potential health risks from combustion emissions would occur almost entirely by direct inhalation. To be conservative, additional pathways were included in the health risk modeling. The health risk assessment (HRA) was conducted following the guidelines established by the California Office of Environmental Health Hazard Assessment (OEHHA) and the California Air Resources Board (CARB) (ESHD 2024h, pg. 5.9-1).

Toxic Air Contaminants (TACs)

Health and Safety Code, section 39655 defines a toxic air contaminant (TAC) as "an air pollutant which may cause or contribute to an increase in mortality or an increase in serious illness, or which may pose a present or potential hazard to human health." In

addition, substances that have been listed as hazardous air pollutants (HAPs) pursuant to 42 U.S.C. section 7412 are TACs under the state law pursuant to Health and Safety Code, section 39657 (b). CARB formally identified HAPs in California Code of Regulations, Title 17, section 93001 (OEHHA 2024).

TACs, also referred to as HAPs or air toxics, are different from criteria pollutants, such as ground-level ozone, particulate matter, carbon monoxide, nitrogen dioxide, sulfur dioxide, and lead. Criteria pollutants are regulated using National Ambient Air Quality Standard (NAAQS) and California Ambient Air Quality Standard (CAAQS). However, there are no ambient standards for most TACs, therefore, site-specific health risk assessments (HRAs) are conducted to evaluate whether risks of exposure to TACs create an adverse impact. Specific TACs have known acute, chronic, and cancer health impacts. The California Air Resources Board (CARB) has identified TACs in the California Code of Regulations, Title 17, sections 93000 and 93001. The nearly 200 regulated TACs include asbestos, organic chemical compounds, and inorganic chemical compounds and compound categories, diesel exhaust, and certain metals. The requirements of the Air Toxic “Hot Spots” Information and Assessment Act of 1987 (Health and Saf. Code, § 44300 et seq.) apply to facilities that emit these listed TACs above regulated threshold quantities.

Health Effects of TACs

The health effects associated with TACs are quite diverse and generally are assessed locally rather than regionally. TACs could cause long-term health effects, such as cancer, birth defects, neurological damage, asthma, bronchitis, or genetic damage; or short-term effects, such as eye watering, respiratory irritation (a cough), runny nose, throat pain, and headaches (BAAQMD 2017, pg. 5-1). Numerous other health effects also have been linked to exposure to TACs, including heart disease, Sudden Infant Death Syndrome, respiratory infections in children, lung cancer, and breast cancer (OEHHA 2015).

Site and Vicinity Description

The proposed WRESC would be in Kern County within the Eastern Kern Air Pollution Control District (EKAPCD). The Willow Rock site is approximately 0.22 miles due east of the State Route 14 interchange at Dawn Road approximately 3.5 miles north of Rosamond, California (ESHD 2024h, pg. 5.9-1). The WRESC would be on approximately 88.6 acres of a private land within the unincorporated, southeastern Kern County, California. The WRESC site is north of Dawn Road and between State Route (SR) 14 and Sierra Highway (ESHD 2024i, pg. 2-1). The WRESC site lies in 2010 census tract 6029005506 (2020 Kern County census tract number is 55.14), which has a population value of 5,964 individuals per the 2020 estimate from the United States Census Bureau (ESHD 2024h, pg. 5.9-1 and 5.9-14).

Sensitive Receptors

Sensitive receptors, such as infants, the aged, and people with specific illnesses or diseases, are the subpopulations which are more sensitive to the effects of toxic substance exposure.

Schools, both public and private, day care facilities, convalescent homes, and hospitals are of particular concern. Although residences and worker receptors are not technically defined as "sensitive receptors" by OEHHA, they were conservatively analyzed as sensitive receptors in Applicant's analysis. Table 5.9-1 of the application (ESHD 2024h) and Table 5.9A-1 of Appendix 5.9A (ESHD 2024j) list the nearest sensitive receptors within 5 miles of the WRESC Site. The nearest residential receptor is approximately 0.4 miles from the project boundary (including the laydown areas) of the WRESC. The nearest worker receptor is approximately 1.49 miles north-northeast from the property line of the WRESC. The nearest sensitive receptor (residential daycare facility) is approximately 3.03 miles from the WRESC site. It should be noted the nearfield sensitive receptors provided in Table 5.9-1 may not be the maximum impacted sensitive receptors on the grid, i.e., residential, worker, school, daycare, etc. (ESHD 2024h, pg. 5.9-2).

Meteorology and Climate

Meteorological conditions, including wind speed, wind direction, and atmospheric stability, affect the extent to which pollutants are dispersed into the air and the direction of pollutant transport. This, in turn, affects the level of public exposure to emitted pollutants along with associated health risks.

The climate of the area surrounding the WRESC is influenced by the local terrain and geography. The terrain surrounding the WRESC is relatively flat with some local elevated areas immediately to the south and southeast. The southern end of the Sierra Nevada Mountain Range is approximately 12 miles to the northwest. Summers are hot, arid, and clear. Winters are cold and partly cloudy. The average high temperatures range from 98 degrees Fahrenheit (°F) in the summer to 56°F in the winter, and average low temperatures range from 69°F in the summer to 33°F in the winter. The area is arid with the wetter season occurring from the end of November to the beginning of April. The dew point generally does not exceed 60°F. Wind is most often out of the west and southwest with an average wind speed of 11.8 mph. The General William J. Fox Field Airport (Fox Field; Lancaster, California), about 19 km south of the WRESC site, is considered representative of the WRESC site and was used in the air quality modeling analyses (ESHD 2024h, pg. 5.1-11 and 5.12-2).

Quarterly and annual wind roses (from 2018 to 2022) from the meteorological data obtained from the General William J. Fox Field Airport shows that the prevailing winds that blow to the proposed WRESC site were mostly from the west and southwest (ESHD 2024o, Figure 5.1D-1 to Figure 5.1D-4). Please refer to **Section 5.1, Air Quality** for more details.

Existing Public Health Concerns

As previously noted, the proposed project site is in Kern County, within the EKAPCD. This analysis is prepared to identify the current status of respiratory diseases (including asthma), cancer, and childhood mortality rates in the population within the same county or air basin of the proposed project site. Such assessment of existing health concerns provides staff with a basis to evaluate the significance of any additional health impacts from the project and assess the need for further mitigation.

Cancer

When examining such risk estimates, staff considers it important to note that the overall lifetime risk of developing cancer for the average male in the United States is about 1 in 2, or 500,000 in one million and about 1 in 3, or 333,333 in one million for the average female (ACS 2023a).

From 2015 to 2019, the cancer incidence rates in California were 42.79 in one million for males and 38.77 for females. Also, from 2016 to 2020, the cancer death rates for California are 15.83 in one million for males and 11.82 in one million for females (ACS 2023b, Cancer Facts & Figures 2023, Table 4 and Table 5). The trends are toward lower values compared to earlier results of previous periods.

By examining the State Cancer Profiles presented by the National Cancer Institute, staff found that the trend of cancer death rates in Kern County had been falling between 2018 and 2022. These rates (of 14.55 in one million, combined male/female) were somewhat higher than the statewide average of 13.27 in one million (NCI 2024a).

According to the County Health Status Profiles 2024, the death rate due to all cancers, from 2020 to 2022, is 13.81 in one million for Kern County, slightly higher than the cancer death rate (12.2 in one million) for California (CDPH 2024a, Table 2).

Lung Cancer

As for lung and bronchus cancers, from 2015 to 2019 the cancer incidence rates in California were 4.38 in one million for males and 3.6 in one million for females. Also, from 2016 to 2020 the cancer death rates for California were 2.98 in one million for males and 2.16 in one million for females (ACS, 2023b, Table 4 and Table 5). The trends are toward lower values compared to earlier results of previous periods.

As for the statistics from State Cancer Profiles, Lung and Bronchus Cancer incidence rates in Kern County between 2017 and 2021 were 2.69 in one million, which is slightly higher than the incidence rate of the entire state (2.45 in one million) (NCI 2024b). Lung and Bronchus Cancer death rate in Kern County between 2018 and 2022 were 2.77 in one million, which is slightly higher than the incidence rate of the entire state (2.32 in one million) (NCI 2024a).

According to the County Health Status Profiles 2024, the death rate due to lung cancers, from 2020 to 2022, is 2.41 in one million for Kern County, slightly higher than the death rate (2.06 in one million) for California (CDPH 2024a, Table 4).

Asthma

The asthma diagnosis rates in Kern County are higher than the average rates in California for both adults (age 18 and over) and children (ages 1-17). The percentage of adults diagnosed with asthma was reported as 10 percent in 2005-2007, compared to 7.7 percent for the general California population. Rates for children for the same 2005-2007 period were reported as 14.8 percent in Kern County compared to 10.1 percent for the state in general (Wolstein et al., 2010).

According to the California Health Interview Survey (CHIS), the current asthma prevalence in Kern County from 2019 to 2020 for adults is 11.6%, higher than the state (9.1%). The current asthma prevalence in Kern County from 2019 to 2020 for children is not available (the state [7.4%]) (CDPH 2024b).

Valley Fever

An additional respiratory illness for the area is Valley Fever (Coccidioidomycosis). Valley Fever is an infection that occurs when the spores of the fungus *Coccidioides immitis* enter a human's lung through inhalation. When people breathe in these *Coccidioides* spores, they are at risk of developing Valley Fever.

Valley Fever is currently found in six southwestern states, including California. Most cases occur in California and Arizona among people over 60 years (CDC 2025). Kern County has higher rates of reported cases compared to other areas in California and is in a highly endemic area (CDC 2012).

The Valley fever rates of 2018 in Kern County is >100 per 100,000 population (CDPH 2021). The map by National Notifiable Diseases Surveillance System (NNDSS) shows the average incidence of reported Valley fever per 100,000 people, by county, during 2011–2017. The rate of Kern County falls in the category of >100 (CDC 2020b).

Conclusion

Given this information and considering the complexity of the proposed project which has multiple sources of multiple pollutants, staff conducted an analysis of existing health issues in the vicinity of Kern County where the proposed site would be located. The existing health analysis includes asthma, Valley Fever, and cancer. Current data shows that Kern County is ranked below average among counties of California with better overall health outcomes.

Regulatory

Federal

Clean Air Act section 112 (Title 42, U.S. Code section 7412) (National Emission Standards for Hazardous Air Pollutants [NESHAP]). CAA Section 112: NESHAP regulates emissions of air pollutants that are hazardous to human health or the environment, called hazardous air pollutants (HAPs). New sources that emit more than 10 tons per year (tpy) of any specified HAP or more than 25 tpy of any combination of HAPs are required to apply Maximum Achievable Control Technology (MACT).

National Emission Standards for Hazardous Air Pollutants (NESHAP) Subpart ZZZZ—National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines. NESHAP Subpart ZZZZ applies to the project's diesel-fired emergency gensets. However, because NSPS Subpart IIII also applies to the gensets, the units would comply with NESHAP Subpart ZZZZ by complying with the requirements of NSPS Subpart IIII. Please refer to **Section 5.1, Air Quality** for details.

State

California Health and Safety Code section 41700. This section states that "no person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause injury or damage to business or property."

The Air Toxics "Hot Spots" Information and Assessment Act (Assembly Bill [AB] 2588, 1987, Connelly) or California Health and Safety Code section 44330. The Act requires that toxic air emissions from stationary sources (facilities) be quantified and compiled into an inventory according to criteria and guidelines developed by the CARB, that each facility be prioritized to determine whether a risk assessment must be conducted, that the risk assessments be conducted according to methods developed by the Office of Environmental Health Hazard Assessment (OEHHA), that the public be notified of significant risks posed by nearby facilities, and that emissions which result in a significant risk be reduced.

Local

EKAPCD Regulation II, Rule 201.2 (synthetic minor sources): A stationary source would be considered "synthetic minor" stationary sources of HAPs if it emits or has the potential to emit HAPs quantities equal to or exceeding the lesser of the following thresholds: 1. 10 tons per calendar year or more of a single HAP listed in Section 112(b) of the Federal Clean Air Act; 2. 25 tons per calendar year or more of any combination of HAPs; or 3. Any such lesser quantity as the EPA may establish by rule.

EKAPCD Regulation II, Rule 208.2.II.F & G (finding of no significant impact): This rule establishes criteria by which a project under review by EKCAPCD can be found to have no potential for causing a significant environmental impact, and, thus, be granted a general rule exemption pursuant to Section 15061(b)(3) of the State CEQA Guidelines. Any increase in the quantity or type of toxic air contaminants emitted from the facility is shown by a risk assessment prepared in accordance with current Cal-EPA guidelines to have increased cancer risk at any receptor outside the facility perimeter less than one in one million (1×10^{-6}) and total hazard index at any receptor outside the facility perimeter less than 0.2. And the proposed project would not have a significant impact due to cumulative effects of successive projects of the same type at the same location.

EKAPCD Regulation II, Rule 210.9 (construction of major stationary source of HAP): This rule is to require new and reconstructed major sources of HAPs to utilize Best Available Control Technology for air toxics (T-BACT).

EKAPCD Regulation IV, Rule 423 (National Emissions Standards for Hazardous Air Pollutants [NESHAP, 40 CFR 63 Subpart ZZZZ: National Emissions Standards for Reciprocating Internal Combustion Engines]): This rule incorporates by reference the federal NESHAP under 40 CFR Parts 61 and 63; applicability is discussed under federal LORS.

Cumulative

According to the application for certification (AFC), no other existing major or large toxics emissions source were identified within the default distance of 0.5 miles (ESHD 2024h, pg. 5.9-13). For Air Quality cumulative analysis, a radius of six miles is normally used because based on staff's modeling experience, beyond six miles there is no statistically significant concentration overlap for nonreactive pollutant concentration between two stationary emission sources. According to **Table A-1**, the existing, approved, pending and proposed projects of potential sources of toxic air pollutants within six miles include:

- Mojave Micro Mill (1.3 miles to the project)
- Edwards Air Force Base Solar Project (2.5 miles to the project)
- True North Renewable Energy (5.4 miles to the project)
- Capella Solar (5.4 miles to the project)
- Organics Energy Solar (5.4 miles to the project)
- Golden Queen Mining Company, LLC (5.5 miles to the project)
- Sanborn Solar (5.9 miles to the project)

This analysis considers how the WRESC along with these projects may impact the health of the identified receptors.

5.10.2 Environmental Impacts

PUBLIC HEALTH	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determination.				
a. Would the project expose sensitive receptors to substantial pollutant concentrations or result in other public health impacts?	☐	☒	☐	☐

Environmental checklist established by CEQA Guidelines, Appendix G, air quality and staff additions.

5.10.2.1 Methodology and Thresholds of Significance

This section discusses TAC emissions to which the public could be exposed during project construction/demolition and routine operation. As mentioned above, since non-criteria pollutants[1] do not have ambient (outdoor) air quality standards that specify health-based levels considered safe for everyone, a HRA is used to determine if people might be exposed to those types of pollutants at unhealthy levels.

The standard approach currently used for a HRA involves four steps: 1) hazard identification, 2) exposure assessment, 3) dose-response assessment and 4) risk characterization (OEHHA, 2003). These four steps are briefly discussed below:

1. **Hazard identification** is conducted to determine the potential health effects that could be associated with project emissions. For air toxics sources, the main purpose is to identify whether or not a hazard exists. Once a hazard has been identified, staff evaluates the exact TAC(s) of concern and determines whether a TAC is a potential human carcinogen or is associated with other types of adverse health effects.
2. **An exposure assessment** is conducted to estimate the extent of public exposure to project emissions, including: (1) the worst-case concentrations of project emissions in the environment using dispersion modeling; and (2) the amount of pollutants that people could be exposed to through inhalation, ingestion, and dermal contact via contaminated air, food, water or soil. Therefore, this step involves emissions quantification, modeling of environmental transport and dispersion, evaluation of environmental fate, identification of exposure routes, identification of exposed populations and sensitive subpopulations, and estimation of short-term and long-term exposure levels.

1 Carbon dioxide (CO_2) is also a non-criteria pollutant, but it is also not considered a TAC at normal consideration and is not evaluated in this analysis.

3. **A dose-response assessment** is conducted to characterize the relationship between exposure to an agent and incidence of an adverse health effect in exposed populations. The assumptions and methodologies of dose-response assessment are different between cancer and non-cancer health effects. In cancer risk assessment, the dose-response relationship is expressed in terms of a potency (or slope) factor that is used to calculate the probability of getting cancer associated with an estimated exposure. In cancer risk assessment, it is assumed that risk is directly proportional to dose. It is also assumed that there is no threshold for carcinogenesis. In non-cancer risk assessment, dose-response data developed from animal or human studies are used to develop acute and chronic non-cancer Reference Exposure Levels (RELs). The acute and chronic RELs are defined as the concentration at which no adverse non-cancer health effects are anticipated. Unlike cancer health effects, non-cancer acute and chronic health effects are generally assumed to have thresholds for adverse effects. In other words, acute or chronic injury from a TAC would not occur until exposure to the pollutant has reached or exceeded a certain concentration (i.e., threshold).
4. **Risk characterization** is conducted to integrate the health effects and public exposure information and to provide quantitative estimates of health risks resulting from project emissions. Staff characterizes potential health risks by comparing worst-case exposure to safe standards based on known health effects.

Staff conducts its public health analysis by evaluating the information and data provided in the AFC by the applicant. Staff also relies upon the expertise and guidelines of the California Environmental Protection Agency (Cal/EPA) Office of Environmental Health Hazard Assessment (OEHHA) to: (1) identify contaminants that cause cancer or other non-cancer health effects, and (2) identify the toxicity, cancer potency factors and non-cancer RELs of these contaminants. Staff relies upon the expertise of the CARB and local air districts to conduct ambient air monitoring of TACs and on the California Department of Public Health (CDPH) to evaluate pollutant impacts in specific communities. The public health related data sets, guidelines and technical analysis issued by these agencies are routinely relied on by experts in the field of public health to perform project level analysis to identify any impacts to public health from the construction and operation of the project.

For each project, a screening-level risk assessment is initially performed using simplified assumptions that are intentionally biased toward protection of public health. That is, staff uses an analysis designed to overestimate public health impacts from exposure to project emissions. It is likely that the actual risks from the source in question would be much lower than the risks as estimated by the screening-level assessment. The risks for such screening purposes are based on examining conditions that would lead to the highest, or worst-case, risks and then using those assumptions in the assessment. Such an approach usually involves the following:

- using the highest levels of pollutants that could be emitted from the plant;

- assuming weather conditions that would lead to the maximum ambient concentration of pollutants;
- using the type of air quality computer model which predicts the greatest plausible impacts;
- calculating health risks at the location where the pollutant concentrations are estimated to be the highest, even if it is unlikely anybody would be in that area;
- assuming that an individual's exposure to carcinogenic (cancer-causing) agents would occur continuously for 30 or 70[2] years; and
- using health-based objectives aimed to protect the most sensitive members of the population (i.e., the young, elderly, and those with respiratory illnesses).

A screening-level risk assessment would, at a minimum, include the potential health effects from inhaling hazardous substances. Some facilities would also emit certain substances (e.g. semi-volatile organic chemicals and heavy metals) that could present a health hazard from non-inhalation pathways of exposure (OEHHA 2003, Tables 5.1, 6.3, 7.1). When these multi-pathway substances are present in facility emissions, the screening-level analysis would include the following additional exposure pathways: soil ingestion, dermal exposure, consumption of locally grown plant foods, mother's milk and water ingestion[3] (OEHHA 2003, pg. 5-3).

The HRA process addresses three categories of health impacts: (1) acute (short-term) health effects, (2) chronic (long-term) non-cancer effects, and (3) cancer risk (also long-term). They are discussed below.

Acute Non-cancer Health Effects

Acute health effects are those that result from short-term (one-hour) exposure to relatively high concentrations of pollutants. Such effects are temporary in nature and include symptoms such as irritation of the eyes, skin, and respiratory tract.

Chronic Non-cancer Health Effects

Chronic noncancer health effects are those that result from long-term exposure to lower concentrations of pollutants. Long-term exposure is defined as more than 12 percent of

2 In 2015 Guidance, OEHHA recommends that an exposure duration (residency time) of 30 years (instead of 70 years) be used to estimate individual cancer risk for the maximally exposed individual resident (MEIR). In addition, for the maximally exposed individual worker (MEIW), OEHHA now recommends using an exposure duration of 25 years (instead of 40 years) to estimate individual cancer risk for off-site workers (OEHHA 2015, Table 8.5).

3 The HRA exposure pathways for the proposed project included inhalation, soil ingestion, dermal (through the skin) absorption, mother's milk, home-grown produce (HARP output files), not including water ingestion, beef/dairy ingestion, and pig/chicken/egg ingestion.

a lifetime, or about eight years (OEHHA 2003, pg. 6-5). Chronic non-cancer health effects include heart and respiratory system diseases that reduced breathing efficiency such as asthma.

Reference Exposure Levels (RELs)

The analysis for both acute and chronic non-cancer health effects compares the maximum project contaminant levels to safe levels known as Reference Exposure Levels, or RELs. These are amounts of toxic substances to which even sensitive individuals could be exposed without suffering any adverse health effects (OEHHA 2003, pg. 6-2). In other word, the REL is a concentration below which there is assumed to be no observable adverse health impact to a target organ system. These exposure levels are specifically designed to protect the most sensitive individuals in the population, such as infants, the aged, and people with specific illnesses or diseases which make them more sensitive to the effects of toxic substance exposure. The RELs are based on the most sensitive adverse health effect reported in the medical and toxicological literature and include specific margins of safety. The margins of safety account for uncertainties associated with inconclusive scientific and technical information available at the time of setting the RELs. They are therefore meant to provide a reasonable degree of protection against hazards that research has not yet identified.

A non-cancer hazard quotient (HQ) signals whether such chronic health effects are likely from exposure to one chemical. If there are exposures to multiple chemicals, the HQ for each chemical is added up to calculate a hazard index (HI) (OEHHA 2020).

The HQ is estimated using the predefined REL of a pollutant, ground level concentration, exposure duration, and other parameters. For an acute HQ the one-hour maximum concentration is divided by the acute REL for the substance. For a repeated 8 hour HQ, the 8-hour average concentration is divided by the 8-hour REL. For a chronic HQ, the annual concentration is divided by the chronic REL (CARB 2015, pg.95 and Table 9-1).

Concurrent exposure to multiple toxic substances would result in health effects that are equal to, less than, or greater than effects resulting from exposure to the individual chemicals. Only a small fraction of the thousands of potential combinations of chemicals have been tested for the health effects of combined exposures. In conformity with California Air Pollution Control Officers Association (CAPCOA) guidelines, the HRA assumes that the effects of each substance are additive for a given organ system (OEHHA 2003, pg. 1-5 and 8-12). Non-cancer risk is then indicated with a HI number for pollutant-targeted organ systems (CARB, pg. 75). The HI is the sum of two or more hazard quotients for multiple substances and/or multiple exposure pathways. Other possible mechanisms due to multiple exposures include those cases where the actions would be synergistic or antagonistic (where the effects are greater or less than the sum, respectively). For these types of exposures, the HRA could underestimate or overestimate the risks.

Cancer Risks

For carcinogenic substances, the health assessment considers the risk of developing cancer and assumes that continuous exposure to the carcinogen would occur over a 30 or 70-year lifetime[4]. The risk that is calculated is not meant to project the actual expected incidence of cancer, but rather a theoretical upper-bound estimate based on the worst-case assumptions.

Cancer Potency Factors

Cancer risk is the likelihood that a person would develop cancer and is expressed in terms of chances per million of developing cancer over a lifetime from exposure to a chemical contaminant. If a person is exposed to multiple cancer-causing chemicals from a site, the risk from each chemical is added up to calculate the person's cumulative cancer risk. The cancer risk estimate does not include a person's background risk, which is the risk a person faces of developing cancer due to other causes (OEHHA 2020).

Cancer risk is a function of the maximum expected pollutant concentration, the probability that a particular pollutant would cause cancer (called potency factors), and the length of the exposure period. Cancer risks for individual carcinogens are added together to yield a total cancer risk for each potential source. The conservative nature of the screening assumptions used means that the actual cancer risks from project emissions would be considerably lower than estimated.

Cancer risk is calculated using the predefined cancer potency factor of a pollutant, ground level exposure concentration, duration of exposure, and other parameters (e.g., age sensitivity) (CARB 2015, Table 9-1). As previously noted, the screening analysis is performed to assess the worst-case risks to public health associated with the proposed project. If the screening analysis were to predict a risk below significance levels, no further analysis would be necessary and the source would be considered acceptable with regard to carcinogenic effects. If, however, the risk were to be above the significance level, then further analysis using more realistic site-specific assumptions would be performed to obtain a more accurate estimate.

Receptors

For purposes of the construction and operational HRA evaluations, the following four types of receptors are usually identified:

- Point of maximum impact (PMI). This receptor represents the highest concentration and risk point on the receptor grid for the analysis under consideration.
- Maximally exposed individual resident (MEIR). This receptor represents the maximum impacted actual residential location on the grid for the analysis under

4 See footnote 2.

consideration.

- Maximally exposed individual worker (MEIW). This receptor represents the maximum impacted actual worker location on the grid for the analysis under consideration.
- Maximally exposed individual sensitive (MEIS). This receptor represents the maximum impacted actual sensitive location on the grid for the analysis under consideration. This location is a non-residential sensitive receptor, i.e., school, hospital, daycare center, or convalescent home.

Significance Criteria

CEC staff assesses the maximum cancer and non-cancer impacts from specific carcinogenic and non-carcinogenic exposures by first estimating the potential impacts on the maximally exposed individual. This is a person hypothetically exposed to WRESC emissions at a location where the highest ambient impacts were calculated using the worst-case assumptions. Since the individual's exposure would produce the maximum impacts possible around the source, staff uses this risk estimate as a marker for acceptability of the project's impacts on public health.

The health effects significant threshold levels for EKAPCD and California are presented in **Table 5.10-1**. These are consistent with the notification levels established by CARB for Kern County under AB 2588 (CARB 2021) and staff agrees that use of the EKAPCD thresholds is appropriate and applicable to this project.

TABLE 5.10-1 HEALTH RISK SIGNIFICANCE THRESHOLD LEVELS FOR EASTERN KERN AIR POLLUTION CONTROL DISTRICT (EKAPCD)

Risk Category	Significance Thresholds	
	EKAPCD Net Project Risk	State of California
Cancer Risk	<=1 in one million without Toxics Best Available Control Technology (TBACT) <=10 in one million with TBACT	<= 1 in a million without TBACT <=10 in a million with TBACT
Chronic Hazard Index	1.0	1.0
Acute Hazard Index	1.0	1.0
Cancer Burden	N/A	1.0

Source: ESHD 2024h, Table 5.9-6

Also, facilities with elevated risks are required to provide public notice. And if the risks are considered significant, the facility must work to reduce emissions to acceptable levels within 5 years (ESHD 2024h, pg. 5.9-8).

The risks predicted in the HRA are compared to the following EKAPCD levels (ESHD 2024h, pg. 5.9-8):

- Public Notification Threshold: Required to notify the public if:
  - The cancer risk is greater than or equal to 10 in one million.
  - The non-cancer chronic or acute hazard index is greater than 1.0.

- Significant Risk Threshold: Required to notify the public and prepare a risk reduction audit plan if:
  - The cancer risk is greater than or equal to 100 in one million.
  - The non-cancer chronic or acute hazard index is greater than 5.0.

Acute and Chronic Non-cancer Health Risks

As mentioned above, staff assesses the non-cancer health effects by calculating a hazard index. A HI is a ratio obtained by comparing exposure from facility emissions to the safe exposure level (i.e., REL) for that pollutant. When the HI or HQ is less than 1, non-cancer health effects are not expected for people exposed to chemicals from the site. When the number is greater than 1, non-cancer health effects are possible, but not certain (OEHHA 2020).

A Total HI of less than 1.0 would indicate that cumulative worst-case exposures would not lead to significant non-cancer health effects. In such cases, asthma and other non-cancer health impacts would be considered unlikely even for sensitive members of the population. CEC staff would therefore conclude that there would be no significant asthma and other non-cancer project-related public health impacts. This assessment approach is consistent with risk management guidelines of both California OEHHA and the U.S. Environmental Protection Agency (U.S. EPA).

Cancer Risk

A cancer risk that is at or below 1 chance in a million (or 1×10^{-6}) is not a public health concern. This means that no more than one person in a population of one million people exposed to the same level of chemical contaminant(s) at the site would develop cancer over a lifetime (OEHHA 2020).

An incremental cancer risk greater than 10 in one million from a project should be regarded as suggesting a potentially significant carcinogenic impact on public health. The 10 in one million risk level is also used by the Air Toxics “Hot Spots” (AB 2588) program as the public notification threshold for air toxic emissions from existing sources, and by Proposition 65, the Safe Drinking Water and Toxic Enforcement Act of 1986, (Health & Safety Code, §§25249.5 et seq.) for guidance in establishing significance levels for carcinogenic exposures. The significant risk level of 10 in one million is also consistent with the level of significance adopted by many California air districts. In general, these air districts would not approve a project with a cancer risk estimate of more than 10 in one million.

An important distinction between staff’s approach and the Proposition 65 risk characterization approach is that the Proposition 65 significance level applies separately to each cancer-causing substance, whereas staff determines significance based on the total risk from all the cancer-causing pollutants to which the individual might be exposed in the given case. Thus, the significance level applied by staff is more conservative (health-protective) than the manner applied by Proposition 65.

As noted earlier, the initial risk analysis for a project is typically performed at a screening level, which is designed to overstate actual risks, so that health protection could be ensured. Staff's analysis also addresses potential impacts on all segments of the population, including the young, the elderly, and individuals with existing medical conditions that would render them more sensitive to the adverse effects of TACs and any minority or low-income populations that are likely to be disproportionately affected by impacts. To accomplish this goal, staff uses the most current acceptable public health exposure levels (both acute and chronic) set to protect the public from the effects of air toxics being analyzed. When a screening analysis shows the cancer risks to be above the significance level, refined assumptions would be applied for likely a lower, more realistic, risk estimate. If, after refined assumptions, the project's risk is still found to exceed the significance level of 10 in one million, staff would recommend appropriate measures to reduce the risk to less than significant levels. If, after all feasible risk reduction measures have been considered and a refined analysis still identifies a cancer risk of greater than 10 in one million, staff would deem such a risk to be significant and unmitigable and would not recommend project approval.

Cancer Burden

To evaluate population risk, regulatory agencies have used the cancer burden as a method to account for the number of incremental cancer cases that could potentially occur in a population. The population burden can be calculated by multiplying the cancer risk and the number of people exposed at various cancer risk levels (OEHHA 2015, pg.1-4).

Cancer burden is defined as the estimated increase in the occurrence of cancer cases in a population resulting from exposure to carcinogenic air contaminants. In other words, it is a hypothetical upper-bound estimate of the additional number of cancer cases that could be associated with toxic air emissions from the project. Cancer burden is calculated as the maximum product of any potential carcinogenic risk greater than 1 in one million, and the number of individuals at that risk level. Therefore, if a predicted derived adjusted cancer risk is greater than 1 in one million, the cancer burden is calculated for each census block receptor (OEHHA 2015, pg. 8-1). A census block is defined as the smallest entity for which the Census Bureau collects and tabulates decennial census information. A centroid is defined as the central location within a specified geographic area (ESHD 2024h, pg. 5.9-11).

The cancer burden is calculated on the basis of lifetime (70-year) risks (whereas individual cancer risk such as the ones at the PMI, MEIR or MEIS is based on 30-year residential exposure). Cancer burden is independent of how many people move in or out of the vicinity of an individual facility. For example, if 10,000 people are exposed to a carcinogen at a concentration with a 1×10^{-5} cancer risk for a lifetime the cancer burden is 0.1, and if 100,000 people are exposed to a 1×10^{-5} risk the cancer burden is 1 (OEHHA 2015, pg. 8-16).

5.10.2.2 Direct and Indirect Impacts

a. Would the project expose sensitive receptors to substantial pollutant concentrations or result in other public health impact?

Construction

Less Than Significant with Mitigation Incorporated. The construction phase of the proposed project is expected to take approximately 60 months, followed by several months of startup and commissioning. Construction-related emissions are temporary and localized, resulting in no long-term effects to the public (ESHD 2024h, pg. 5.9-3). Project construction emissions would result from the combustion of fuel in vehicles and equipment, fugitive dust emissions from wind erosion, land clearing and materials movement, rock screening and crushing, concrete batch plant operations, and travel on paved and unpaved roads.

Fugitive Dust

Fugitive dust is defined as dust particles that are introduced into the air from vehicle and construction equipment, including grading, truck loading/dumping, and travel on paved and unpaved roadways during project construction. Fugitive dust emissions can create a nuisance causing adverse effects.

The effects of fugitive dust on public health are covered in **Section 5.1, Air Quality** which includes staff's recommended mitigation measures. With the implementation of **AQ-SC1** through **AQ-SC5**, the PM10 impacts of the project during construction would be less than significant. In addition, the applicant would submit the Fugitive Dust Emission Control Plan to EKAPCD to prevent fugitive dust plumes from leaving the project boundary. As long as the dust plumes are kept from leaving the project site, there would be no significant concern of fugitive dust adversely affecting public health.

Diesel Exhaust

The primary air toxic pollutant of concern from construction activities is diesel particulate matter (diesel PM or DPM) generated during movement of diesel-fueled construction equipment and vehicles.

Diesel exhaust is a complex mixture of thousands of gases and fine particles and contains over 40 substances listed by the U.S. EPA as HAPs and by CARB as TACs. The solid material in diesel exhaust is known as diesel particulate matter (DPM) (CARB 2023a). Diesel exhaust is also characterized by CARB as "particulate matter from diesel-fueled engines."

DPM has been the accepted surrogate for whole diesel exhaust since the late 1990s. CARB identified DPM as the surrogate compound for whole diesel exhaust in its Proposed Identification of Diesel Exhaust as a Toxic Air Contaminant staff report in April 1998 (Appendix III, Part A, Exposure Assessment [CARB 1998]). DPM is primarily composed of aggregates of spherical carbon particles coated with organic and inorganic

substances. Diesel exhaust deserves particular attention mainly because of its ability to induce serious non-cancerous effects and its status as a likely human carcinogen. The impacts from human exposure would include both short and long-term health effects. Short-term effects can include increased coughing, labored breathing, chest tightness, wheezing, and eye and nasal irritation. Effects from long-term exposure can include increased coughing, chronic bronchitis, reductions in lung function, and inflammation of the lung. Epidemiological studies strongly suggest a causal relationship between occupational diesel exhaust exposure and lung cancer. Diesel exhaust is listed by the U.S. EPA as "likely to be carcinogenic to humans" (U.S. EPA 2002).

Based on health effects studies, the Scientific Review Panel (SRP) on TACs in 1998 recommended a cancer unit risk factor of $3x10^{-4}$ $(\mu g/m^3)^{-1}$ and a chronic REL for diesel exhaust particulate matter of five micrograms per cubic meter of air ($\mu g/m^3$) (U.S. EPA 2003). However, SRP did not recommend a specific value for an acute REL since available data in support of a value was deemed insufficient. Therefore, there is no acute REL for diesel particulate matter, and it was not possible to conduct an assessment for its acute health effects.

Construction Health Risk Assessment (HRA) for Diesel Exhaust

A screening HRA was conducted for the construction period due to emissions of diesel particulate matter (ESHD 2024h, pg. 5.9-4). Health risks were calculated for an exposure period of 5 years. The construction HRAs were run for the architectural berm and no-architectural berm options with identical receptor grids but different fence lines (ESHD 2024h, pg. 5.9-11). Staff only reports the no-architectural berm option in **Table 5.10-2** since its HRA results are higher than architectural berm option.

TABLE 5.10-2 CONSTRUCTION HAZARD/RISK FROM DPM

Receptor Type	Cancer Risk Impact (in one million)	Chronic Non-Cancer Hazard Index (HI) (unitless)	Acute Non-Cancer Hazard Index (HI) (unitless)
PMI[1]	**273**	0.1192	-
MEIR[2]	3.05	0.00133	-
MEIS[3]	0.711	0.00031	
MEIW[4]	0.36	0.00133	-
EKAPCD Significance Threshold	10	1	1[5]

Notes:
[1] Point of Maximum Impact (PMI). It is on the immediate eastern project fence line.
[2] Maximally Exposed Individual Resident (MEIR). It is approximately 2,200 feet northwest of the project boundary.
[3] Maximally Exposed Individual Sensitive (MEIS). It is the Rosamond Elementary School and approximately 2.8 miles southeast of the project boundary.
[4] Maximally exposed individual worker (MEIW). It is at the same location of MEIR.
[5] The EKAPCD threshold value is for all the pollutants. However, due to insufficient information of a specific value for an acute REL, there is no acute REL for diesel particulate matter, and it was not possible to conduct an assessment for its acute health effects.
Source: ESHD 2024h, Table 5.9-10, and HRA modeling files provided by the applicant.

The HRA results for the construction activities show a maximum off-property residential cancer risk (maximally exposed individual resident or MEIR) of 3.05 in one million. This impact is below the significance threshold of 10 in one million. Even though the calculated point of maximum impact or PMI (i.e., 273 in one million) is higher than the threshold, it is on the immediate eastern fence line and do not represent either actual worker or actual residential receptor locations. All chronic risk exposures are less than the significance criteria of 1.0 at all receptors for both the architectural berm and no-architectural berm options and thus, the project will not contribute to any type of chronic impact on human health (ESHD 2024h, pg. 5.9-11).

Per request by staff's Data Request 39, the applicant provided a map of the 10-in-one-million risk with this response as Attachment DR39-1 for both the berm and no berm options. There are no structures or buildings within the extent of the 10-in-one-million risk (no berm option) isopleth. Therefore, it is not expected that any member of the public would be exposed to this level of risk since there would be no public member residing or present in this very limited area with continuous exposure over the five (5) year construction period. Also, the project would be required to comply with the CEC Condition of Certification **AQ-SC5** to include maximum use of Tier 4 construction equipment, to the extent that Tier 4 construction equipment is available to reduce the construction DPM emissions.

Also, the risk numbers of MEIR, MEIS and MEIW are less than the threshold of 10 in one million. Therefore, staff concludes that there is no significant cancer health risk from the toxic air emissions from construction activities.

The predicted chronic health index at the PMI, MEIR, MEIS and MEIW are 0.1192, 0.00133, 0.00031 and 0.00133, respectively. The chronic hazard indices for diesel exhaust during construction activities are all lower than the significance level of 1.0. This means that there would be no chronic non-cancer impacts expected from construction activities.

Accordingly, public health risk associated with construction is expected to be less than significant and no additional mitigation is necessary.

Valley Fever

Construction could disturb a certain percentage of top soil that could harbor the *Coccidioides* spores, possibly exposing humans to the risk of Valley Fever (ESHD 2024h, pg. 5.9-1). On-site and off-site workers, visitors and nearby residents could be exposed from inhaling these fungal spores from wind-blown dust generated from soil excavation work. As mentioned above, Kern County has higher rates of reported cases of valley fever compared to other areas in California and is in a highly endemic area (CDC 2012, CDC 2020b and CDPH 2021).

To minimize the risk of getting Valley Fever, Center for Disease Control and Prevention (CDC) recommends the following measures (CDC 2020a):

- Try to avoid areas with a lot of dust like construction or excavation sites.
- If can't avoid these areas, wear an N95 respirator.
- Stay inside during dust storms and close your windows.
- Avoid activities that involve close contact to dirt or dust, including yard work, gardening, and digging.
- Use air filtration measures indoors.

The California Department of Public Health (CDPH) also recommends:

- Avoid dust in places where Valley fever is common (where Valley fever rates are high):
    - Stay inside and keep windows and doors closed when it is windy outside and the air is dusty, especially during dust storms.
    - Consider avoiding outdoor activities that involve close contact to dirt or dust, including yard work, gardening, and digging, especially if you are in one of the groups at higher risk for severe or disseminated Valley fever.
    - Cover open dirt areas around your home with grass, plants, or other ground cover to help reduce dusty, open areas.
    - While driving in these areas, keep car windows closed and use recirculating air, if available.
    - Try to avoid dusty areas, like construction or excavation sites.
    - If cannot avoid these areas, or must be outdoors in dusty air, consider wearing an N95 respirator to help protect against breathing in dust that can cause Valley fever.
- When digging in dirt or stirring up dust in areas where Valley fever is common:
    - Stay upwind of the area where dirt is being disturbed.
    - Wet down soil before digging or disturbing dirt to reduce dust.
    - Consider wearing an N95 respirator (mask).
    - After returning indoors, change out of clothes if covered with dirt.
        - Be careful not to shake out clothing and breathe in the dust before washing. If someone else is washing your clothes, warn the person before they handle the clothes.

Kern County Planning and Natural Resources Department also proposed the following control measures to minimize personnel and public exposure to potential Valley Fever (KCPNRD 2024r):

a. Equipment, vehicles, and other items shall be thoroughly cleaned of dust before they are moved off site to other work locations.

b. Wherever possible, grading and trenching work shall be phased so that earth-moving equipment is working well ahead or downwind of workers on the ground.

c. The area immediately behind grading or trenching equipment shall be sprayed with water before ground workers move into the area.

d. In the event that a water truck runs out of water before dust is sufficiently dampened, ground workers being exposed to dust shall leave the area until a truck can resume water spraying.

e. To the greatest extent feasible, heavy-duty earth-moving vehicles shall be closed-cab and equipped with a High Efficiency Particulate Arrestance (HEPA)-filtered air system.

f. Workers shall receive training in procedures to minimize activities that may result in the release of airborne *Coccidioides immitis* (CI) spores, to recognize the symptoms of Valley Fever, and shall be instructed to promptly report suspected symptoms of work-related Valley Fever to a supervisor. Evidence of training shall be provided to the Kern County Planning and Natural Resources Department within 5 days of the training session.

g. A Valley Fever informational handout shall be provided to all onsite construction personnel. The handout shall, at a minimum, provide information regarding the symptoms, health effects, preventative measures, and treatment. Additional information and handouts can be obtained by contacting the Kern County Public Health Services Department.

h. Onsite personnel shall be trained on the proper use of personal protective equipment, including respiratory equipment. National Institute for Occupational Safety and Health–approved respirators shall be provided to onsite personal, upon request. When exposure to dust is unavoidable, provide appropriate NIOSH-approved respiratory protection to affected workers. If respiratory protection is deemed necessary, employers must develop and implement a respiratory protection program in accordance with Cal/OSHA's Respiratory Protection standard (8 CCR 5144).

Based on CDC and CDPH's recommendations and the conditions proposed by Kern County Planning and Natural Resources Department, staff proposes Condition of Certification **PH-1** to ensure that exposure to Valley Fever would be reduced to the greatest extent feasible.

Staff also considers the fugitive dust control measures for construction discussed in **Section 5.1, Air Quality** and required under Conditions of Certification (COC), **AQ-SC3** (Construction Fugitive Dust Control) and **AQ-SC4** (Dust Plume Response Requirement) adequate to minimize the risk of workers getting exposed to Valley Fever in areas where *Coccidioides* spores may be found.

As for the individuals away from the project site, the potential Valley Fever risk to stems from the potential of the spores of the Valley Fever fungus to be released into the air as

a result of grading and excavating activities during construction. Because the spores disperse similarly to dust, mitigation measures used to control dust would be effective to control spore dispersal. Public exposure to spores would be reduced through the applicant's compliance with specific mitigation measures, including **AQ-SC3** (Construction Fugitive Dust Control) and **AQ-SC4** (Dust Plume Response Requirement) for the purposes of preventing all fugitive dust plumes, including spores, from leaving the project boundary. Keeping the dust plumes within the project boundary would limit potential for exposure to Valley Fever to adjacent residents, farm workers, and members of the public traveling or recreating in proximity to the proposed project.

Therefore, with the implementation of Condition of Certification **PH-1**, along with the Air Quality COCs, staff concludes that Valley Fever would not be a major concern for the proposed project for either the workers or the public.

Operation

Less Than Significant.

Emission Sources

During the operational phase, three diesel generators (no more than 2.5 MW per generator) would supply emergency power for critical loads. Additionally, a single diesel fire pump would be onsite to provide fire water pumping in critical situations. These engines are the only stationary sources that would combust fossil fuel and are anticipated to operate for up to 50 hours each per year for testing and maintenance (ESHD 2024h, pg. 5.9-4).

The EKAPCD requires the annual emissions of emergency equipment to be based on 200 hours per year which assumes that each year has up to 150 hours of emergency operation. Since HRAs are based on routine operation and typically do not include emergency operation, basing the health risk on a 30-year exposure values where each year has 150 hours of emergency operation was deemed to be too conservative. Thus, the HRA conducted by the applicant reflects up to 50 hours per year of operation for each engine. This HRA includes emissions from the operation of the three emergency diesel generators and the fire pump engine (ESHD 2024h, pg. 5.9-4).

Hazard Identification

Numerous health effects have been linked to exposure to TACs, including development of asthma, heart disease, Sudden Infant Death Syndrome (SIDS), respiratory infections in children, lung cancer, and breast cancer (OEHHA, 2003). As mentioned above, the potential TACs emitted from the project is DPM.

Exposure Assessment

Air would be the dominant pathway for public exposure to chemical substances released by WRESC operation. Potential health risks from public exposure to combustion emissions and geothermal fluid-related emissions were assessed by conducting an HRA.

Although exposure would occur almost entirely by direct inhalation, additional pathways were conservatively included in the HRA. The HRA was conducted in accordance with guidance established by OEHHA and CARB.

The applicable exposure pathways for the toxic emissions include inhalation, soil ingestion, dermal (through the skin) absorption, mother's milk, home-grown produce, not including water ingestion, beef/dairy ingestion, and pig/chicken/egg ingestion (HARP output files). This method of assessing health effects is consistent with OEHHA's Air Toxics Hot Spots Program Risk Assessment Guidelines (OEHHA 2003) referred to earlier.

The health risk from exposure to each project-related pollutant is assessed using the "worst case" emission rates and impacts. Maximum hourly emissions are used to calculate acute (one-hour) non-cancer health effects, while estimates of maximum emissions on an annual basis are used to calculate cancer and other chronic (long-term) health effects.

The next step in the assessment process is to estimate the project's incremental concentrations using a screening air dispersion model and assuming conditions that would result in maximum impacts. Concentrations of these pollutants in air potentially associated with the project were estimated using the American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD) dispersion modeling program. Modeling allows the estimation of both short-term and long-term average concentrations in air for use in an HRA, accounting for site-specific terrain and meteorological conditions.

Dose-Response Assessment

The dose-response assessment was based on toxicity values including the cancer potency factor and RELs to quantify the cancer and non-cancer health risks from the project's combustion-related pollutants. The toxicity values were obtained from the OEHHA's Guidelines (OEHHA 2015) and OEHHA/ARB Consolidation Table of OEHHA/ARB Approved Risk Assessment Health Values (CARB 2023b). RELs are used to calculate short-term and long-term non-cancer health effects, while the cancer potency factors are used to calculate the lifetime risk of developing cancer. These toxicity values are predefined in Hotspots Analysis and Reporting Program model, Version 2 (HARP2).

Characterization of Risks from TACs

As described above, the last step in an HRA is to integrate the health effects and public exposure information, provide quantitative estimates of health risks resulting from project emissions, and then characterize potential health risks by comparing worst-case exposure to safe standards based on known health effects.

With AERMOD, air dispersion modeling combined the emissions with site-specific terrain and meteorological conditions to analyze the mean short-term and long-term ground-level concentrations in air for use in the HRA. Ground-level concentrations were then

used in conjunction with cancer unit risk factors and RELs to estimate the cancer and non-cancer risks from operations.

The risk assessment was conducted in accordance with guidance established by the California Office of Environmental Health Hazard Assessment (OEHHA 2015) and the California Air Resources Board. The operational HRA assumed a conservative 30-year continuous exposure duration for residential and sensitive receptors and a 25-year exposure duration for workers (OEHHA 2015) (HARP modeling files).

The operation HRAs were run for the architectural berm and no-architectural berm options with identical receptor grids but different fence lines. The HRA results for both scenarios are the same. Staff reviewed the applicant's modeling files and agreed with the inputs used by the applicant and the outputs from the model for carcinogenic and chronic health risks.

The results of applicant's HRA for project operation are presented in **Table 5.10-3**. **Table 5.10-3** shows that the cancer risks and chronic HIs at the PMI, MEIR, MEIS, and MEIW during operation would be less than the EKAPCD's significance thresholds of 10 in one million and 1, respectively. It should be noted that the risk values shown in **Table 5.10-3** are the highest of those modeled for each type of sensitive receptors. The risk values at other locations for each type of receptors would be lower than those shown in **Table 5.10-3**. Therefore, staff concluded that the health risks of the project operation would be a less than significant impact.

TABLE 5.10-3 OPERATION HAZARD/RISK FROM DPM

Receptor Type	Cancer Risk Impact (in one million)	Chronic Non-Cancer Hazard Index (HI) (unitless)	Acute Non-Cancer Hazard Index (HI) (unitless)
PMI[1]	3.16	7.14E-04	-
MEIR[2]	0.0177	4.00E-06	-
MEIS[3]	0.00884	2.00E-06	-
MEIW[4]	0.0052	4.00E-06	-
EKAPCD Significance Threshold	10	1	1[5]

Notes:
[1] Point of maximum impact (PMI). The PMI in both scenarios is located on the eastern fence line and is not a residential receptor.
[2] Maximally exposed individual residential (MEIR). It is approximately 2,023 feet northwest of the project boundary for Architectural berm Option, and approximately 2,229 feet northwest of the project boundary for No-Architectural berm Option.
[3] Maximally Exposed Individual Sensitive (MEIS). The MEIS in both scenarios is the Rosamond Elementary School and approximately 2.8 miles southeast of the project boundary.
[4] Maximally exposed individual worker (MEIW). It is approximately 2,200 feet northwest of the project boundary for Architectural berm Option, and approximately 2,211 feet northwest of the project boundary for No-Architectural berm Option.
[5] The EKAPCD threshold value is for all the pollutants. However, due to insufficient information of a specific value for an acute REL, there is no acute REL for diesel particulate matter, and it was not possible to conduct an assessment for its acute health effects.
Source: ESHD 2024h, Table 5.9-7 and 5.9-8, and HRA modeling files provided by the applicant.

Cancer Burden

As mentioned above, the cancer burden can be calculated by multiplying the cancer risk at a census block centroid by the number of people who live in the census block, and adding up the estimated number of potential cancer cases across the zone of impact. The result of this calculation is a single number that is intended to estimate of the number of potential cancer cases within the population that was exposed to the emissions for a lifetime (70 years) (OEHHA 2015, pg. 8-16). OEHHA requires a 70-year exposure duration to estimated cancer burden or provide an estimate of population-wide risk (OEHHA 2015, pg. 8-1).

The applicant conducted a cancer burden analysis. It was based on a 70-year cancer risk analysis using an isopleth of 1 x 10^{-6} and the estimated population within this isopleth area (<50 individuals) showing a burden value of 0.00005. In Appendix 5.9D (ESHD 2024j), Figure 5.9D-1 and Figure 5.9D-2 show the actual architectural berm and no-architectural berm 1x10^{-6} risk isopleths, and Figure 5.9D-3 shows the extended circular area based on these isopleths, which was used to determine the estimated exposed population (ESHD 2024h, pg. 5.9-11). Even though a cancer burden threshold of significance value was not identified for the EKAPCD, 0.00005 is below the significance threshold value of 1 established by the State of California (ESHD 2024h, Table 5.9-6).

Legionella from Cooling Tower Operation

The WRESC would not have a cooling tower or wet surface air cooler. As such, there is no requirement to prepare and implement a water treatment program designed to reduce the potential for Legionella (ESHD 2024h, pg. 5.9-13). And there is no condition of certification proposed.

5.10.2.3 Cumulative Impacts

Less Than Significant Impact with Mitigation Incorporated. A project would result in a significant adverse cumulative impact if its effects are cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects (Cal. Code Regs., tit. 14, § 15130). As for cumulative impacts for cumulative hazards and health risks, if the implementation of the proposed project, as well as the past, present, and probable future projects, would not cumulatively contribute to regional hazards, then it could be considered a less than cumulatively considerable impact.

As mentioned above, according to **Table A-1**, the existing, approved, pending and proposed projects of potential sources of toxic air pollutants within six miles include:

- Mojave Micro Mill (1.3 miles to the project)
- Edwards Air Force Base Solar Project (2.5 miles to the project)
- True North Renewable Energy (5.4 miles to the project)

- Capella Solar (5.4 miles to the project)
- Organics Energy Solar (5.4 miles to the project)
- Golden Queen Mining Company, LLC (5.5 miles to the project)
- Sanborn Solar (5.9 miles to the project)

As discussed above, the health impacts from project construction would be less than significant with mitigation incorporated on the issue of Valley Fever, and the health impacts from project operation would be less than significant. The maximum cancer risk and chronic non-cancer hazard index of operations emissions from the project for the PMI, MEIR, MEIS and MEIW are all below levels of corresponding significance. While air quality cumulative impacts could occur with sources within a six-mile radius, cumulative public health impacts from TACs are usually not significant unless the emitting sources are extremely close to each other, within a few blocks, not miles. The contribution of WRESC to both cancer risk and chronic non-cancer impacts would be very small even in a cumulative context including other regional sources; its contribution to area health impacts would thus be less than significant in a cumulative context. CEC staff, therefore, concludes that the proposed project, even when combined with these projects, would not contribute to cumulative impacts in the area of public health.

5.10.3 Applicable LORS and Project Conformance

The HRA for the proposed WRESC shows no potentially significant adverse impacts for any receptors, including sensitive receptors. In arriving at this conclusion, staff notes that its analysis complies with all directives and guidelines from the Cal/EPA OEHHA and CARB. Staff's assessment is biased towards protection of public health and takes into account the most sensitive individuals in the population. Using extremely conservative (health-protective) exposure and toxicity assumptions, staff's analysis demonstrates that members of the public potentially exposed to toxic air contaminant emissions of this project, including sensitive receptors such as the elderly, infants, and people with pre-existing medical conditions, would not experience any acute or chronic significant health risk or any significant cancer risk from that exposure.

Staff incorporated every conservative assumption called for by state and federal agencies responsible for establishing methods for analyzing public health impacts. The results of that analysis indicate that there would be no direct or cumulative significant public health impact on any population in the area. Therefore, staff concludes that construction and operation of the project would comply with all applicable LORS regarding long-term and short-term project impacts in the area of public health.

Table 5.10-4 staff's determination of conformance with applicable local, state and federal LORS, including any proposed COCs, where applicable, to ensure the project would comply with LORS. As shown in this table, staff concludes that with implementation of specific COCs, the proposed project would comply with applicable LORS. The subsection below, "Staff Proposed Conditions of Certification," contains the full text of the referenced COCs.

TABLE 5.10-4 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Compliance and Basis for Compliance**
Federal	
Clean Air Act section 112 (Title 42, U.S. Code section 7412) (National Emission Standards for Hazardous Air Pollutants [NESHAP)).	**Yes**. Based on the HRA results, the project's cancer and chronic health risks do not exceed acceptable levels. The facility would comply with applicable federal, state, and EKAPCD rules and regulations.
National Emission Standards for Hazardous Air Pollutants (NESHAP) Subpart ZZZZ—National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines.	**Yes.** The gensets would comply with NESHAP Subpart ZZZZ by complying with the requirements of NSPS Subpart IIII. The project would include three diesel-fired emergency generators and one diesel fire pump. The only requirement under Subpart ZZZZ is that the units comply with the requirements of NSPS Subpart IIII. The proposed emergency engine emission units would likely use catalytic oxidation and/or selective catalytic reduction, as well as diesel particulate filters to meet Tier 4 standards, meaning their emissions would not exceed any of the emission limitations of this subpart. The proposed fire pump engine would comply with the Tier 3 standard that meet the requirements of both subparts.
State	
California Health and Safety Code section 41700	**Yes.** The CEC COCs and the EKAPCD Authority to Construct (ATC) processes are developed to ensure that no adverse public health effects or public nuisances result from operation of the project.
The Air Toxics "Hot Spots" Information and Assessment Act (Assembly Bill [AB] 2588, 1987, Connelly) or California Health and Safety Code sections 44330.	**Yes.** The project would participate in the AB 2588 inventory and reporting program, as required and implemented by EKAPCD. Based on the HRA results, the project's cancer and chronic health risks do not exceed acceptable levels.
Local	
EKAPCD Regulation II, Rule 201.2 (synthetic minor sources)	**Yes.** Emissions of hazardous air pollutants (HAPs) from the operational WRESC would be less than 10 tons per year of an individual HAP and 25 tons per year total HAP and would therefore be classified as a minor source of HAP.
EKAPCD Regulation II, Rule 208.2.II.F & G (finding of no significant impact	**Yes.** The HRA shows that risks from WRESC operations would be less than these values.
EKAPCD Regulation II, Rule 210.9 (construction of major stationary source of HAP)	**Yes.** The WRESC would not be a major stationary source of HAP; therefore, this rule would not apply.
EKAPCD Regulation IV, Rule 423 (National Emissions Standards for Hazardous Air Pollutants [NESHAP, 40 CFR 63 Subpart ZZZZ: National Emissions Standards for Reciprocating Internal Combustion Engines])	**Yes.** This rule incorporates by reference the federal NESHAP under 40 CFR Parts 61 and 63; applicability is discussed under federal LORS.

5.10.4 Comments and Responses on the Preliminary Staff Assessment

Response to Comment from the Applicant (TN 264316)

Comment: The applicant requests to revise the distance between the nearest residential receptor and the property fence line from 0.4 miles to 0.8 miles on page 5.10-3.

Staff response: Staff used a distance of about 0.4 miles from the nearest residential receptor, as shown in Table 5.9-1 on page 5.9-2 of the Supplemental AFC (ESHD 2024h), to the northwest corner of the project boundary shown as blue lines in Figure 1-4 on page 1-7 of the Supplemental AFC (ESHD 2024i). These blue lines appear to include the laydown areas. Staff understands that the 0.8-mile distance is from the nearest residential receptor to the northwest corner of the project site under the no-architectural berm option. And under the architectural berm option, the distance from the nearest residential receptor to the northwest corner of the project site, including the berm, would be 0.7 miles. To clarify, staff has revised the text on page 5.10-3 to indicate that the distance of 0.4 miles is to the project boundary including the laydown areas.

Response to comment from California Unions for Reliable Energy (CURE) (TN 264343)

Comment: CURE asserts that the PSA lacks substantial evidence to conclude Valley Fever impacts are less than significant because the identified mitigation measures are designed to address dust and not the smaller spores. CURE also presents *Attachment A Comments On Willow Rock Energy Storage Center Project, Kern County, CA*, authored by Dr. Clark (18 pages).

Staff response: Please see the detailed responses in Section 4.4, Worker Safety and Fire Protection which address specific issues raised by Dr. Clark regarding Valley Fever and discuss staff's modifications to **Worker Safety-7** condition based on recommendations from Dr. Clark. With the implementation of **PH-1**, **WORKER SAFETY-7**, **AQ-SC3**, and **AQ-SC4**, Valley Fever exposure risks for on-site personnel and the general public would be effectively minimized.

5.10.5 Conclusions and Recommendations

As discussed above, with implementation of COCs, the project would have a less than significant impact related to public health and would conform with applicable LORS. Staff recommends adopting the COCs as detailed in subsection "5.10.5 Proposed Conditions of Certification" below.

5.10.6 Proposed Conditions of Certification

The following proposed COCs include both measures to mitigate environmental impacts and ensure conformance with applicable LORS.

PH-1 The project owner shall develop and implement a Valley Fever Management Plan to minimize personnel and public exposure to potential Valley Fever. The Valley Fever Management Plan shall include the following:

a. Equipment, vehicles, and other items shall be thoroughly cleaned of dust before they are moved off site to other work locations.

b. Wherever possible, grading and trenching work shall be phased so that earth-moving equipment is working well ahead or downwind of workers on the ground.

c. The area immediately behind grading or trenching equipment shall be sprayed with water before ground workers move into the area.

d. In the event that a water truck runs out of water before dust is sufficiently dampened, ground workers being exposed to dust shall leave the area until a truck can resume water spraying.

e. To the greatest extent feasible, heavy-duty earth-moving vehicles shall be closed-cab and equipped with a High Efficiency Particulate Arrestance (HEPA)-filtered air system.

f. Workers shall receive training in procedures to minimize activities that may result in the release of airborne *Coccidioides immitis* (CI) spores, to recognize the symptoms of Valley Fever, and shall be instructed to promptly report suspected symptoms of work-related Valley Fever to a supervisor. Evidence of training shall be provided to the Kern County Planning and Natural Resources Department within five days of the training session.

g. A Valley Fever informational handout shall be provided to all onsite construction personnel. The handout shall, at a minimum, provide information regarding the symptoms, health effects, preventative measures, and treatment. Additional information and handouts can be obtained by contacting the Kern County Public Health Services Department.

h. Onsite personnel shall be trained on the proper use of personal protective equipment, including respiratory equipment. National Institute for Occupational Safety and Health–approved respirators shall be provided to onsite personal, upon request. When exposure to dust is unavoidable, provide appropriate NIOSH-approved respiratory protection to affected workers. If respiratory protection is deemed necessary, employers must develop and implement a respiratory protection program in accordance with Cal/OSHA's Respiratory Protection standard (8 CCR 5144).

Verification: At least 30 days prior to the start of the ground disturbance, the project owner shall submit the Valley Fever Management Plan to the CPM for review and approval. The CPM will notify the project owner of any necessary modifications to the plan within 15 days from the date of receipt. The project owner shall provide the CPM a Monthly Compliance Report to include a summary of all actions taken to maintain compliance with this condition.

5.10.7 References

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5.11 Socioeconomics

Testimony of Ellen LeFevre

5.11.1 Environmental Setting

This section describes the environmental setting and regulatory background and discusses the impacts associated with construction and operation of the project with respect to population and housing, public services, and recreation.

Existing Conditions

Population and Housing

The proposed Willow Rock Energy Storage Center (WRESC) project would be in southeastern Kern County near Rosamond, a census designated place. The applicant estimates that 15 percent of the construction workforce would be local to Kern County and 85 percent would be non-local from nearby counties. The operation workforce would be drawn locally from Kern County or the nearby community of Rosamond and cities of Palmdale and Lancaster in Los Angeles County. Staff considers Kern County the study area for population and housing impacts. The setting for labor supply for the project would be Bakersfield Metropolitan Statistical Area (MSA)[1], which covers Kern County; Los Angeles-Long Beach-Glendale Metropolitan Division (MD)[2], which covers Los Angeles County; and Riverside-San Bernardino-Ontario MSA, which covers Riverside and San Bernadino counties. Police and fire services would be provided from departments within Kern County. Recreation facilities and other public facilities, such as libraries, are within Kern County. The project site is located within the Mojave Unified School District.

Population Growth

Kern County is the third largest county by area in California with 8,134 square miles of land area. The total population of Kern County is 909,235 people (US Census 2020). The project site would be located within unincorporated Kern County. The estimated population of unincorporated Kern County is 606,531 (DOF 2024).

Table 5.11-1 shows the projected population growth projection for Kern County. Population projection between the 2020 and 2050 shows a growth of 12.2% for Kern County.

1 Metropolitan Statistical Areas (MSA) is a geographical area with a population of 50,000 or more, plus adjacent territory that has a high degree of social and economic integration with the core as measured by commuting ties.
2 Metropolitan Divisions (MD) - If specified criteria are met, a Metropolitan Statistical Area containing a single core with a population of 2.5 million or more may be subdivided to form smaller groupings of counties.

TABLE 5.11-1 HISTORICAL AND PROJECTED POPULATIONS

Area	2020	2024	2050	Projected Population Change 2020-2045 Number	Projected Population Change 2020-2045 Percent
Kern County	909,235	911,607	1,020,272	111,037	12.2%

Source: Census 2020, Kern COG 2024

Kern Council of Governments (Kern COG) is the Metropolitan Planning Organization for the Kern Region. The Kern COG develops the Kern COG's Regional Growth Forecast and Demographic Forecast which is used for understanding the most likely trajectory for growth and development of the region.

The Regional Growth Forecast and Demographic Forecast divides the county into Regional Subareas (RSAs). Generally, the RSA boundaries closely follow existing Census Bureau boundaries for census tracts and block groups. The project site is located within the Greater California City RSA.

Table 5.11-2 shows the projected household growth projections for Greater California RSA, unincorporated Kern County, and Kern County. Household projections between the 2024 and 2050 show a growth range of 9 percent to 22 percent.

TABLE 5.11-2 HISTORICAL AND PROJECTED HOUSEHOLD

Area	2024	2035	2050	Projected Household Change 2020-2050 Number	Projected Household Change 2020-2050 Percent
Greater California City RSA	16,117	16,989	17,571	1,454	9.0%
Unincorporated Kern County	101,546	112,892	112,483	10,937	10.8%
Kern County	289,902	328,166	353,702	63,800	22.0%

Source: Kern COG 2024

Housing

The Kern COG develops the Regional Housing Needs Assessment (RHNA) for Kern County. The purpose of the RHNA Plan is to allocate to the cities and County their “fair share” of the region’s projected housing need by household income group over the projection period covered by the plan. For the 2023 to 2031 RHNA planning period, the unincorporated area of Kern County would need to construct 9,243 housing units (Kern COG 2022).

Table 5.11.3 presents the housing supply data for the project area. Year 2024 housing estimates indicate 19,937 vacant housing units within Kern County and vacancy rates ranging from 6.4 percent to 10 percent for the county and unincorporated Kern County (CA DOF 2024).

TABLE 5.11-3 HOUSING SUPPLY ESTIMATES IN THE PROJECT AREA

Housing Supply	2024 Total Number	2024 Vacant Number	2024 Vacant Percent
Unincorporated Kern County	113,399	11,363	10%
Kern County	310,784	19,937	6.4%

Source: CA DOF 2024

There are hotel and motel accommodations as well as recreational vehicle (RV) parks in the surrounding area. Within the cities of Lancaster, Palmdale, and Tehachapi and the communities of Rosamond and Mojave, there are approximately 35 hotels and motels with approximately 2,804 rooms. There are 5 RV parks located in Lancaster and Palmdale with approximately 235 sites (Good Sam 2024).

Labor Supply

The project would be within Bakersfield Metropolitan Statistical Area (MSA) (Kern County). It is anticipated that construction workers would be drawn from the Bakersfield MSA, Los Angeles-Long Beach-Glendale Metropolitan Divisions (MD), and Riverside-San Bernardino-Ontario (MSA). It is anticipated that 15 percent of the construction workforce would be local and drawn from Kern County. The other 85 percent would be considered non-local and drawn from nearby counties.

The California Employment Development Department 2020-2030 Occupational - Employment Projections for the project's construction are shown in **Table 5.11-4, 5.11-5**, and **5.11-6**. The employment projections the Bakersfield (Kern County) MSA are provided in **Table 5.11-4**. **Table 5.11-5** and **Table 5.11-6** has the employment projections for Los Angeles-Long Beach-Glendale Metropolitan Division (MD) and Riverside-San Bernardino-Ontario (MSA) respectively.

Table 5.21-7 provides the project's operations occupations and the Bakersfield (Kern County) MSA employment projections. It is anticipated that all occupation workers would be drawn from within Kern County or the nearby communities of Rosamond, Lancaster, and Palmdale.

TABLE 5.11-4 PROJECTED EMPLOYMENT GROWTH

Bakersfield MSA (Kern County)	Year 2020	Year 2030	Annual Average Percent Change	Peak Construction Period (Month 34)
Mechanic	1,030	1,210	17.5%	16
Electrician	1,190	1,420	19.3%	6
Hoistman[1]	180	230	27.8%	8
Miner[2]	70	70	0%	44
Equipment Operator	1,110	1,260	13.5%	4(9)
Site Supervisor	1,870	2,080	11.2%	4
Project Management	4,790	5,370	12.1%	8
Nippers[2]	70	70	0%	(8)

TABLE 5.11-4 PROJECTED EMPLOYMENT GROWTH

Bakersfield MSA (Kern County)	Year 2020	Year 2030	Annual Average Percent Change	Peak Construction Period (Month 34)
Batch Plant Operator[3]	540	580	7.4%	(6)
Superintendent[4]	930	1,120	20.4%	(2)
Shift Boss[5]	1,870	2,080	11.2%	(2)
Clerk	5,160	5,490	6.4%	(2)
Rigger[6]	200	230	15%	(2)
Safety Professional	-	-	-	(2)
Laborer	3,140	3,670	16.9%	2 (6)
Welder	1,080	1,260	16.7%	3(9)
Staff	-	-	-	125
Craft Support	-	-	-	69
Tanks[7]	120	150	25%	32
Insulation[8]	560	590	5.4%	4(35)
Instrumentation	-	-	-	3(20)
Steel Crew[9]	180	210	16.7%	41(47)
Scaffold[10]	350	390	11.4%	6(10)
Pipe Crew[11]	1,010	1,170	15.8%	75(137)
Mechanical Crew	-	-	-	108
InEight Startup Resources	-	-	-	3(12)
Electrical Crew[12]	1,030	1,210	17.5%	78(114)
Concrete Crew[3]	540	580	7.4%	40(65)
Civil Crew	-	-	-	(97)
Buildings	-	-	-	(4)
Cavern Waste Rock Hauling[13]	5,580	7,360	31.9%	31
Transmission-Aboveground Offsite[14]	270	250	-7.4%	20
Transmission-Underground Offsite[14]	270	250	-7.4%	17(19)

Notes: - No data available; () Number in the parenthesis represents peak number of workers in a given month for a specific trade type of construction. 1. Excavating and Loading Machine and Dragline Operators, Surface Mining; 2. Underground Mining Machine Operators and Extraction Workers-all other; 3. Cement Masons and Concrete Finishers; 4. construction manager; 5. First-Line Supervisors of Construction Trades and Extraction Workers; 6. Crane and Tower Operators; 7. Septic Tank Servicers and Sewer Pipe Cleaner; 8. Drywall and Ceiling Tile Installers; 9. Structural and Steel Workers; 10. Helpers construction trades, 11. Plumbers, Pipefitters, and Steamfitters; 12. Electrical and Electronics Repairers, Commercial and Industrial Equipment, 13. Heavy and Tractor-Trailer Truck Drivers, 14. Electrical Power-Line Installers and Repairers.
Source: CA EDD 2023

TABLE 5.11-5 PROJECTED EMPLOYMENT GROWTH

Los Angeles-Long Beach-Glendale MD	Year 2020	Year 2030	Annual Average Percent Change	Peak Construction Period (Month 34)
Mechanic	12,260	12,480	1.8%	16
Electrician	13,100	15,360	17.3%	6
Hoistman[1]	-	-	-	8
Miner[2]	-	-	-	44
Equipment Operator	1,110	1,260	10.4%	4(9)

TABLE 5.11-5 PROJECTED EMPLOYMENT GROWTH

Los Angeles-Long Beach-Glendale MD	Year 2020	Year 2030	Annual Average Percent Change	Peak Construction Period (Month 34)
Site Supervisor	12,960	14,720	13.6%	4
Project Management	75,190	85,030	13.1%	8
Nippers[2]	-	-	-	(8)
Batch Plant Operator[3]	3,850	4,050	5.2%	(6)
Superintendent[4]	10,110	12,040	19.1%	(2)
Shift Boss[5]	12,960	14,720	13.6%	(2)
Clerk	75,790	77,680	2.5%	(2)
Rigger[6]	1,030	1,170	13.6%	(2)
Safety Professional	-	-	-	(2)
Laborer	21,890	25,630	16.6%	2 (6)
Welder	6,510	6,770	4.0%	3(9)
Staff	-	-	-	125
Craft Support	-	-	-	69
Tanks[7]	390	500	28.2%	32
Insulation[8]	5,780	6,610	14.4%	4(35)
Instrumentation	430	460	7.0%	3(20)
Steel Crew[9]	1,430	1,570	9.8%	41(47)
Scaffold[10]	660	760	15.2%	6(10)
Pipe Crew[11]	9,100	10,220	12.3%	75(137)
Mechanical Crew	-	-	-	108
InEight Startup Resources	-	-	-	3(12)
Electrical Crew[12]	12,260	12,480	1.8%	78(114)
Concrete Crew[3]	3,850	4,050	5.2%	40(65)
Civil Crew	-	-	-	(97)
Buildings	-	-	-	(4)
Cavern Waste Rock Hauling[13]	42,520	49,530	16.5%	31
Transmission-Aboveground Offsite[14]	1,580	1,640	3.8%	20
Transmission-Underground Offsite[14]	1,580	1,640	3.8%	17(19)

Notes: - No data available; () Number in the parentheses represents peak number of workers in a given month for a specific trade type of construction. 1. Excavating and Loading Machine and Dragline Operators, Surface Mining; 2. Underground Mining Machine Operators and Extraction Workers-all other; 3. Cement Masons and Concrete Finishers; 4. construction manager; 5. First-Line Supervisors of Construction Trades and Extraction Workers; 6. Crane and Tower Operators; 7. Septic Tank Servicers and Sewer Pipe Cleaner; 8. Drywall and Ceiling Tile Installers; 9. Structural and Steel Workers; 10. Helpers construction trades, 11. Plumbers, Pipefitters, and Steamfitters; 12. Electrical and Electronics Repairers, Commercial and Industrial Equipment, 13. Heavy and Tractor-Trailer Truck Drivers, 14. Electrical Power-Line Installers and Repairers.
Source: CA EDD 2023

TABLE 5.11-6 PROJECTED EMPLOYMENT GROWTH

Riverside-San Bernardino-Ontario MSA	Year 2020	Year 2030	Annual Average Percent Change	Peak Construction Period (Month 34)
Mechanic	4,550	5,270	15.8%	16
Electrician	7,210	8,820	22.3%	6
Hoistman[1]	340	380	11.8%	8
Miner[2]	-	-	-	44
Equipment Operator	3,560	4,140	16.3%	4(9)
Site Supervisor	8,590	10,190	18.6%	4
Project Management	18,420	21,420	16.3%	8
Nippers[2]	-	-	-	(8)
Batch Plant Operator[3]	3,580	4,020	12.3%	(6)
Superintendent[4]	4,590	5,740	25.1%	(2)
Shift Boss[5]	8,590	10,190	18.6%	(2)
Clerk	24,320	25,940	6.7%	(2)
Rigger[6]	360	430	19.4%	(2)
Safety Professional	-	-	-	(2)
Laborer	16,180	19,590	21.1%	2 (6)
Welder	4,090	4,830	18.1%	3(9)
Staff	-	-	-	125
Craft Support	-	-	-	69
Tanks[7]	260	370	42.3%	32
Insulation[8]	4,850	5,830	20.2%	4(35)
Instrumentation	210	250	19.0%	3(20)
Steel Crew[9]	1,300	1,530	17.7%	41(47)
Scaffold[10]	2,200	2,580	17.3%	6(10)
Pipe Crew[11]	4,080	4,790	17.4%	75(137)
Mechanical Crew	-	-	-	108
InEight Startup Resources	-	-	-	3(12)
Electrical Crew[12]	510	610	19.6%	78(114)
Concrete Crew[3]	3,580	4,020	12.3%	40(65)
Civil Crew	-	-	-	(97)
Buildings	-	-	-	(4)
Cavern Waste Rock Hauling[13]	38,230	49,580	29.7%	31
Transmission-Aboveground Offsite[14]	1,330	1,440	8.3%	20
Transmission-Underground Offsite[14]	1,330	1,440	8.3%	17(19)

Notes: - No data available; () Number in the parentheses represents peak number of workers in a given month for a specific trade type of construction. 1. Excavating and Loading Machine and Dragline Operators, Surface Mining; 2. Underground Mining Machine Operators and Extraction Workers-all other; 3. Cement Masons and Concrete Finishers; 4. construction manager; 5. First-Line Supervisors of Construction Trades and Extraction Workers; 6. Crane and Tower Operators; 7. Septic Tank Servicers and Sewer Pipe Cleaner; 8. Drywall and Ceiling Tile Installers; 9. Structural and Steel Workers; 10. Helpers construction trades, 11. Plumbers, Pipefitters, and Steamfitters; 12. Electrical and Electronics Repairers, Commercial and Industrial Equipment, 13. Heavy and Tractor-Trailer Truck Drivers, 14. Electrical Power-Line Installers and Repairers.
Source: CA EDD 2023

TABLE 5.11-7 PROJECTED EMPLOYMENT GROWTH

Bakersfield MSA (Kern County)	Anticipated Number of Operations Positions	Year 2020	Year 2030	Annual Average Percent Change
Operators	30	110	100	-9.1%
Maintenance personnel[1]	5	3,700	4,370	18.1%
Supervisors	3	820	890	8.5%
Administrative personnel[2]	1	5,160	5,490	6.4%
Plant manager[3]	1	3,730	4,520	21.2%

Notes: 1 Janitors and Cleaners, Except Maids and Housekeeping Cleaners; 2 office clerk general; 3 general and operations managers. Source: CA EDD 2023

Public Services

Police and fire services would be provided from departments within Kern County. Recreational facilities and other public facilities, such as libraries, are within Kern County. The project site is within the Mojave Unified School District.

Fire Protection

The project would be within the jurisdiction of Kern County Fire Department (KCFD). The KCFD provides fire protection, emergency medical services, and public training and education services for the unincorporated areas of Kern County, 9 cities, and 41 communities. The KCFD has 14 mutual aid agreements with neighboring fire suppression organizations. The KCFD has 47 has fire stations (KCFD 2021). Station 15 (Rosemond) is the closest to the project, located approximately 3.1 miles southwest of the project site. The CAL FIRE maps for Kern County indicates the project is in an area of local responsibility (CalFire 2008).

The KCFD has approximately 621 permanent employees which includes approximately 521 uniformed officers. In 2021, KCFD responded to 62,718 incidents which included 5,359 fires, 39,408 EMS/rescues, 1.373 hazards, 16,407 service calls, and 171 other incidents (KCFD 2021).

Police Protection

Police protection would be provided by the Kern County Sheriff's Office (KCSO). The KCSO services the unincorporated areas of Kern County and two cities. The KCSO's Law Enforcement Bureau has two Division and is comprised of the uniform patrol staff. One of those divisions is the Substation Division which includes 13 substations and is responsible for uniform patrol throughout the county (KCSO 2022). The Rosemond Substation is the nearest to the project, located approximately 3.2 miles south of the project site. The Rosemond Substation serves over 20,000 residents.

The KCSO has approximately 1,213 employees of which 540 are deputy sheriffs (KCSO 2024). In 2022, the KCSO received 197,294 calls for service and responded to 133,832 events (KCSO 2022).

Schools

The project would be located within the Mojave Unified School District (MUSD). The district had an enrollment of 2,842 students in the 2023-2024 school year (CDE 2024). District facilities include three elementary schools, one middle school, one high school, one junior/senior high school, and an adult school (MUSD 2025). The nearest schools to the project are located within the Southern Kern Unified School District. Rosemond Elementary and Rare Earth High School are located approximately 2.6 miles and 3 miles south, respectively, of the project. Mojave Elementary and Mojave Junior/Senior High Schools are the nearest schools in the MUSD to the project site, approximately 9.8 miles north of the project site.

Parks

Kern County maintains a regional system of parks, open spaces, landscapes, and recreational facilities. Kern County Parks and Recreation manages 8 regional parks, 40 neighborhood parks, and 25 public buildings, supervises three golf courses and landscapes 76 county buildings. (KCPR 2024) There are nine special park and recreational districts encompassing over 50 percent of the unincorporated area of Kern County. Rosamond is community services district, the Rosamond Community Services District (RCSD).

The Kern County General Plan current park standard is 2.5 acres per 1,000 people. Kern County has and a population of 909,235. Based on this current estimate, approximately 2,273 acres would be needed to meet the park standard. The county maintains approximately 4,702 acres of parkland meets the park standard (KCPR 2010).

Rosamond Park is the closest to the project, located approximately 3 miles to south of the project site. The 10-acre park includes a tot lot and playground, basketball courts, baseball fields, picnic area and restrooms. RCSD maintains the park.

Other Public Facilities

Kern County has 22 branch libraries to serve the county. The closest library to the project is the Rosemond Branch Library, which is located approximately 3.4 miles southwest of the project site (KCL 2024).

Regulatory

No federal regulations related to socioeconomics apply to the project.

State

California Education Code, Section 17620. The governing body of any school district is, authorized to levy a fee, charge, dedication, or other requirement for the purpose of funding the construction or reconstruction of school facilities.

Local

Mojave Unified School District Board Policy BP 7211 Facilities: Developer Fees. To finance the construction or reconstruction of school facilities needed to accommodate students coming from new development, the Governing Board may establish, levy and collect developer fees on residential, commercial and industrial construction within the district, subject to restrictions specified by law and administrative regulation.

Cumulative

A project may result in a significant adverse cumulative impact when its effects are cumulatively considerable. Cumulatively considerable means the incremental effects of individual projects are significant when viewed in connection with the effects of past projects, other current projects, and probably future projects. Staff used Kern County as the geographic scope for socioeconomic cumulative projects. A master list of cumulative projects located within the study area is provided in **Appendix A, Table A-1**. These projects include:

- Golden Queen Mining Company – surface mining and reclamation plan
- GEM Hill Quarry – surface mining and reclamation plan
- Capella Solar – solar PV facility
- Enterprise Solar – solar PV facility
- Sanborn Solar – solar PV facility
- Mojave Micro Mill – construct a steel mill facility and solar array
- Bullhead Solar – PV solar facility
- Organics Energy Solar – high solids anaerobic digestion facility for composting organic waste

5.11.2 Environmental Impacts

SOCIOECONOMICS	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Would the project induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☒	☐
b. Would the project displace substantial numbers of existing people or housing,	☐	☐	☒	☐

SOCIOECONOMICS	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
necessitating the construction of replacement housing elsewhere?				
c. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:				
i. Fire protection?	☐	☐	☒	☐
ii. Police Protection?	☐	☐	☒	☐
iii. Schools?	☐	☐	☐	☒
iv. Parks?	☐	☐	☒	☐
v. Other public facilities?	☐	☐	☐	☒
d. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☒	☐
e. Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

Environmental checklist established by Cal. Code Regs., tit. 14, Div. 6, Ch. 3, Appendix G, population and housing, public services, and recreation.

5.11.2.1 Methodology and Thresholds of Significance

Methodology

The determination of the significance of any impacts on population, housing, police protection, schools, and parks and recreation is based on expert testimony, including input from local and state agencies, and the industry-accepted, two-hour commute range for construction workers and one-hour commute range for operational workers.

Thresholds of Significance

There are no additional thresholds of significance applicable to this project.

5.11.2.2 Direct and Indirect Impacts

a. Would the project induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

Construction

Less Than Significant Impact. The project would not directly or indirectly induce substantial unplanned growth in Kern County. The project would construct an underground energy storage system. The project does not propose new housing, and the project site is zoned Exclusive Agriculture.

Construction of the project is expected to last 60 months and require an average of 271 workers per month and a peak of 751 workers per month. The applicant anticipates 85 percent of the workforce would be non-local and 15 percent local to Kern County (WSP 2024z). Thus, the average construction workforce would have approximately 41 local workers and 230 non-local workers per month. The peak workforce would have approximately 113 local workers and 638 non-local workers per month. Staff proposes Condition of Certification (COC) **SOCIO-1**, per the request of the Kern County Planning and Natural Resources Department (KCPNRD 2024r), which would require an effort be made to hire at least 50 percent of construction workers from local Kern County communities.

Typically, non-local workers that seek lodging closer to the project site, return to their primary residences on weekends or their days off. There are approximately 35 hotels and motels with approximately 2804 rooms in the nearby communities of Palmdale, Lancaster, Tehachapi, Mojave, and Rosamond. Additionally, there are RV parks available in Lancaster and Palmdale. The non-local workers performing longer-duration work, such as the excavation work, would likely temporarily relocate closer to the project site. As shown in **Table 5.11-3**, Kern County has housing vacancy rate of 6.4 percent, or 19,937 vacant housing units, and unincorporated Kern County has a 10 percent vacancy rate, or 11,363, vacant housing units. There are additional hotels, motels, RV parks, and other types of rental housing units available within the 2-hour commute range for construction workers.

The local workforce of Kern County is shown in **Table 5.11-4**. **Table 5.11-5** and **Table 5.11-6** show the workforce available in the nearby by counties of Los Angeles, Riverside, and San Bernadino. There is a sufficient workforce for project construction in the Bakersfield MSA, Los Angeles-Long Beach-Glendale Metropolitan Divisions (MD), and Riverside-San Bernardino-Ontario (MSA), as show in **Table 5.11-4**, **Table 5.11-5** and **Table 5.11-6**. Therefore, the project's construction workforce would not directly or indirectly induce substantial population growth in the project area. The impacts would be less than significant.

Operation

Less Than Significant Impact. Operation of the project would not directly or indirectly induce substantial unplanned population growth in Kern County. The project would employ 40 operation workers. It is anticipated that all operation workers would be local and live within Kern County or the nearby communities of Rosamond, Palmdale, and Lancaster (ESHD 2024h p. 5.10-20). As shown in **Table 5.11-7** there is sufficient local workforce within the Bakersfield MSA (Kern County). If some workers were to relocate closer to the project, the small number of workers required for operation, would not significantly increase population growth. In addition, the housing data shows a vacancy rate of 6.4 percent for Kern County and unincorporated Kern County has a 10 percent vacancy rate. A 5-percent vacancy is a largely industry-accepted minimum benchmark for a sufficient amount of housing available for occupancy (Virginia Tech 2006). There is a sufficient amount of housing units available if operation workers relocate closer to the project site. Therefore, the impact would be less than significant.

b. Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

Construction

Less Than Significant Impact. The project would not necessitate the construction of replacement housing. The project site is vacant and contains no housing. Project construction would take 60 months to complete and would average 271 and have a peak of 751 workers per month, of which up to 85 percent would be non-local. There are multiple hotels and motels in nearby the communities Rosamond, Palmdale, Lancaster, Mojave, and Tehachapi. Additionally, there are RV parks in the cities of Lancaster and Palmdale. The available housing supply for Kern County and the unincorporated Kern County is provided in **Table 5.11-3.** Construction workers may relocate closer to the project site; however, this relocation would be temporary and cease at the end of the project construction. Additionally, staff proposes COC **SOCIO-1** to encourage hiring of local workers within Kern County. Therefore, project construction would not displace any people or housing. Construction of replacement housing elsewhere would not be necessary. The impact would be less than significant.

Operation

No Impact. The project site is currently vacant and does not contain any housing. Therefore, the project would not displace any people or housing. Construction of replacement housing elsewhere would not be necessary, and thus, no impact would occur.

c. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:

i. Fire protection?

Construction

Less Than Significant Impact. The project site would be serviced by KCFD. The KCFD has 14 mutual aid agreements with neighboring fire suppression organizations in the event additional assistance is needed. Station 15 in Rosamond would be the primary responder to the project site.

Project construction activities that could pose a risk for fire or the need for the fire protection due to heated exhaust or sparks, including the use of cranes, rotary drills, excavation equipment, construction vehicles, scrapers, and bulldozers/graders. The project would use the controlled detonation of explosives which could pose a fire risk and require the need for fire protection. Other construction activities with a potential fire risk due to heat sources or open flames could include the use of torches or welding equipment. The Worker Safety conditions of certifications **WORKER SAFETY-5** and **WORKER SAFETY-8** would require a Project Construction Controlled Detonations Plan and a Construction Underground Fire Protection Plan.

While there may be a slight increased need for fire protection response during project construction, the effects would not be sufficient to induce the construction of new or physically altered governmental facilities that could result in significant environmental impacts. Therefore, impacts would be less than significant.

Operation

Less Than Significant Impact. The project would employ 40 operation workers that would be drawn locally from Kern County. If some operation workers were to relocate closer to the project site, they would have a negligible effect on the ability of fire stations to meet their emergency service and response standards.

The KCFD would provide fire protection and emergency medical services to the project site. The project would have a fire protection system which would include an electric fire pump, a small jockey pump, and a fire protection water network system consisting of hydrants or standpipes and portable fire extinguishers. Fire sprinkler systems would be installed, and firefighting water would be stored in the service/fire water storage tank (ESHD 2024i).

Hazardous materials would be onsite during operations. All hazardous material storage areas will be equipped with a fire extinguishing system and ventilation for enclosed substances. Diesel fuel would be stored in dual-walled, integrated fuel tanks. (ESHD 2024i p. 5.5-8)

With all the above elements, the project would not result in substantial adverse physical environmental impacts associated with the provision of new or physically altered fire service facilities to maintain acceptable service rations, response times, or other performance objectives. Therefore, the project impact would bel less than significant.

ii. Police protection?

Construction

Less Than Significant Impact. The project site would be serviced by KCSO. The construction workforce would include non-local workers, some of which would temporarily relocate closer to the project site. While this may cause a slight increase in the need for residential police services, it would be temporary and cease with the completion of construction.

The KCSO's Rosamond Substation is the nearest substation to the project site. A perimeter fence would be placed around the project site during construction. The KCSO response time to the project site would depend on the availability and proximity of the sheriff deputies at the time the call is received. The project site is located approximately three miles from Rosamond substation, and given the proximity of the project site to the substation, would not significantly affect the service ratios or response times.

Construction of the project would cause a slight increase in the need of emergency response services, including police protection. However, this increase would be temporary and cease at the end of project construction. The sheriff's office would not be significantly affected by the project, nor would the project induce the construction of new or physically altered government facilities, such as a sheriff station, that could result in significant environmental impacts. Therefore, the impact would be less than significant.

Operation

No Impact. The project would employ 40 operation workers that would have a negligible effect on the emergency response times of the stations that service the project site. If some operation workers were to relocate closer to the project site, there would be a limited effect on police protection.

The project would have a 6 to 8-foot-tall perimeter fence, security access gates, security lighting and building cameras. The project would have a security plan to ensure the project has security alarms for critical structures, perimeter breach detectors, onsite monitoring detectors, and video or still camera monitoring systems (ESHD 2024i). The

project operations would not result in substantial adverse physical environmental impacts associated with the provisions of new or physically altered police service facilities to maintain acceptable service ratios, response times, or other performance objectives. Therefore, the project would have no impact.

iii. Schools?

Construction

No Impact. The project would be in the Mojave Unified School District (MUSD). The construction workforce would include non-local workers and some of these workers may temporarily relocate closer to the project site. The California Government Code sets forth the exclusive methods of considering and mitigating impacts on school facilities. Section 65995 expressly provides that "[t]he payment or satisfaction of a fee, charge, or other requirement levied or imposed pursuant to Section 17620 of the Education Code in the amount specified in Section 65995... are hereby deemed to be full and complete mitigation of the impacts of any legislative or adjudicative act, or both, involving but not limited to, the planning, use, or development of real property, or any change in governmental organization... on the provision of adequate school facilities."

Construction workers who temporarily relocate closer to the project site typically do not bring their families with them. However, if there is an increase in children attending public school during project construction, it would be mitigated through the payment of the school impact fee. Therefore, the project would not result in substantial adverse physical impacts to school facilities and there would be no impact.

Operation

No Impact. The project would employ 40 operation workers. The operational workforce would be local, drawn from Kern County, and are not expected to relocate closer to the project site. However, if some operation workers were to relocate closer to the project site, it is unlikely that there would be an increase in the need for schools or an effect on service ratios to the extent that new or physically altered school facilities would be necessary. Operation of the project would not result in substantial adverse physical impacts associated with the provision of new or physically altered school facilities and, therefore, no impact would result from operation.

iv. Parks

Construction

Less Than Significant Impact. As identified in subsection 5.11.1, Kern County meets its park standard of 2.5 acres of parkland per 1,000 people. Construction of the project would last 60 months and require an average of 271 construction workers per month and a peak of 751 workers per month. Construction workers do not typically visit parks while working on a project.

Approximately 85 percent of the construction workforce would be non-local and some may temporarily relocate closer to the project site. If workers were to visit parks and recreational facilities, the usage would be temporary and cease at the end of construction. Construction of the project would not significantly affect park standards and would not result in substantial adverse physical environmental impacts associated with the provision of new or physically altered park facilities. The project would have a less than significant effect on parks and park facilities.

Operation

No Impact. The project would employ 40 operation workers. The workers would be drawn from Kern County or nearby communities of Rosamond, Lancaster, and Palmdale. If some operation workers were to relocate closer to the project site, the few new residents would have a negligible increase on the usage of or demand for parks or other recreational facilities. Therefore, the project would not result in substantial adverse physical environmental impacts associated with the provision of new or physically altered park facilities to maintain acceptable service ratios or other performance objectives. Therefore, the project would have no impact on park facilities.

v. Other public facilities?

Construction

No Impact. Construction of the project would last 60 months and require an average of 271 construction workers per month and a peak of 751 workers per month. It is unlikely the workers would visit public facilities such as libraries while working in the project area. If construction workers were to visit public facilities in the vicinity of the project, the use would be temporary and cease at the end of construction. Therefore, the project construction would have no impact on public facilities.

Operation

No Impact. The project's 40 operations workers are expected to be drawn locally from Kern County. If some operations workers were to relocate closer to the project, the increased usage or demand for the surrounding libraries would be negligible. Therefore, the project's operation would have no impact to other public facilities.

d. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

Construction

Less Than Significant Impact. Project construction is planned to 60 months and require an average of 271 workers per month and a peak of 751 workers per month. Construction workers are not likely to visit parks and recreational facilities while working on a project. It is anticipated that some non-local workers may temporarily relocate

closer to the project site. If workers visit local parks and recreational facilities, any increase in usage of parks and recreational facilities would be temporary and end with the completion of construction. The project would not increase the use of parks or other recreational facilities such that physical deterioration would occur or be accelerated. The project would have a less than significant impact on surrounding parks and recreational facilities.

Operation

No Impact. The project would require 40 operation workers. They would be drawn locally from Kern County and are not expected to relocate closer to the project site. If some workers were to relocate closer to the project site, they would not be in the numbers where the use of existing parks or recreational facilities would be increased to the extent that substantial physical deterioration of the park or facility would result. There would be no impact to surrounding parks and recreational facilities.

e. Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

Construction

No Impact. Recreational facilities are not included, nor would the project require the construction or expansion of recreational facilities. Project construction would last 60 months and require an average of 271 workers per month and a peak of 751 workers per month. Construction workers do not typically visit recreational facilities while working on projects. If some workers were to use nearby recreational facilities, the usage would be temporary and end with the completion of construction. The project construction would not require the construction or expansion of recreational facilities. Therefore, the project would have no impact.

Operation

No Impact. The project would require 40 operation workers drawn from Kern County. If some workers were to relocate closer to the projects site, they would not be in numbers that would require construction or expansion of recreational facilities. Therefore, the project would not require the construction or expansion of recreational facilities. Therefore, the project would have no impact.

5.11.2.3 Cumulative Impacts

Less Than Significant Impact. The construction and operation of WRESC would not make a cumulatively considerable contribution to any significant cumulative impacts related to population and housing, public services, and recreation facilities. Cumulative impacts could occur when more than one project in the same area has overlapping construction schedules, thus creating a demand for workers that cannot be met locally, or when a project's demand for public services does not match a local jurisdiction's

ability to provide such services. An influx of non-local workers and their dependents can strain housing, law enforcement services, fire protection services, and parks and recreation.

In assessing the project's direct impacts, staff assumed approximately 85 percent of WRESC workforce would be non-local and may seek temporary lodging closer to the project site. Although staff proposes COC **SOCIO-1**, staff assumed approximately 85 percent of WRESC workforce would be non-local in the event the project owner is unable to hire enough local workers for project construction. In assessing cumulative impacts, staff estimates the workforce for the cumulative projects would include about 20 percent non-local workers. A review of the cumulative projects' environmental documents showed a mostly local workforce to be used.

CEC staff used Kern County as the geographic scope for cumulative impacts. Staff considered projects that would likely employ a similar workforce to the WRESC and that could have construction schedules overlapping with WRESC. Project construction would last 60 months, beginning in 2025 and operation is expected to begin in 2029.

Labor

The socioeconomic impacts of the project are primarily driven by its construction workforce needs. The project would average 271 workers and a peak of 751 workers during project construction. The cumulative projects are solar and mining projects that would require workers in similar occupations as WRESC. The cumulative projects are in different stages of approval and development, so the labor needed to construct them would be spread out over time. As shown in **Table 5.11-8**, there is sufficient workforce for these projects.

TABLE 5.11-8 LABOR SUPPLY FOR THE STUDY AREA

Total Labor (Construction Workforce*)	Total Workforce for 2020	Total Projected Workforce for 2030	Growth from 2030	Percent Growth from 2030
Bakersfield MSA (Kern County)	32,260	37,400	5,140	15.9%
Los Angeles-Long Beach-Glendale MD	320,910	346,250	25,340	7.9%
Riverside-San Bernardino-Ontario MSA	157,350	186,500	29,150	18.5%

Notes: Total workforce includes only crafts specifically needed for WRESC. *See Table 5.11-4 list of occupations included in total construction figures. Source: CA EDD 2023

Housing

Up to approximately 85 percent of the project's construction workforce would be non-local and may seek lodging closer to the project site or temporarily relocate closer to the project site. There is a sufficient supply of hotel and motels rooms and vacant

housing units available for workers that may seek temporary lodging or temporarily relocate closer to the project site.

The 40 workers for project operations would be local to Kern County or nearby communities. The low employment-creating project would have no impact on housing supply or population growth. The project would not contribute to a cumulatively considerable impact on the housing supply.

Public Services

The project would be serviced by the KCFD and KCSO. There are mutual aid agreements with neighboring fire suppression organizations in the event additional assistance is needed. Safety concerns would be addressed with Worker Safety conditions of certification **WORKER SAFETY-1**, requiring a Project Construction Health and Safety Program, and **WORKER SAFETY-2**, requiring an Operations and Maintenance Safety and Health Program. In addition, **WORKER SAFETY-5** and **WORKER SAFETY-8** would require a Construction Controlled Detonations Plan and a Construction Underground Fire Protection Plan. **HAZ-4** would require a site security plan for the construction phase of the project and **HAZ-5** would require a site security plan for the commissioning and operation phases. The project would not create a need for new or physically altered facilities that could result in significant environmental impacts. The project would not have an incremental impact on fire protection services. Even if the cumulative projects listed in **Table A-1** create a significant demand on fire protection services, WRESC would not have an incremental contribution to a cumulative impact.

The project would be serviced by the KCSO. Security concerns would be addressed with the Hazardous Materials Management **HAZ-4** and **HAZ-5**. The project would not result in the need for new or physically altered law enforcement facilities which would cause significant environmental impacts. Thus, the project would not have an incremental impact on law enforcement services.

Operation workers would be drawn locally from Kern County so there would likely be no additional students added to the Mojave Unified School District. If some workers were to relocate closer to the project site it would not have an incremental impact on the schools.

Construction workers are not likely to spend time at parks and recreation facilities while working on the project. Construction workers may seek lodging or relocate closer to the project site; however, this would be temporary and cease at the end of project construction. Thus, the project would not affect parks or other recreation facilities. The project would not have an incremental impact on parks or other recreation facilities.

Operation workers would be drawn from Kern County so there would be no impact to parks or other public facilities. If some workers were to relocate closer to the project, it would not have an incremental impact on parks or other public facilities.

5.11.3 Project Conformance with Applicable LORS

Table 5.11-9 staff's determination of conformance with applicable state and local laws, ordinances, regulations, and standards (LORS), including any proposed conditions of certification (COC), where applicable, to ensure the project would comply with LORS. As shown in this table, staff concludes that with implementation of specific COCs, the proposed project would be consistent with all applicable LORS. The subsection below, "Staff Proposed Conditions of Certification," contains the full text of the referenced COCs.

TABLE 5.11-9 CONFORMANCE WITH APPLICABLE LORS

Applicable LORS	Conformance and Basis For Determination
State	
California Education Code, section 17620	
The governing board of any school district is authorized to levy a fee, charge, dedication, or other requirement for the purpose of funding the construction or reconstruction of school facilities.	**Yes.** Condition of Certification (COC) **SOCIO-2** would require the project owner to pay school impact fees to the Mojave Unified School District.
California Code Government Code, sections 65995-65998	
Except for a fee, charge, dedication of other requirement authorized under Section 17620 of the Education Code, state and local public agencies may not impose fees, charges, or other financial requirement to offset the cost for school facilities.	**Yes.** The proposed project would not trigger any state and local public agency fees, etc. to offset the cost for school facilities. Therefore, the project is in conformance.
Local	
Mojave Unified School District Board Policy	
BP 7211 Facilities: Developer Fees – In order to finance the construction or reconstruction of local school facilities needed to accommodate increased student enrollment resulting from new development, the Governing Board may establish, levy, and collect developer fees on residential, commercial, and industrial construction within the district, subject to restrictions specified by law.	**Yes. SOCIO-2** would require the project owner to pay school impact fees to the Mojave Unified School District.

The Mojave Unified School District Policy (BP 7211 Facilities: Developer Fees) allows the Board of Trustees to establish, levy, and collect developer fees. The current school impact fee for the district is $0.84 per square foot of covered, enclosed commercial/industrial space (MUSD 2006, MUSD 2023). Based on the proposed size of the enclosed structures (13,200 square feet), an estimated $11,088 would be assessed. As shown in **Table 5.11-9**, staff concludes that with implementation of **SOCIO-2**, the project would conform with all applicable LORS. The subsection below "5.11.5 Proposed Conditions of Certification", contains the full text of **SOCIO-2.**

5.11.4 Comments and Responses on the Preliminary Staff Assessment

No comments were received on the Socioeconomics section.

5.11.5 Conclusions and Recommendations

As discussed above, with implementation of conditions of certification, the project would have a less than significant impact related to socioeconomics and would conform with applicable LORS. Staff recommends adopting the COCs as detailed in subsection "5.11.5 Proposed Conditions of Certification" below.

5.11.6 Proposed Conditions of Certification

SOCIO-1 The project owner and its contractors shall make a good faith effort to hire at least 50 percent of their workers from local Kern County communities. The project owner shall provide the contractors a list of training programs that provide skilled workers and shall require the contractor to advertise locally for available jobs, notifying the training programs of job availability, all in conjunction with normal hiring practices of the contractor.

Verification: At least 60 days prior to the start of construction, the project owner shall submit a letter to the CEC's Compliance Project Manager (CPM) detailing the hiring efforts prior to commencement of construction, which encourages all contractors of the project site to hire at least 50 percent of their workers from local Kern County communities.

SOCIO-2 The project owner shall pay the current one-time statutory school facility development fee to Mojave Unified School District as authorized by Education Code Section 17620 and the Mojave Unified School District Board Policy BP 7211 Facilities: Developer Fees.

Verification: At least 30 days prior to the start of construction, the project owner shall provide to the CPM proof of payment to the Mojave Unified School District of the statutory development fees.

5.11.7 References

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5.12 Solid Waste Management

Testimony of James Ackerman

5.12.1 Environmental Setting

Existing Conditions

The proposed Willow Rock Energy Storage Center (WRESC) would be constructed approximately 4 miles north of Rosamond, California, immediately east of State Route (SR) 14. It would consist of an 88.6-acre power plant facility within a 112-acre parcel. Hydrostor's advanced compressed air energy storage (A-CAES) system would store power during off-peak electricity conditions by pumping compressed air into an underground cavern. The air would be held and compressed in the cavern by a column of water from a surface reservoir. To recoup power, the compressed air would be released from the cavern. Electricity would be generated during both the charging and discharging cycles. The net power storage capacity of 500 megawatts (MWs) or 4,000 megawatt-hours (MWh) (ESHD 2024i).

Solid Waste Generation and Reuse or Disposal

Nonhazardous solid waste generated during construction is anticipated to consist of scrap wood, glass, plastic and metal, concrete, silicate or mineral insulation, and trash. Soil generated during excavation is expected to be used onsite during grading activities. The applicant estimates approximately 19,000 cubic yards (CY) of rock cuttings in the form of slurry sludge would be produced from the drilling of the shafts connecting the underground cavern to the surface. Approximately 1.3 million CY of waste rock are anticipated as a result of excavating the underground cavern. The applicant proposes managing excess waste rock using one or a combination of the following three options:

1. Use on-site to construct an architectural berm.
2. Off-site transport for commercial use.
3. Off-site transport for permanent storage or reuse.

Disposal of waste rock at a local landfill was evaluated in Alternatives section 6.5.3.2, but was determined to be a less desirable option since it would consume valuable landfill capacity and not advance the state's objectives to recycle waste material to the greatest extent possible (ESHD 2024h).

Besides incidental office trash, anticipated nonhazardous solid waste generated during project operations would include machine inlet air filters, spent activated carbon filters, water treatment membranes, and spent cartridge filters. WRESC would employ a third-party to properly recycle and dispose of solid waste rather than relying on a municipal service. Solid waste generated during the project's construction and operational phases would be recycled and diverted from landfills to the greatest extent possible.

Nonhazardous solid waste generated during project construction and operation would be transported to one of following disposal facilities (CalRecycle 2024):

- Boron Sanitary Class III Landfill (SWIS No. 15AA-0045) – Approximately 28 miles east of the project site, is permitted through 2048 to accept a maximum of 200 tons of solid waste per day and as of September 24, 2019, had a remaining capacity of 1 million cubic yards (cy), which is equivalent to approximately 137,500 tons assuming an average weight of 0.138 ton/cy for typical mixed solid waste (USEPA 2016).
- Mojave-Rosemond Sanitary Class III Landfill (SWIS No. 15-AA-0058) - Approximately 6 miles north of the project site, is permitted through 2123 to accept a maximum of 3,000 tons of solid waste per day and as of March 1, 2013, had a remaining capacity of 78 million cy, or an equivalent of 10.7 million tons (USEPA 2016).
- Tehachapi Sanitary Class III Landfill (SWIS No. 15-AA-0062) - Approximately 17 miles northwest of the project site, is permitted to accept a maximum of 1,000 tons of solid waste per day and as of September 1, 2015, had a remaining capacity of 522,298 cy.
- Tehachapi Recycling, Inc. (SWIS No. 15-AA-0106) - Approximately 22 miles northwest of the project site, is permitted to process a maximum of 850 tons of solid waste per day.

Regulatory

Federal

Resource Conservation and Recovery Act (RCRA), 40 CFR, Subtitle D. RCRA Subtitle D regulates the disposal of non-hazardous waste. It includes guidelines for the storage and collection of residential, commercial and institutional solid waste (Part 243), source separation for material recovery (Part 246), and criteria for municipal solid waste facilities (Part 258).

State

Integrated Waste Management Act (PRC § 40000 et seq.). The Integrated Waste Management Act of 1989 established the California Integrated Waste Management Board (CIWMB), revamped the government codes regulating solid waste management, and required cities and counties to reduce the amount of solid waste disposed of in landfills by 50 percent. Duties of the CIWMB were transferred to California Department of Resources Recycling and Recovery (CalRecycle) in January 2010. Under CalRecycle's oversight, counties must adopt regulations and policies to comply with the Integrated Waste Management Act.

Mandatory Commercial Recycling Law (PRC § 41780.01, 42649 et seq., Cal. Code Regs. tit 27, § 18837). Public Resources Code section 41780.01 (AB 341, Chesbro, Chapter 476, Statutes of 2011) set a statewide goal of reducing solid waste by

75 percent by 2020 and annually thereafter. AB 341 also established mandatory recycling programs for solid waste generated by businesses, public entities, and multi-family dwellings generated solid waste. CalRecycle adopted requirements for mandatory recycling of commercial solid waste by businesses which became effective on May 7, 2012 (Cal. Code Regs. tit 27, § 18837.) In addition, Public Resources Code section 42649.2 (SB 1018, Chapter 39, Statutes of 2012) requires any business generating over 4 cy of solid waste per week to arrange for recycling services.

Short-Lived Climate Pollutant Reduction Law (PRC §42652 et seq.). Approved by the Governor on September 19, 2016, Short-Lived Climate Pollutant Reduction Law (SB 1383, Lara, Chapter 395, Statutes of 2016) established statewide targets to reduce disposal of organic waste to 50 percent of 2014 levels by 2020 and to 75 percent of 2014 levels by 2025.

California Energy Efficiency Standards for Residential and Nonresidential Buildings—Green Building Code (2011), CCR Title 24 Update (2019). The California Green Buildings Standards Code applies to the planning, design, operation, construction, use, and occupancy of newly constructed buildings and requires energy and water-efficient indoor infrastructure. The related waste management plan is required to allow for the diversion of 50 percent of the generated waste away from the landfill.

Local

Kern County Integrated Waste Management Plan (Amended 2015). Prepared to comply with the California Integrated Waste Management Act of 1989, as well as subsequent State statute and regulation, the plan contains guidance on solid waste management practices in the County, including a source reduction component that addresses requirements of Public Resources Code section 41870.01.

Kern County Ordinance 8.28.060 (B), Garbage Removal. It is the duty of every owner of a commercial property to arrange for the proper collection and disposal of all discarded material accumulated on the premises.

Kern County Ordinance 8.28.080, Illegal Dumping. It is unlawful and a violation of this code and this chapter for any person to cause or permit the illegal dumping of waste matter on the right-of-way of any public highway, street, easement, thoroughfare, or upon any public grounds, or into any stream or dry watercourse, or in any manner not otherwise authorized by this code or State or Federal law.

Kern County Ordinance G-8337, Commercial Recycling Program. This County ordinance established a commercial recycling program in 2012 to comply with requirements for Public Resources Code section 41870.01.

5.12.2 Environmental Impacts

SOLID WASTE MANAGEMENT Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☒	☐
b. Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☐	☒

Environmental checklist established by Cal. Code Regs., tit. 14, Div. 6, Ch. 3, Appendix G, XIX. Utilities and Service Systems.

5.12.2.1 Methodology and Thresholds of Significance

There are no applicable methodologies or additional thresholds of significance applicable to this project.

5.12.2.2 Direct and Indirect Impacts

a. Would the project generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

Construction

Less Than Significant Impact. During the expected 60-month construction period, solid waste consisting of the following materials would be generated:

- Paper, wood, glass, insulation, and plastics (5,500 tons) – During project construction, an estimated 1,100 tons of scrap wood, steel, glass, plastic, paper, calcium silicate, insulation, and mineral wool insulation would be generated annually.
- Concrete (700 tons) – Excess concrete is expected to be generated during project construction at an average of 140 tons annually.
- Metal (600 tons) – During construction, metals would be generated from cutting and welding operations, electrical wiring, packing materials, and empty non-hazardous chemical containers at an average of 120 tons annually
- Drill cuttings and waste rock (1,319,000 cubic yards) – An estimated 1.3 million CY of waste rock would be produced as a result of underground cavern excavation. In addition, approximately 19,000 CY of drill cuttings in the form of slurry sludge would be produced from the drilling of the (5) 8-foot diameter access shafts.

Where feasible, materials generated during subsurface excavation would be used during grading operations. The excess waste rock would be managed using one or a combination of the following three options:

1. Onsite reuse to construct an architectural berm.
2. Transport off-site for commercial reuse.
3. Transport off-site for permanent storage or reuse.

Assuming the excavated excess waste rock would not be disposed in a local landfill, an estimated 6,800 tons of solid waste would be generated during project construction.

Construction solid waste would be diverted from landfills and recycled to the extent possible to comply with AB 341 and the Green Building Code. However, solid waste that cannot be recycled would be disposed in Class III landfills. According to CalRecycle, the three identified local landfills have a combined remaining capacity of 77 million CY (CalRecycle 2024). By converting the estimated tonnage of materials provided in the application, approximately 28,564 CY of solid waste would be generated during project construction (Contra Costa County 2023, SCDHEC 2015). Assuming all of the construction-related solid waste could not be recycled, it would represent 0.04 percent of the combined available capacity of the three listed landfills. The Construction Waste Management Plan required in Condition of Certification **SOLID WASTE-1** would ensure the recycling of solid waste generated during project construction to the greatest extent possible.

Therefore, the impact resulting from the construction of the proposed project on landfill capacity would be less than significant.

Operation

Less Than Significant Impact. During project operations, the following primary waste streams would be generated annually:

- Spent air-stream filters (23,100 pounds [lbs.] or 11.55 tons) – Operation of the compressors and turbines is estimated to generate 5,775 lbs. of spent air-stream filters each quarter.
- Operation of the water treatment system is estimated to generate the following solid waste;
    - Activated carbon filters (1,000 lbs. or 0.5 tons) – An estimated 250 lbs. of spent activated carbon filters would be generated each quarter.
    - Ultrafiltration membranes (1,000 lbs. or 0.5 tons) – An estimated 1,000 lbs. of spent ultrafiltration membranes would be generated annually.
    - Reverse osmosis membranes (1,200 lbs. or 0.6 tons) – An estimated 1,200 lbs. of spent reverse osmosis membranes would be generated annually.

  - Gas contact membranes (20 lbs.) – An estimated 1,200 lbs. of spent reverse osmosis membranes would be generated annually.
  - Cartridge filters (500 lbs. or 0.25 tons) – An estimated 500 lbs. of cartridge filters would be generated annually, although these would also be used in the HVAC system.
- Office/Industrial solid waste (416 CY, or 57 tons [USEPA 2016]) – An estimated 8 CY per week of office related waste would be generated consisting of paper, packaging, lunch food waste and other miscellaneous items. An undisclosed amount of small metal or electrical materials would be generated during maintenance activities.

Approximately 152 tons of solid waste would be generated during operation of the facility annually. Operational solid waste would be diverted from landfills and recycled as practical to comply with AB 341 and the Green Building Code. However, solid waste that cannot be recycled would be disposed of at a Class III landfill. As stated above, the three identified local landfills have a combined remaining capacity of 77 million CY (CalRecycle 2024). By converting the estimated tonnage of materials provided in the application, approximately 556 CY of solid waste would be generated annually during project operation (Chen et al. 2017, Fil-Trek 2018, PPG 2020, SRP Americas 2024, Superwater 2024, USEPA 2016). The annual generation of solid waste during project operations is insignificant compared to the remaining capacity of the three identified local landfills. The Operation Waste Management Plan required in Condition of Certification **SOLID WASTE-1** would ensure the recycling of solid waste generated during project operation to the greatest extent possible.

Therefore, the impact resulting from the operation of the proposed project on landfill capacity would be less than significant.

b. Would the project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

Construction and Operation

No Impact. The California Integrated Waste Management Act of 1989 requires local jurisdictions in California to reduce, by 50 percent, the amount of solid waste disposed of in landfills by the year 2000 and beyond. Moreover, Assembly Bill 341 of 2011 sets statewide goals of reducing solid waste by 75 percent by 2020 and Senate Bill 1383 of 2016 establishes statewide targets to reduce organic waste levels to 75 percent by 2025.

During construction, the project would collect and haul construction debris off-site for recycling or disposal in accordance with local programs that comply with state requirements.

During operations, the project would comply with federal, state, and local statutes and regulations related to solid waste. Commercial solid waste and spent air and water

filtering cartridges would be collected and hauled off-site for recycling or disposal. Management of hazardous waste and applicable federal and state regulations are discussed in **Section 5.7, Hazards and Hazardous Materials**.

The project would comply with federal, state, or local statutes and regulations related to solid waste management and reduction, therefore, no impact would occur.

5.12.2.3 Cumulative Impacts

Less Than Significant Impact. According to the applicant's Table 5.0-2 Cumulative Project List and Figure 5.0-2 Cumulative Projects both prepared based on Kern County Planning Department (Kern County) records, there are 5 projects that have been approved, but not yet constructed (omitting those requesting rezoning or variance) within a 10-mile radius of the project site (ESD 2024i). These projects fall within the following categories:

- Solar Energy (3)
- Residential (1)
- Mining (1)

According to the draft environmental impact reports (DEIRs) listed on the Kern County website (Kern County), the three solar energy projects and the mining project are expected to generate only minimal amounts of solid waste during operation (Kern County 2024). Based on the information on a bankruptcy website, the company proposing an 89-unit multifamily residential project filed for bankruptcy pursuant to United States Bankruptcy Code, Chapter 11 on September 25, 2022, and the project may not be constructed (BKData 2024).

Therefore, the cumulative impact of solid waste on local landfill capacity would be negligible.

5.12.3 Project Conformance with Applicable LORS

Table 5.12-1 presents staff's determination of conformance with applicable local, state, and federal LORS, including any proposed Conditions of Certification, where applicable, to ensure the project would comply with LORS. As shown in this table, staff concludes that with the implementation of specific conditions of certification, the proposed project would be consistent with all applicable LORS. The subsection below, "Staff Proposed Conditions of Certification," contains the full text of the referenced conditions of certification.

TABLE 5.12-1 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
Federal	
Resource Conservation and Recovery Act (RCRA)	
40 CFR, Subtitle D. Provides guidelines for the storage and collection of residential, commercial, and institutional solid waste (Part 243), source separation for material recovery (Part 246), and design of municipal solid waste facilities (Part 258).	**Yes.** All landfills proposed for use with the project would comply with Federal regulations.
State	
Integrated Waste Management Act (PRC §40000)	
0000. Established the California Integrated Waste Management Board (CIWMB), revamped the government codes regulating solid waste management, and required cities and counties to reduce the amount of solid waste disposed of in landfills by 50 percent.	**Yes.** All landfills proposed for use with the project would comply with State statutes. Conditions of Certification (COC) **SOLID WASTE-1** would assist with the solid waste reduction requirement of the statute.
Reduction of Solid Waste (PRC §41780.01).	
1780,01. Set a statewide goal of reducing solid waste by 75 percent by 2020. It also established mandatory recycling programs for solid waste.	**Yes.** All landfills proposed for use with the project would comply with State statutes. COC **SOLID WASTE-1** would assist with the solid waste reduction requirement of the statute.
Local	
Kern County Ordinance	
Kern County ordinance 8.28.060 states that is the duty of every owner of a commercial property to arrange for the proper collection and disposal of all discarded material accumulated on the premises.	**Yes.** The project owner and all landfills proposed for use with the project would comply with local ordinances.
Kern County ordinance 8.28.080 states that it is unlawful for any person to cause or permit the illegal dumping of waste matter on the right-of-way of any public highway, street, easement, thoroughfare, or upon any public grounds, or into any stream or dry watercourse, or in any manner not otherwise authorized by this code or State or Federal law.	
Kern County ordinance G-8337 established a commercial recycling program.	

5.12.4 Comments and Responses on the Preliminary Staff Assessment

TN 264316 - WSP USA Inc., on Behalf of the Applicant

Response to TN 264316, Page 5.12-9, COC SOLID WASTE-1. The applicant suggests including a description of methods to maintain waste shipping and disposal documents in addition to the minimum requirements for the construction and

operations waste management plans. CEC Staff concurs with this addition, and it has been incorporated into the COC.

TN 264343 - California Unions for Reliable Energy

Comment on Page 8 of CURE comments: Several of the Conditions of Certification ("COC") in the PSA impermissibly defer the preparation of plans, reports, and/or studies as mitigation for the Project's significant environmental effects until after certification and without specific performance standards. The PSA also defers to other agencies to analyze the impacts or identify mitigation measures for the Project. The comment identified **SOLID WASTE-1** as a measure improperly deferred until after the Commission has certified the Project.

Response to TN 264343, Page 8, regarding SOLID WASTE-1. See global response to comments on deferred mitigation in **Section 9, Compliance Conditions and Compliance Monitoring Plan.**

5.12.5 Conclusions and Recommendations

As discussed above, with the implementation of staff proposed Conditions of Certification listed in section 5.12.6 below, the project would have a less than significant impact related to solid waste management and would conform with applicable LORS.

5.12.6 Proposed Conditions of Certification

The following proposed Conditions of Certification include measures to ensure conformance with applicable LORS.

SOLID WASTE-1 The project owner shall prepare a Construction Waste Management Plan and an Operation Waste Management Plan for all wastes generated during construction and operation of the facility, respectively, and shall submit both plans to the Compliance Project Manager (CPM) for review and approval. The plans shall contain, at a minimum, the following:

- A description of all waste streams, including projections of frequency, amounts generated, and hazard classifications.
- Methods of managing each waste, including treatment methods and entities contracted for treatment services, waste testing methods to assure correct classification, methods of transportation, disposal requirements and sites, and recycling and waste minimization/reduction plans.
    - A description of methods for maintaining waste shipping and disposal documents, including manifest and bills of lading, receipts and invoices. All waste shipping papers, receipts, and applicable documentation shall be readily available for review.

Verification: No less than 30 days prior to the start of site mobilization, the project

owner shall submit the Construction Waste Management Plan to the CPM for review and approval.

The Operation Waste Management Plan shall be submitted to the CPM for review and approval no less than 30 days prior to the start of project operation. The project owner shall submit any required revisions within 20 days of notification by the CPM.

In the Annual Compliance Reports, the project owner shall document the actual waste management methods used during the year compared to the planned management methods.

5.12.7 References

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CalRecycle 2024 – California Department of Resources Recycling and Recovery (CalRecycle). Imperial Landfill (SWIS Facility No 13-AA-0019), SWIS Facility/Site Activity Details website. Accessed on November 2, 2023. Available online at: https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/4191?siteID=603

Chen et al. 2017 – Xiao Yuan Chen, Serge Kaliaguine and Denis Rodrigue (Chen et al). A Comparison Between Several Commercial Polymer Hallow Fiber Membrane for Gas Separation. Journal of Membrane and Separation Technology, 2017, Vol. 6, No. 1, 15 p. Available online at: https://www.researchgate.net/publication/272132700_Effect_of_macrovoids_in_nano-silicapolyimide_mixed_matrix_membranes_for_high_flux_CO2CH4_gas_separation

Contra Costa County 2023 – Contra Costa County Conservation & Development Department (Contra Costa County). CalGreen Compliance Packet for Residential Projects, Item 7. Volume to Weight Conversion Table. Available online at: https://www.contracosta.ca.gov/DocumentCenter/View/61612/CalGreen-Packet-for-Residential-Projects

ESHD 2024i – Ellison Schneider Harris & Donlan LLP (TN 254806). Willow Rock Energy Storage Center SAFC, Volume 1, Part A, dated March 1, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-AFC-02

Fil-Trek 2018 – Fil-Trek Corporation (Fil-Trek). CGP Carbon Block Filters Product Datasheet. Available online at: https://fil-trek.com/product/cgp-series/

Kern County 2024 – Kern County Planning and Resources Department (Kern County). Kern County Planning Website. Available online at: https://kernplanning.com/planning/

SRP Americas 2024 – SRP Americas Mitsubishi Engine & Generator (SRP Americas). Mitsubishi Generators website, Air Filter Element (2806-E18: JG) CH11396 Product Detail webpage. Available online at: https://www.srpamericas.com/powergeneratorparts

PPG 2020 – PPG Filtration Technologies (PPG). Product Data Sheet: PPG 8040-D*1P-FEM. Available online at: https://www.ppg.com/filtration/en-US/literature https://fil-trek.com/product/cgp-series/

SCDHEC 2015 – South Carolina Department of Health and Environmental Control (SCDHEC). Volume-To-Weight Conversion Factors table. Prepared May 5, 2015. Accessed on November 6, 2023. Available online at: https://dc.statelibrary.sc.gov/bitstream/handle/10827/18367/DHEC_Volume_to_Weight_2015-03.pdf?sequence=1&isAllowed=y

Superwater 2024 – Superwater.com Website. AL40-60B / Pentair AquaLine AL40-60B Cartridge # AL4060B Product Information. Available online at: https://superwater.com/al40-60b-pentair-aqualine-al40-60b-cartridge-al4060b/?srsltid=AfmBOor79ntlNZTk60UeGtL1w6pFjuJ1gBReXZY-T9uyAoQtcydohPg6

USEPA 2016 – United Stated Environmental Protection Agency (USEPA). Volume-To-Weight Conversion Factors, U.S. Environmental Protection Agency, Office of Resource Conservation and Recovery, April 2016. Accessed on November 27, 2023. Available online at: https://www.epa.gov/sites/default/files/2016-04/documents/volume_to_weight_conversion_factors_memorandum_04192016_508fnl.pdf

5.13 Transmission Line Safety and Nuisance

Testimony of Sudath Edirisuriya

This section describes the environmental and regulatory setting, and discusses impacts associated with the construction and operation of the project and project conformance with applicable laws, ordinances, regulations, and standards (LORS) specific to transmission line safety and nuisance. The project components and their operation that could result in impacts associated with transmission line safety and nuisance and are regulated by applicable LORS include the proposed 230 kilovolt (kV) generator tie-line and the 230 kV project substation.

5.13.1 Environmental Setting

The proposed project would change the environmental setting by adding a 230 kV above-ground generator tie-line (gen-tie) to interconnect the proposed Willow Rock Energy Storage Center (WRESC or project) to the first point of interconnection, at the existing Southern California Edison's Whirlwind Substation. The gen-tie would be approximately 19 miles long, 230 kV single circuit. The WRESC would be a nominal 520-megawatt (MW) and 4,160 megawatt-hour (MWh) energy storage facility, which utilizes advanced compressed air energy storage technology. The WRESC would be owned and operated by the GEM A-CAES LLC's (applicant), along with the associated gen-tie. The project would be on approximately 88.6 acres of private land immediately north of Dawn Road and between State Route 14 and Sierra Highway within unincorporated, southern Kern County, California.

Regulatory

The national, federal, state, and local laws and policies in the next section apply to the control of the field and non-field impacts of electric power lines. Staff's analysis examines the project's compliance with these requirements. There are different versions of the National Electrical Code (NEC) enforced throughout the United States, and this is because the Code does not actually fall under federal law. Instead, it is a "uniform code", a set of guidelines which each state may adopt and apply as they see fit.

National

Institute of Electrical and Electronics Engineers (IEEE). IEEE is the world's largest technical professional organization dedicated to advancing technology for the benefit of humanity. IEEE and its members inspire a global community through its highly cited publications, conferences, technology standards, and professional and educational activities.

American National Standards Institute (ANSI). ANSI is a private, non-profit organization that administers and coordinates the U.S. voluntary standards and conformity assessment system.

National Electrical Safety Code (NESC). NESC is a United States standard of the safe installation, operation, and maintenance of electric power and communication utility systems including power substations, power and communication overhead lines, and power and communication underground lines.

Federal

Code of Federal Regulations (CFR)

Title 47, CFR, section 15.205, Federal Communications Commission (FCC)

Prohibits operation of devices that can interfere with radio- frequency communication.

State

California Public Utilities Commission General Order 52 (GO-52)

Governs the construction and operation of power and communications lines to prevent or mitigate interference.

CPUC, General Order-131-D" Rules for Planning and Construction of Electric Generation, Line, and Substation Facilities in California"

Specifies application and noticing requirements for new line construction including EMF reduction.

CPUC, General Order 95 (GO-95), "Rules for Overhead Electric Line Construction"

Governs clearance requirements to prevent hazardous shocks, grounding techniques to minimize nuisance shocks, and maintenance and inspection requirements.

CPUC, General Order 128 (GO-128), "Rules for construction of underground electric supply and communication systems"

The order formulates uniform requirements for underground electric supply and communication line construction in California.

California Code of Regulations

Title 8, California Code of Regulations, section 2700 et seq. "High Voltage Safety Orders"

Specifies requirements and minimum standards for safely installing, operating, working around, and maintaining electrical installations and equipment.

Title 14, California Code of Regulations, sections 1250-1258, "Fire Prevention Standards for Electric Utilities"

Provides specific exemptions from electric pole and tower firebreak and conductor clearance standards and specifies when and where standards apply.

Cumulative

The project could have cumulative impact associated with Transmission Line Safety and Nuisance (TLSN) if other power-generating facilities are sited adjacent to the WRESC and share the gen-tie line to transmit electricity to the grid.

5.13.2 Environmental Impacts

TRANSMISSION LINE SAFETY AND NUISANCE Would the project's transmission line either physically or electrically (via its electromagnetic field):	**Significant and Unavoidable Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a. Affect aviation safety?	☐	☐	☒	☐
b. Interfere with radio frequency communication?	☐	☐	☒	☐
c. Be a source of audible noise?	☐	☐	☒	☐
d. Be a fire hazard?	☐	☒	☐	☐
e. Be a source of hazardous shock?	☐	☒	☐	☐
f. Be a source of nuisance shock?	☐	☒	☐	☐
g. Affect public health?	☐	☒	☐	☐

Environmental checklist established by Cal. Code Regs., tit. 20, Div. 2, Ch. 5, Powerplant and Transmission Line Jurisdictional Investigations, Appendix B, Transmission System Safety and Nuisance

Transmission System Components

The project's maximum continuous rating is approximately 520 MW gross output, with an expected net output of approximately 500 MW. WRESC is a 4,000 MWh net compressed air energy storage facility. The energy stored at the WRESC will be delivered to SCE's Whirlwind substation. The applicant provided a map showing the entire preferred gen-tie route from the WRESC site to the existing SCE's 230-kV Whirlwind substation (WRESC SAFC-Volume 1, part A, Chapter 3, Section 3, Page 6-18).

Gen-tie line – The 230-kV, 19 miles long transmission interconnection for the proposed project facility would consist of a single-circuit, double-bundle gen-tie line connection, which would require overhead and underground line segments. The overhead line segment would construct with 60 to 140-foot steel transmission poles, spaced approximately 200 to 800 feet apart. The underground line segment would construct with an underground cable which runs through a continuous underground duct bank. Several alternative interconnections are described in the AFC, section 5.6, including two that could potentially interconnect to the future LADWP Rosamond substation (Route 2A and 2B). Two alternatives which have been selected by the applicant requires additional gen-tie line length of approximately 2.5 to 3.5 miles. The gen-tie line, plant substation, and its components would be owned, operated, and maintained by the applicant (WRESC SAFC-Volume 1, part A, Chapter 3, Figure 3-1a through 3-1c and figure 3-3, Data Request set 1,3, 1B response report).

Compressor unit electrical configuration – The project gross output would be 520 MW with an auxiliary load of 20 MW. The project would generate power by utilizing four air compressor units. Each compressor unit consists of two synchronous motors, soft-started and accelerated to synchronous speed using an LCI and 1200A breakers. The motors are transferred to the synchronous bus and 4000A breakers once they reach synchronous speed. (WRESC SAFC-Volume 1, part A, Chapter 3, Figure 3-1a through 3-1c and figure 3-2 and 3-3).

Project substation electrical configuration – Each unit, low sides of the three winding 13.8-230 kV, 105/140/175 MVA transformer would tie into 13.8 kV buses via a dedicated 4000 Ampere breaker. High side of each unit transformer would connect with 230 kV bus bar via a motor operated disconnect switch. The same common bus bar would link with project 152.9 MVA, .85 PF, 13.8 kV ,60 HZ project generator via a 230-13.8 kV, 105/140/175 MVA transformer, disconnect switch and a breaker through a 7000 A, 13.8 kV isolated phase busduct. The same common bus would tie into outgoing bus of the substation via each unit's, a motor operated disconnect switch and a breaker. Outgoing SCE grid connected 230 kV gen-tie line would connect to the project's common tubular bus bar where project's four units connected. The project substation consists with capacitor banks to provide var support, surge arrestors to mitigate voltage spikes, lighting arrestors to mitigate lighting strike, grounding substation components to dissipate fault current and provide electrical connection for plant auxiliary loads (WRESC SAFC-Volume 1, part A, Chapter 3, Figure 3-1a through 3-1c and figure 3-2 and 3-3).

Specific gen-tie right-of-away (ROW) requirements depend on the project-selected structure type, height, span, and conductor configuration. The single steel poles for the WRESC lines would range from 60 to 140 feet in height, spaced approximately 200 feet to 800 feet apart, with an overall ROW width of 125 feet. The phase conductors will be arranged vertically on three side arms for each circuit, as shown in Figures 3.1-b and 3.1-c. The 19-mile-long gen-tie line overhead line segment would be built with ACSR double bundle 1590 kcmil 54/19 "Falcon" conductors. The conductor's current carrying capacity is approximately 1,359 amperes per conductor. One shield wire with an integrated fiber optic cable will be installed with the new gen-tie line associated with the project. The fiber optic cable will be used for any necessary communications within SCE's transmission system. The underground line segment of the gen-tie constructs with 2000 kcmil parallel single conductor coper shielded cables. The cable's current carrying capacity is approximately 885 amperes per cable (WRESC SAFC-Volume 1, part A, Chapter 3, Figure 3-1a through 3-1c and Figure 3-2 and 3-3, Data Response submitted by the applicant December 13, 2024).

Grounding safety is imperative for site personnel and electrical equipment. The electrical system is protected (protection schemes by utilizing Supervisory Control and Data Acquisition (SCADA)) against ground faults that result in unit ground potential rises. The station grounding system provides a path to dissipate unsafe ground fault currents and reduces the ground potential rise. The grounding conductor will be sized

for sufficient capacity to reduce the most severe fault conditions within allowable limits. The project's onsite substation electrical components, underground duct banks and each pole of the gen-tie line would be grounded according to the National Electrical Safety Code (NESC), California Public Utilities Commission (CPUC) G.O. 95, and 128 standards and guidelines.

The CEC staff has concluded that the first point of grid interconnection would be the dead-end structure adjacent to the SCE's Whirlwind substation as proposed by the applicant and therefore staff must analyze the impacts accordingly. For a more detailed discussion regarding the first point of grid interconnection, as well as a discussion of potential environmental impacts associated with transmission facilities necessary for the project, not licensed by the CEC, please see **Section 4.3, Transmission System Engineering**.

5.13.2.1 Methodology and Thresholds of Significance

With the exception of the above environmental checklist, no other methodology or thresholds of significance were used.

5.13.2.2 Direct and Indirect Impacts

a. Would the project's transmission line either physically or electrically (via its electromagnetic field) affect aviation safety?

Less Than Significant Impact. For WRESC, any potential hazard to the area aircraft would potentially cause a collision in the navigable airspace. The requirements in the LORS listed in **Table 5.13-1** establish the standards for assessing the potential for obstruction hazards within the navigable airspace. The requirements also establish the criteria for determining when to notify the Federal Aviation Administration (FAA) about such hazards. For example, FAA notification is required in cases of structures over 200 feet above ground level, or if the structure were to be less than 200 feet in height but within the restricted airspace in the approaches to public or military airports and heliports. Moreover, for airports with runways longer than 3,200 feet, the restricted space is defined by the FAA as an area of space that extends 20,000 feet (3.3 nautical miles) from the runway. For airports with runways of 3,200 feet or less, the restricted airspace is defined as a space that extends 10,000 feet from the runway. For heliports, the restricted space is an area of space that extends 5,000 feet (0.8 nautical miles) from the landing site.

CEC staff has assessed the potential for a civil aviation hazard regarding the height of the proposed project transmission lines. The project transmission system would be 90 feet in height, which is less than the 200-foot height of concern to the FAA. The nearest airport (Meadows Field Municipal Airport) to the project site is 28 miles distant. Therefore, CEC staff concludes that the transmission lines would not pose a significant collision hazard to civil aviation or aircraft. Thus, an FAA "Notice of Proposed Construction or Alteration" (Form 7460) for an obstruction hazard would not be

necessary. (WRESC SAFC-Volume 1, part A, Chapter 3, section 3, Figure 3-1a through 3-1c)

b. Would the project's transmission line either physically or electrically (via its electromagnetic field) interfere with radio-frequency communication?

Less Than Significant Impact. Transmission line-related radio-frequency interference is one of the indirect effects of line operation. It is produced by the physical interactions of line electric fields. More specifically, such interference is due to radio noise produced by the action of the electric fields on the surface of the energized conductor. The process involved is known as *corona discharge* but is referred to as *spark gap electric discharge* when it occurs within gaps between the conductor and insulators or metal fittings. Corona from a transmission line may result in radio and television reception interference, audible noise, light, and the production of ozone. When generated, such noise manifests itself as perceivable interference with radio or television signal reception or interference with other forms of radio communication.

Since the level of interference depends on factors such as line voltage, distance from the line to the receiving device, orientation of the antenna, signal level, line configuration, and weather conditions, maximum interference levels are not specified as design criteria for modern transmission lines. The level of any such interference usually depends on the magnitude of the electric fields involved and the distance from the line. The potential for such impacts therefore would be minimized by reducing the line's electric fields and by locating the line away from inhabited areas.

The WRESC transmission lines would be built and maintained according to standard practices that minimize surface irregularities and discontinuities. Moreover, the potential for such corona-related interference is usually of concern for lines of 345 kV and above, and not for 230 kV lines such as the proposed line of the WRESC. The proposed project's gen-tie line is rated at less than 345 kV (Figure 1.4, chapter 1), therefore CEC staff does not expect any corona-related radio-frequency interference or complaints and does not recommend any related condition of certification (COC).

c. Would the project's transmission line either physically or electrically (via its electromagnetic field) be a source of audible noise?

Less Than Significant Impact. Audible noise usually results from the action of the electric field at the surface of the line conductor and could be perceived as a characteristic crackling, frying, or hissing sound or hum, especially in wet weather. Since the noise level depends on the strength of the line's electric field, the potential for perception would be assessed by estimating the field strengths during operation. Such noise is usually generated during rainfall, but mainly from overhead lines of 345 kV or higher. Audible noise is, therefore, not generally expected at significant levels from lines of less than 345 kV as proposed for the WRESC. Research by the Electric Power Research Institute (EPRI 1982) has validated this by showing that the fair-weather

audible noise from modern transmission lines is generally indistinguishable from background noise at the edge of a ROW of 100 feet or more. A more detailed discussion of the proximity of potentially sensitive receptors is found in **Section 5.9, Noise and Vibration.** Since the proposed line ROW would fall mainly within the boundaries of the WRESC boundary and Edison service area, CEC staff does not expect the proposed line operation to add significantly to current background noise levels in the project area. (WRESC SAFC-Volume 1, part A, Figure 3-1a through 3-1c, Chapter 3, section 3)

The noise-reducing designs related to electric field intensity are not specifically mandated by federal or state regulations in terms of specific noise limits. Instead, such audible noise is limited through design, construction, or maintenance practices established from industry research and experience as effective without significant impacts online safety, efficiency, maintainability, and reliability. Since these designs are also aimed at minimizing field strengths, CEC staff does not expect the proposed line operation to add significantly to current background noise levels in the project area. For an assessment of the noise from the proposed project and related facilities, please refer to staff's analysis in **Section 5.9, Noise and Vibration.**

d. Would the project's transmission line either physically or electrically (via its electromagnetic field) be a fire hazard?

Less Than Significant with Mitigation Incorporated. The fire hazards addressed in **Table 5.13.1** are those that could be caused by sparks from conductors of overhead lines, or that could result from direct contact between a line and nearby trees and other combustible objects.

The requirements of the existing Edison fire prevention and suppression program would be implemented for the proposed project line. The applicant would comply with Title 14, California Code of Regulations, Section 1250, Article 4, which establishes fire prevention standards for electric power generation facilities. Also, CPUC GO-95 establishes rules and guidelines for transmission line construction including clearances from other manmade and natural structures, and tree-trimming requirements to mitigate fire hazards. Therefore, the applicant's intention to ensure compliance with the clearance-related aspects of GO-95 would be an important part of this mitigation approach. Although the new line would be located within the WRESC's gen-tie right away area, condition of certifications **TLSN-1** and **TLSN-2** are recommended to ensure compliance with these program requirements. (WRESC SAFC-Volume 1, part A, Figure 3-1a through 3-1c, Chapter 3, section 3)

e. Would the project's transmission line either physically or electrically (via its electromagnetic field) be a source of hazardous shock?

Less Than Significant with Mitigation Incorporated. Hazardous shocks are those that could result from direct or indirect contact between an individual and the energized line, whether overhead or underground. Such shocks are capable of serious physiological

harm or death. Hazard shocks remain a driving force in the design and operation of transmission and other high-voltage lines.

No design-specific federal regulations have been established to prevent hazardous shocks from overhead power lines. Safety is assured within the industry from compliance with the requirements specifying the minimum national safe operating clearances applicable in areas where the line might be accessible to the public.

Potentially hazardous shocks could result from electrical faults from the new WRESC equipment of the substation, gen-tie line, or the Edison high-voltage transmission system. The existing Edison 230-kV transmission system is within a secured area under Edison's access control. The Edison substation and plant substation would be fenced to keep individuals from entering the area where they could be exposed to associated hazardous shocks. The new WRESC's 230-kV generation tie line would be designed in accordance with applicable LORS. Implementing the GO-95 and 128 related measures against direct contact with the energized line would serve to minimize the risk of hazardous shocks. Because the lines would be constructed in conformance with the requirements of CPUC GO-95 and Title 8 California Code of Regulations (CCR) 2700, hazardous shocks are highly unlikely to occur because of the project's construction and operation. CEC staff's recommended conditions of certification **TLSN-1** and **TLSN-3** would be adequate to ensure the implementation of the necessary mitigation measures. (WRESC SAFC-Volume 1, part A, Figure 3-1a through 3-1c, Chapter 3, section 3)

f. Would the project's transmission line either physically or electrically (via its electromagnetic field) be a source of nuisance shock?

Less Than Significant with Mitigation incorporated. Nuisance shocks are caused by current flow at levels generally incapable of causing significant physiological harm. They result mostly from direct contact with metal objects electrically charged by fields from the energized line. Such electric charges are induced in different ways by the line's electromagnetic field (EMF).

There are no design-specific federal or state regulations to limit nuisance shocks in the transmission line environment. For modern overhead high-voltage lines, such shocks are effectively minimized through grounding practices and procedures specified in the NESC and the joint guidelines of the American National Standards Institute (ANSI) and the Institute of Electrical and Electronics Engineers (IEEE).

For the proposed project line, the project owner would be responsible in all cases for ensuring compliance with these grounding-related practices within the ROW. Staff recommends condition of certification **TLSN-3** to ensure such grounding for WRESC. (WRESC SAFC-Volume 1, part A, Figure 3-1a through 3-1c, Chapter 3, section 3)

g. Would the project's transmission line either physically or electrically (via its electromagnetic field) affect public health?

Less Than Significant with Mitigation Incorporated. EMF is created whenever electricity flows, and exposure to them together is generally referred to as EMF exposure. There is public concern regarding the possibility of health effects from EMF exposure.

The electrical transmission interconnection and other electrical devices that would be constructed as part of the project emit EMF when in operation. These fields are typically measured near ground level, where they are encountered by people. EMF fields, to the extent they occur, could impact receptors on the properties adjacent to the project site (Appendix 1, Section 3.6.1).

As previously stated, the project electrical substation and other interconnection electrical devices would be mainly within the WRESC site and SCE's transmission system. There are no receptors adjacent to the project site. Site access is restricted and would be limited to station workers, incidental construction and maintenance personnel, other company personnel, regulatory inspectors, and approved guests. Because access would not be available to the public, public exposure to EMF is not expected to occur from WRESC or the transmission facilities to be constructed as part of the project (WRESC SAFC-Volume 1, part A, Figure 3-1a through 3-1c, Chapter 3, section 3)

Industries and Applicant's Approach to Reducing EMF Exposures

The present focus of EMF exposure concern is on the magnetic field. This is because, unlike electric fields, magnetic fields would penetrate the soil, buildings, and other materials to produce the types of human exposures at the root of health concerns. The industry seeks to reduce exposure, not by setting specific exposure limits, but through design guidelines that minimize exposure in each given case.

In comparison to the strong magnetic fields from the more visible high-voltage power lines, CEC staff considers it important, for perspective, to note that an individual in a home could be exposed to much stronger fields from high-voltage lines while using some common household appliances (National Institute of Environmental Health Sciences 1998). The difference between these types of field exposures is that the higher-level, appliance-related exposures are short-term duration, while the exposures from power lines are lower level, but long-term duration. Scientists have not established which of these exposure types would be more biologically meaningful in the individual. CEC staff notes such exposure differences only to show that high-level magnetic field exposures regularly occur in areas other than around high-voltage power lines.

As with WRESC project lines, specific field strength-reducing measures would be incorporated into the proposed line design to ensure the field strength minimization currently required by the CPUC given the concern over EMF exposure and health.

The field reduction measures that could be applied include the following:

1. increasing the distance between the conductors and the ground to an optimal level.
2. reducing the spacing between the conductors to an optimal level.
3. minimizing the current in the line; and
4. arranging current flow to maximize the cancellation effects from interacting of conductor fields.

The field strengths of most significance would be encountered within the boundaries of the proposed WRESC, and an SCE-controlled area. These field intensities would depend on the effectiveness of the applied field-reducing measures. The requirements in condition of certification **TLSN-4** for field strength measurements are intended to assess the applicant's assumed field reduction efficiency. The actual contribution to the area's field exposure levels would be documented for the proposed route from the results of the field strength measurements required in **TLSN-4,** for field strength measurements are intended to assess the applicant's assumed field reduction efficiency.

5.13.2.3 Cumulative Impacts

No Impact. There are no additional generating facilities identified above in the "Environmental Setting" subsection and are not adjacent to WRESC. Additionally, there are no generating facilities share a common gen-tie line with the WRESC to transmit power from the plant to Edison's substation. For these reasons, no adverse impacts are anticipated due to WRESC combined with the other projects.

5.13.3 Project Conformance with Applicable LORS

TABLE 5.13-1 CONFORMANCE WITH APPLICABLE LORS

Applicable LORS	Conformance and Basis for Determination
Federal	
Title 14, Part 77 of the Code of Federal Regulations (CFR)," Objects Affecting the Navigable Air Space". Describes the criteria for determining the need for a Federal Aviation Administration (FAA) "Notice of Proposed Construction or Alteration" in cases of potential obstruction hazards.	**Yes.** The Project's overhead gen-tie line structures would be 90 feet in height, which is less than the 200-feet height of concern to the FAA.
Title 47, CFR, section 15.205, Federal Communications Commission (FCC). Prohibits the operation of devices that can interfere with radio-frequency communication.	**Yes.** The applicant would not use any equipment that emits restricted frequency bands given under section 15.205 of FCC.
State	
California Public Utilities Commission (CPUC) General Order 52 (GO-52). Governs the construction and operation of power and communications lines to prevent or mitigate interference.	**Yes.** The applicant would not construct or operate transmission or communication lines for the prevention or mitigation of inductive interference.

TABLE 5.13-1 CONFORMANCE WITH APPLICABLE LORS

Applicable LORS	Conformance and Basis for Determination
California Public Utilities Commission (CPUC) General Order (GO-95 and GO-128), "Rules for Overhead and Underground Electric Line Construction". Governs clearance requirements to prevent hazardous shocks, grounding techniques to minimize nuisance shocks, and maintenance and inspection requirements.	**Yes.** The applicant would construct Gen-tie line structures with a height of less than 90 feet to satisfy the G.O 95 requirement. All gen-tie structures, components of the substation, and switchyard would be constructed according to the G.O. 95 and 128 electrical grounding standards. Underground circuits of the project would utilize the duct banks to minimize the EMF effects. Thereby satisfy the G.O.128 standards. The applicant would utilize the lighting and surge arresters in the substations, switchyard as it is necessary. Thereby dissipating the fault currents and voltages due to lighting and voltage surges.
Title 8, California Code of Regulations (CCR) section 2700 et seq. "High Voltage Safety Orders". Specifies requirements and minimum standards for safely installing, operating, working around, and maintaining electrical installations and equipment.	**Yes.** All gen-tie structures, circuits overhead/underground, substations, and switchyard components would be constructed according to "High Voltage Safety Orders".
National Electrical Safety Code (NESC). Specifies grounding procedures to limit nuisance shocks. It also specifies minimum conductor ground clearances.	**Yes.** All Gen-tie structures, components of the substation, and switchyard would be constructed according to the NESC standards and G.O. 95 and 128 grounding standards. Overhead and underground grounding circuits will be designed with proper conductor sizes to dissipate the fault current. The applicant will select proper conductor sizes to satisfy the NESC standards. All the components of the substation or switchyard would be grounded by utilizing the underground grounding grid. The applicant will assess the soil resistivity test for the project's substation, switchyard sites, and transmission line path.
GO-131-D, CPUC "Rules for Planning and Construction of Electric Generation, Line, and Substation Facilities in California" specifies application and noticing requirements for new line construction including EMF reduction.	**Yes.** The project would be built with proper transmission line clearance with the ground and satisfy G.O.95 Transmission paths Right-of-way requirements. Underground circuits would utilize duct banks to minimize the EMF and de-rated ampacity of conductors.

TABLE 5.13-1 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis for Determination**
CPUC Decision D.93-11-013. Specifies CPUC requirements for reducing electric and magnetic fields.	**Yes.** The CPUC required the utilities to undertake no-cost EMF mitigation measures and implement low-cost mitigation measures to the extent approved as part of a project's certification process. "Low-cost" was defined to be within the range of 4% of the total project cost but the Commission specified that this 4% benchmark is not an absolute cap.
CPUC Decision D.06-01-042. Re-affirms CPUC EMF Policy in D.93-11-013.	**Yes.** Re-affirms stated above requirement.
Title 14, Cal. Code Regs., sections 1250-1258, "Fire Prevention Standards for Electric Utilities". Provides specific exemptions from electric pole and tower firebreak and conductor clearance standards and specifies when and where standards apply.	**Yes.** The applicant should refer to the Fire Prevention Standards under 1250-1258 (design, construction, and operation phases).
Standards	
Institute of Electrical and Electronics Engineers (IEEE) 1119, "IEEE Guide for Fence Safety Clearances in Electric-Supply Stations". Specifies the guidelines for grounding-related practices within the ROW and substations.	**Yes.** Having a fence around the substation or switchyard and proper Transmission line clearance would facilitate a safety clearance zone. All the components of the substation or switchyard and fence would be grounded by utilizing the underground grounding grid. Maintain the proper ROW of the transmission paths, and substations to minimize the flashover and EMF effects.
American National Standards Institute (ANSI/IEEE) 644-1944 Standard Procedures for Measurement of Power Frequency Electric and Magnetic Fields from AC Power Lines. Specifies standard procedures for measuring electric power frequency electric and magnetic fields from an operating electric line.	**Yes.** Having a fence around the substation or switchyard and proper Transmission line clearance would facilitate a safety clearance zone. All the components of the substation or switchyard and fence would be grounded by utilizing the underground grounding grid. Maintain the proper ROW of the transmission paths, and substations to minimize the flashover and EMF effects.

Facility Closure

If the proposed WRESC project were to be closed and decommissioned, and all related structures are removed as described in **Section 3, Project Description**, the minimal electric shocks and fire hazards from the physical presence of this gen-tie line would be eliminated. Decommissioning and removal would also eliminate the transmission lines' field and non-field impacts assessed in this analysis in terms of nuisance shocks, radio-frequency impacts, audible noise, and electric and magnetic field exposure, and aviation safety. Since the lines would be designed and operated according to existing CPUC G.O.95 guidelines, these impacts would be as expected for SCE lines of the same

voltage and current-carrying capacity and therefore, at levels reflecting compliance with existing health and safety LORS.

5.13.4 Comments and Response to Comments on the Preliminary Staff Assessment

Public comments on the Transmission Line Safety and Nuisance Preliminary Staff Assessment (PSA) were provided by the applicant via WSP USA Inc. (TN 264316). All suggested edits were incorporated into the Final Staff Assessment (FSA).

5.13.5 Conclusions and Recommendations

CEC staff has identified the following conclusions and with the implementation of COCs as detailed in subsection 5.13.6, the project would have a less than significant impact related to transmission line safety and nuisance, and would conform with applicable LORS.

- The proposed gen-tie line would lie mainly within the boundaries of the WRESC's gen-tie line ROW and maintained according to the standard procedures of the American National Standard Institute/Institute of Electrical and Electronic Engineers (ANSI/IEEE) guidelines for line safety and field management. The lines would conform to all applicable laws, ordinances, regulations, and standards.
- Construction and operation of the WRESC's new gen-tie line and onsite substation do not contribute to EMF levels, corona, audible noise, or radio and television interference, beyond the acceptable standards.
- The long-term, mostly residential, magnetic exposure would be insignificant for the proposed gen-tie line given the absence of residences along the proposed route. On-site worker or public exposure would be short-term and at levels expected for SCE lines of similar design and current-carrying capacity.
- The potential for nuisance shocks would be minimized through grounding and other field-reducing measures that would be implemented in keeping with current utility standards and guidelines.
- With the four proposed COCs, safety and nuisance impacts from construction and operation of the proposed gen-tie line would be less than significant.

5.13.6 Proposed Conditions of Certification

The following proposed COCs include measures to both mitigate environmental impacts and ensure conformance with applicable LORS. The conditions below are enforceable as part of the CEC's certificate for the portions of the projects constituting the site and related facility.

For purposes of the facility certification issued by CEC, the following COCs must be complied with by the applicant on the jurisdictional site and related facilities as delineated in **Section 3, Project Description**.

TLSN-1 The project owner shall construct the proposed 230-kV transmission lines according to the requirements of California PUC's GO- 95, GO-52, GO-131-D, Title 8, and Group 2, High Voltage Electrical Safety Orders, sections 2700 through 2974 of the California Code of Regulations, and SCE's EMF reduction guidelines**.**

Verification: At least 30 days prior to the start of construction of the transmission lines or related structures and facilities, the project owner shall submit to the compliance project manager (CPM) a letter signed by a California licensed and registered electrical engineer affirming that the lines will be constructed according to the requirements stated in the condition.

TLSN-2 The project owner shall ensure that the route of the proposed transmission lines is kept free of combustible material, as required under the provisions of GO-95 and section 1250 of Title 14 of the California Code of Regulations.

Verification: During the first five years of plant operation, the project owner shall provide a summary of inspection results, and any fire prevention activities carried out along the proposed route and provide such summaries in the Annual Compliance Report on transmission line safety and nuisance-related requirements.

TLSN-3 The project owner shall ensure that all permanent metallic objects within the proposed route are grounded according to industry standards.

Verification: At least 30 days before the lines are energized, the project owner shall transmit to the CPM a letter confirming compliance with this condition.

TLSN-4 The project owner shall measure the maximum strengths of the line EMF at the edge of the ROW to validate the estimates the applicant has provided for these fields. These measurements shall be made (a) according to the standard procedures of the American National Standard Institute/Institute of Electrical and Electronic Engineers (ANSI/IEEE) and (b) before and after energizing. The measurements shall be completed no later than six months after the start of operations.

Verification: The project owner shall file copies of the pre-and post-energizing measurements with the CPM within 60 days after completion of the measurements.

5.13.7 References

CEC 2021b – California Energy Commission (TN 241097). Staff's Data Adequacy Recommendation, dated December 30, 2021. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-AFC-02

CEC 2022d – California Energy Commission (TN 241982). Notice of Receipt of Application for Certification, dated February 28, 2022. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-AFC-02

CEC 2022bb – California Energy Commission (TN 244399). Applicant's Response to CEC Staff's Issues Identification Report and Proposed Schedule, dated August 9, 2022. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-AFC-02

CEC 2024x – California Energy Commission (TN 260789). Report of Conversation_Willow Rock Energy Storage Center_TLSN Information Gathering, dated December 23, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-AFC-02

EPRI 1982 – Electric Power Research Institute 1982. Transmission Line Reference Book: 345 kV and above. Accessed online at: https://www.academia.edu/41079824/EPRI_Transmission_Line_Reference_Book_345_kV_and_above

NIEHS 1998 – National Institute of Environmental Health Sciences (NIEHS). 1998. An Assessment of the Health Effects from Exposure to Power-Line Frequency Electric and Magnetic Fields, Working Group Report. Accessed online at: http://www.niehs.nih.gov/health/assets/docs_a_e/emf1.pdf

NIEHS 2002 – National Institute of Environmental Health Sciences (NIEHS). 2002. Electric and Magnetic Fields Associated with the Use of Electric Power. https://www.niehs.nih.gov/sites/default/files/health/materials/electric_and_magnetic_fields_associated_with_the_use_of_electric_power_questions_and_answers_english_508.pdf

WHO 2002 – World Health Organization (WHO). 2002, Establishing a Dialogue on Risks from Electromagnetic Fields. Accessed online at: http://www.who.int/peh-emf/publications/EMF_Risk_ALL.pdf

WHO 2024 – World Health Organization (WHO). 2024 Electromagnetic fields (EMF). Accessed online at: https://www.who.int/news-room/questions-and-answers/item/radiation-electromagnetic-fields

5.14 Transportation

Testimony of Francisco Martin

5.14.1 Environmental Setting

Existing Conditions

The proposed project is on approximately 88.6 acres of private land immediately north of Dawn Road and between State Route (SR) 14 and Sierra Highway in the Ansel area of unincorporated Kern County, approximately two miles north of the unincorporated town of Rosamond.

Descriptions of the roadways and highways likely to be utilized by vehicles traveling to/from the project site are provided below. A map of the project site in relation to these roadways is provided in **Figure 5.14-1**.

Existing Local and Regional Transportation Network

Local access to the project site is proposed via Dawn Road, with regional access provided by SR 14 and Sierra Highway. SR 14 connects to Interstate 5, approximately 60 miles to the south, and also provides access to SR 58 and the unincorporated area of Mojave, located about 10 miles north of the project site. Sierra Highway provides access to the cities of Lancaster and Palmdale, approximately 15 miles and 24 miles south of the project site, respectively.

Existing Bicycle, Pedestrian and Transit Facilities

There are no sidewalks or bicycle facilities that exist on roadways accessing the proposed project site or within the immediate study area.

Kern Transit operates 13 fixed routes and seven dial-a-ride service routes throughout Kern County. Kern Transit Route 100 operates on a fixed route between Bakersfield and Lancaster, with local stops in Rosamond. Route 250 operates on a fixed route between California City and Lancaster, also with local stops in Rosamond. Routes 100 and 250 serve the following stops in Rosamond:

- On 20th Street West at Orange Street (near Hummel Hall)
- On Eagle Way at Rosamond Boulevard (near Taco Bell)

Although both routes operate on SR 14 near the project site, neither route stops in the vicinity of the site. The hours of operation are summarized below:

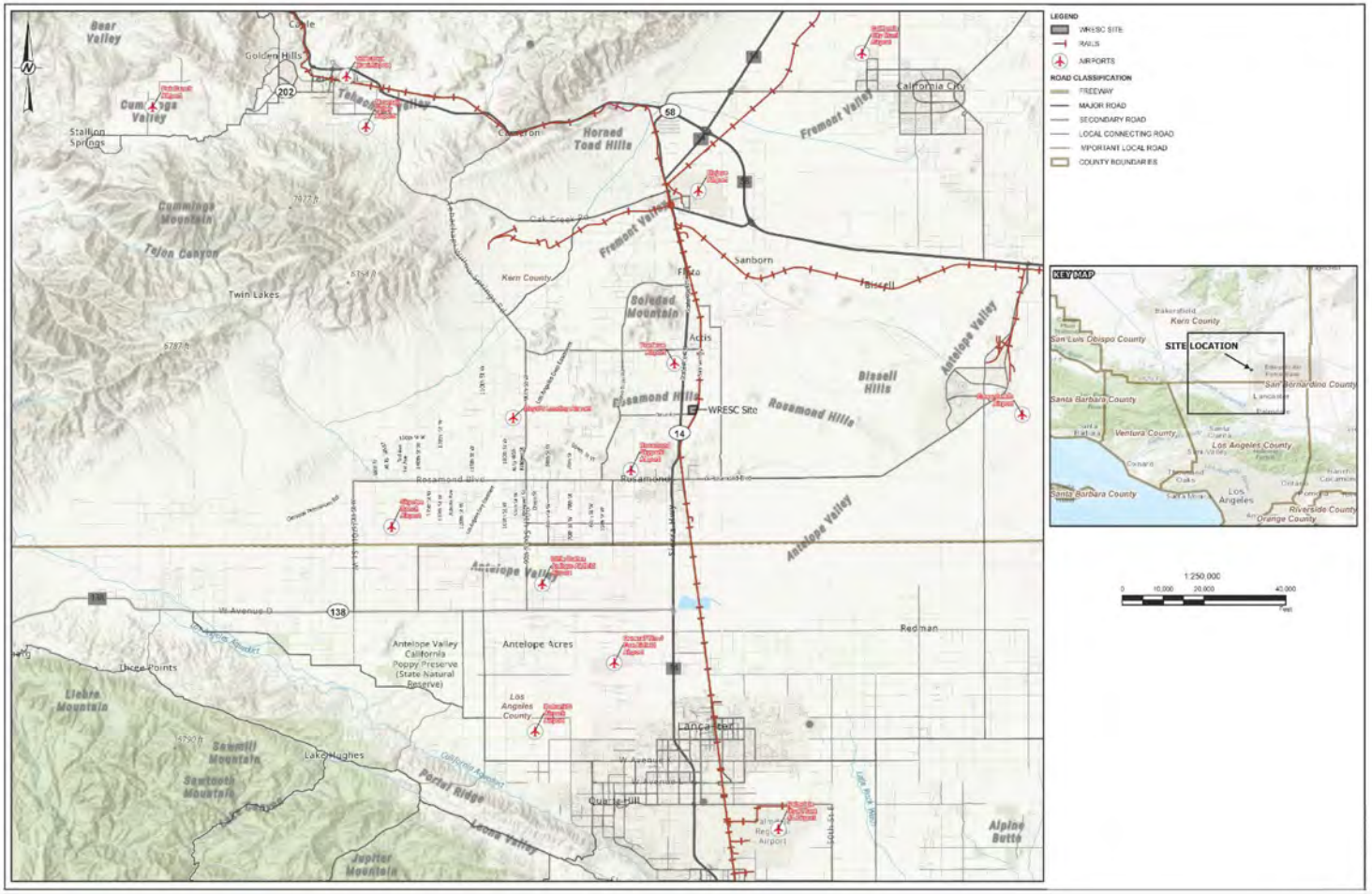

Figure 5.14-1
Regional Transportation Setting

Sources: WSP 2024w, GARMIN, SAFEGRAPH, METI/NASA, USGS, BUREAU OF LAND MANAGEMENT, EPA, NPS, USDA, USFWS, CALTRANS, MAP SERVICE LAYER CREDITS: ESRI, NASA, NGA, USGS, ESRI, HERE, GARMIN, FAO, USGS, EPA, NPS, CALIFORNIA STATE PARKS, ESRI, TOMTOM

- Route 100
  - Weekdays: Six westbound trips and five eastbound trips in Rosamond, operating between 5:00 AM and 9:27 PM.
  - Weekends: Three eastbound and three westbound trips, operating between 5:17 AM and 8:24 PM.
- Route 250
  - Weekdays: Five southbound and five northbound trips in Rosamond, operating between 7:04 AM and 7:42 PM.
  - Saturdays: Three southbound and three northbound trips, operating between 9:29 AM and 7:00 PM.

Regulatory

Laws, ordinances, regulations, and standards (LORS) related to transportation are summarized below. Details regarding all federal, state, and local LORS that apply to the project are included. Staff's analysis of project compliance with these LORS is presented in **Table 5.14-9**.

Federal

Code of Federal Regulations. The Code of Federal Regulations, Title 49, contains the federal rules and regulations pertaining to the transportation of goods and materials. Title 14 contains federal regulations pertaining to air transportation and aviation.

State

California Vehicle Code (CVC) and Streets and Highways Code. The California Vehicle Code and the Streets and Highways Code contain requirements applicable to the licensing of drivers and vehicles, the transportation of hazardous materials, and right-of-way.

California State Planning Law. Government Code, Section 65302 requires that the project must conform to the General Plan.

Manual on Uniform Traffic Control Devices (MUTCD). The MUTCD provides standards and guidelines for the design and usage of traffic control devices, such as signs, signals, and pavement markings, to ensure uniformity and consistency on roads and highways across the United States. It regulates construction-related signage and pavement delineation, offering guidelines for temporary traffic control in work zones. It ensures consistent and safe practices on roads during construction activities.

Local

Kern County General Plan. The project is within the unincorporated area of Kern County. As such, the County's General Plan is relevant. Specifically, the General Plan's Circulation Element outlines long-term planning objectives and policies related to the

quality and performance of transportation infrastructure in Kern County. The transportation objectives emphasize supporting development through timely infrastructure, aligning transportation planning with land use goals, and ensuring accessibility for all. Additionally, the plan focuses on minimizing environmental impacts without compromising quality of life, maintaining an adequate level of service for roads, and fostering collaboration with Caltrans, the Kern Council of Governments (COG), and local cities to improve transportation planning and congestion management. These goals are designed to create a sustainable, equitable, and well-integrated multimodal transportation system for the region.

2022 Regional Transportation Plan/Sustainable Communities Strategy. The latest Regional Transportation Plan (RTP) serves as a long-term blueprint for developing Kern County's multimodal transportation systems over the next 20 years. Developed through a comprehensive planning process, the RTP ensures coordination among local, regional, state, and federal agencies. It includes a Sustainable Communities Strategy (SCS), as required by California's Senate Bill (SB) 375, aimed at meeting the state's emissions reduction targets for automobiles and light trucks while promoting economic vitality, environmental health, transportation safety, and quality of life.

Cumulative

Cumulative projects are identified as past projects, current projects, or reasonably foreseeable future projects that, when viewed in connection with the proposed project, cause its effect(s) on traffic and transportation to be potentially significant. A master list of cumulative projects within the study area is provided in **Appendix A, Table A-1** The following cumulative projects are relevant to Transportation:

- Class II bike lanes on Sierra Highway from Rosamond Boulevard to Los Angeles County line (3.0 miles)
- Class II bike lanes on Rosamond Boulevard from 60th Street West to Sierra Highway from (4.2 miles)

These projects are planned, approved, or under construction and, given their physical proximity to the project area and potential to overlap the transportation routes used during construction, could potentially contribute to the same environmental effects as the proposed project.

5.14.2 Environmental Impacts

TRANSPORTATION Would the project:	**Significant and Unavoidable Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a. Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit,	☐	☒	☐	☐

TRANSPORTATION Would the project:	**Significant and Unavoidable Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
roadway, bicycle and pedestrian facilities?				
b. Conflict or be inconsistent with CEQA Guidelines, section 15064.3, subdivision (b)?	☐	☐	☒	☐
c. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☒	☐	☐
d. Result in inadequate emergency access?	☐	☐	☒	☐

Environmental checklist established by Cal. Code Regs., tit. 14, Div. 6, Ch. 3, Appendix G, transportation.

5.14.2.1 Methodology and Thresholds of Significance

In addition to the above environmental checklist, staff used the following methodology and thresholds of significance to evaluate the project.

Methodology

Level of Service Analysis

The operations of roadway facilities are described with the term “level of service” (LOS). LOS is a qualitative description of traffic flow from a vehicle driver’s perspective based on factors such as speed, travel time, delay, and freedom to maneuver. Six levels of service are defined, ranging from LOS A (free-flow conditions) to LOS F (over-capacity conditions). LOS E corresponds to operations “at capacity”. When volumes exceed capacity, stop-and-go conditions result, and results are designated LOS F.

Unsignalized Intersections

The LOS analysis evaluated the following unsignalized study intersections:

- Mojave Tropico Road and Backus Road
- SR 14 Southbound Ramps and Backus Road
- SR 14 Northbound Ramps and Backus Road
- SR 14 Southbound Ramps and Dawn Road
- SR 14 Northbound Ramps and Dawn Road
- Project Driveway and Dawn Road (future intersection)
- Sierra Highway and Backus Road
- Sierra Highway and Dawn Road

Traffic conditions at unsignalized (all-way stop-controlled and side-street stop-controlled) intersections were evaluated using methods developed by the Transportation Research Board (TRB), as documented in the *Highway Capacity Manual 7th Edition* (HCM 7th) for vehicles. The HCM method calculates control delay at an intersection based on inputs such as traffic volumes, intersection control, lane geometry, and peak hour factors. Control delay is defined as the delay directly associated with the traffic control device (i.e., a stop sign) and specifically includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The relationship between LOS and control delay for unsignalized intersections is summarized in **Table 5.14-1**. At side-street stop-controlled intersections, the delay calculated for the worst stop-controlled movement is reported. For all-way stop-controlled intersections, average delay and highest movement/approach delay are reported.

TABLE 5.14-1 UNSIGNALIZED INTERSECTION LOS CRITERIA

Level of Service	Description	Control Delay in Seconds
A	Little or no delays	≤ 10.0
B	Short traffic delays	> 10.0 to 15.0
C	Average traffic delays	> 15.0 to 25.0
D	Long traffic delays	> 25.0 to 35.0
E	Very long traffic delays	> 35.0 to 50.0
F	Extreme traffic, delays where intersection capacity exceeded	> 50.0

Source: Highway Capacity Manual 7th Edition (Transportation Research Board).

Staff used the LOS standards of Caltrans and Kern County, described in the sections below, as significance thresholds to determine whether project-generated traffic's effects on LOS would create a conflict with the County's General Plan policy.

Vehicles Miles Travelled Analysis

Vehicle Miles of Travel (VMT) is a measure used to describe automobile use on a daily basis. VMT is the product of the total number of vehicles traveling and the number of miles traveled per vehicle. In December 2018, the Governor's Office of Planning and Research finalized new CEQA guidelines (CEQA Guidelines section 15064.3) that identify VMT as the most appropriate criterium to evaluate a project's transportation impacts. The implementation of Senate Bill (SB) 743 eliminated the use of criteria such as auto delay, LOS, and similar measures of vehicle capacity of traffic congestion as the basis for determining significant impacts as part of CEQA compliance. The SB 743 VMT criteria promote the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses. In compliance with SB 743 mandates, VMT was employed to assess the environmental impacts of this project on the transportation network.

Thresholds of Significance

Kern County General Plan Policies

The Circulation Element includes the following transportation policies that are applicable to the project:

- This plan requires, as a minimum, construction of local road widths in areas where the traffic model estimates little growth through and beyond year 2010. Where Planning Department's growth estimates indicate more than a local road is required, expanded facilities shall be provided. The timing and scope of required facilities should be set up and implemented through the Kern County Land Division Ordinance. However, the County shall routinely protect all surveyed section lines in the Valley and Desert Regions for arterial right-of-way. The County shall routinely protect all mid-section lines for collector highways in the same regions. The only possible exceptions shall be where the County adopts special studies and where Map Code 4.1 (Accepted County Plan) areas occur. In the Mountain Region where terrain does not allow construction on surveyed section and mid-section lines, right-of-way width shall be the size shown on the diagram map. No surveyed section and mid-section "grid" will comprehensively apply to the Mountain Region.
- This plan's road width standards are listed below. These standards do not include State highway widths that would require additional right-of-way for rail transit, bike lanes and other modes of transportation. Kern County shall consider these modifications on a case-by-case basis.
    - Expressway [Four Travel Lanes]: Minimum 110-foot right-of-way
    - Arterial [Major Highway]: Minimum 110-foot right-of-way
    - Collector [Secondary Highway]: Minimum 90-foot right-of-way
    - Commercial-Industrial Street: Minimum 60-foot right-of-way
    - Local Street: Minimum 60-foot right-of-way
- The County should monitor development applications as they relate to traffic estimates developed for this plan. Mitigation is required if development causes affected roadways to fall below LOS D.
- As a condition of private development approval, developers shall build roads needed to access the existing road network. Developers shall build these roads to County standards unless improvements along State routes are necessary then roads shall be built to Caltrans standards. Developers shall locate these roads (width to be determined by the Circulation Plan) along centerlines shown on the circulation diagram map unless otherwise authorized by an approved Specific Plan Line. Developers may build local roads along lines other than those on the circulation diagram map. Developers would negotiate necessary easements to allow this.

- Kern County should not allow new roads that serve low-density parcels to have unpaved surfaces. Any road capable of or now serving fifty average daily traffic trips or more should be paved.

Caltrans LOS Standards

Caltrans has identified a target LOS at the transition between LOS C and LOS D on state highway facilities; however, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS. For the purposes of this assessment, directional segments, and intersections on the state highway system may be considered deficient when the addition of project-generated traffic causes intersection LOS to degrade to LOS D or worse.

VMT Threshold

Kern County has not yet completed consideration of transportation significance thresholds based on VMT. The County has not yet adopted VMT-based transportation significance thresholds. Where no VMT threshold has yet been adopted, the Office of Planning and Research's Technical Advisory on Evaluating Transportation Impacts in CEQA (OPR 2018) provides guidance. In areas not near established or incorporated cities or towns, for example, the Technical Advisory notes that "significance thresholds may be best determined on a case-by-case basis." For the purposes of establishing VMT thresholds of significance for this project, CEQA Guidelines Sections 15064(b)(2) and 15064.7 were considered. A performance-based threshold consistent with the analysis of the significance of the project's greenhouse gas (GHG) emissions was determined to be appropriate for this project. Accordingly, for purposes of this project, an impact to VMT would be significant if it would conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs.

5.14.2.2 Direct and Indirect Impacts

a. Would the project conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

Construction

Less Than Significant with Mitigation Incorporated. The project could, unless mitigated, significantly conflict with the Kern County General Plan's intersection LOS D standard due to construction worker and truck trips causing operations to degrade to LOS F at the SR 14 Southbound Ramps and Dawn Road intersection during the PM peak hour.

Otherwise, the addition of project-generated traffic during construction would not cause a substantial increase in traffic volumes within the transportation system affecting the efficiency of the transportation system, including transit, roadway, bicycle, and pedestrian facilities.

Additionally, any effect of project-generated traffic during construction would be temporary in nature and is not expected to result in any long-term impacts to the transportation system.

Construction Trip Generation

The applicant reports an estimated 60-month construction period with construction activities. The project is estimated to employ a maximum of 749 workers per day during the peak period of construction. During peak period construction activity, the project is estimated to generate 1,498 worker trips and 728 truck trips during a typical day of the peak construction period. The project is also estimated to generate 749 worker trips and 76 truck trips during the AM and PM peak hours.

The resultant construction trip generation estimates for daily, AM peak hour, and PM peak hour conditions are summarized below in **Table 5.14-2**.

TABLE 5.14-2 CONSTRUCTION TRIP GENERATION

		AM Peak Hour			PM Peak Hour		
Trip Type	**Daily**	**In**	**Out**	**Total**	**In**	**Out**	**Total**
Workers	1,498	749	0	749	0	749	749
Trucks[1]	728	38	38	76	38	38	76
Total Construction Trips	**2,226**	**787**	**38**	**825**	**38**	**787**	**825**

Notes:
1. Truck trips were converted to passenger car equivalents (PCE) by applying a factor 2.0 passenger cars per truck.

Construction Trip Distribution

Project trip distribution refers to the directions of approach and departure that vehicles would take to access and leave the site. Estimates of regional project trip distribution were developed based on information provided by the applicant and home location U.S. Census Bureau data of non-specialized workers currently employed in the Rosamond Census Designated Place (CDP).

During the construction phase, 15 percent of the workforce is expected to be locally recruited non-specialized workers. The remaining 85 percent of worker trips would be from specialized workers recruited from outside the area and accommodated in hotels in nearby cities. The specialized workforce is expected to stay in hotels in nearby cities and towns such as Rosamond, Mojave, Lancaster, and Palmdale. Since the specific hotels are unknown, their distribution was estimated based on the location of hotels in the area. Non-specialized and specialized worker trip distribution, including distribution of truck trips are summarized in **Table 5.14-3**.

TABLE 5.14-3 CONSTRUCTION TRIP DISTRIBUTION

Trip Type	To/From South via SR 14	To/From North via SR 14	To/From South via Sierra Hwy	To/From North via Sierra Hwy
Local Non-Specialized Workers	89%	6%	5%	0%
Specialized Workers	75%	20%	5%	0%
Water Trucks	50%	50%	0%	0%
Haul Trucks	0%	95%	0%	5%

Figure 5.14-2 shows the AM and PM peak hour turning movement project trips generated by the project at the study intersections.

Intersection LOS with Construction Traffic

Existing AM and PM peak hour intersection turning movement counts were collected at study intersection on June 25, 2024. The peak hour traffic volumes are presented in **Figure 5.14-3**. Year 2028 forecasts, which corresponds to the anticipated peak year of construction activity, were developed by applying a 2 percent annual growth factor to existing peak hour traffic volumes. The estimated Year 2028 Before Construction peak hour traffic volumes are shown on **Figure 5.14-4**. The AM and PM peak hour construction trip generation estimates summarized in **Figure 5.14-2** were added to the 2028 Before Construction volumes summarized in **Figure 5.14-4** to develop Year 2028 During Construction volumes forecasts, as shown on **Figure 5.14-5**.

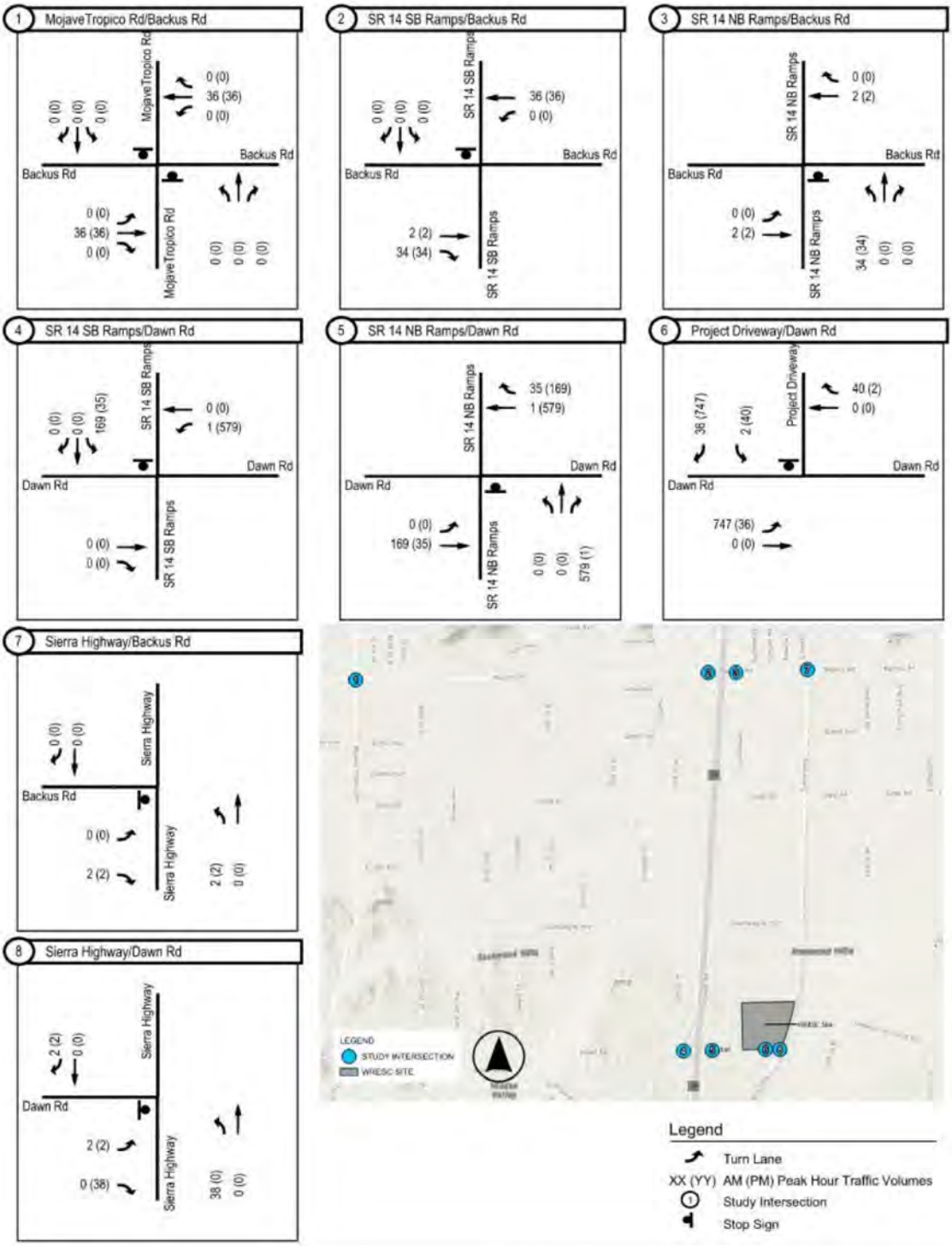

Figure 5.14-2
Project Peak Hour Trip Assignment – Construction Phase

Sources: WSP 2024w

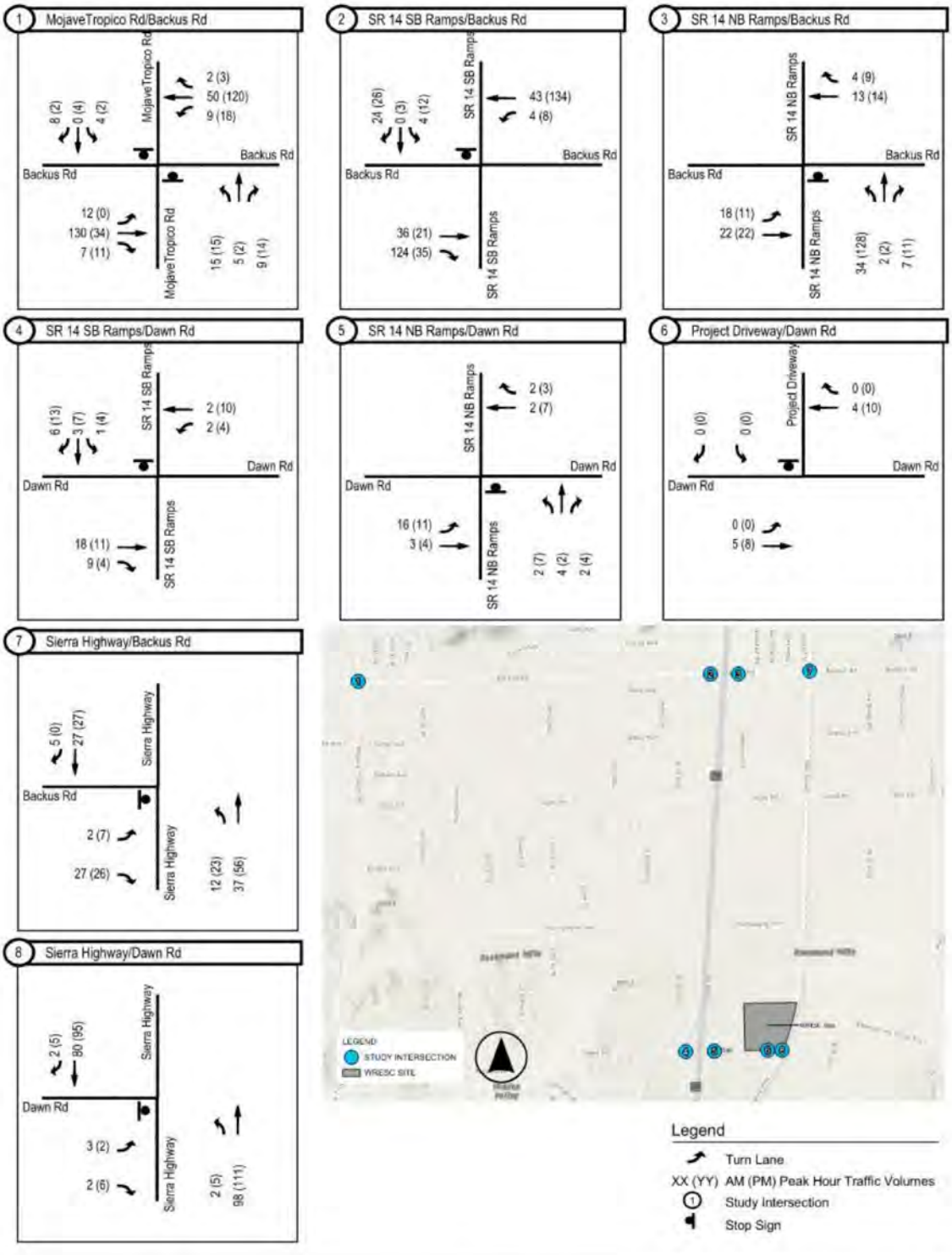

Figure 5.14-3
Existing (2024) Peak Hour Intersection Traffic Volumes

Sources: WSP 2024w

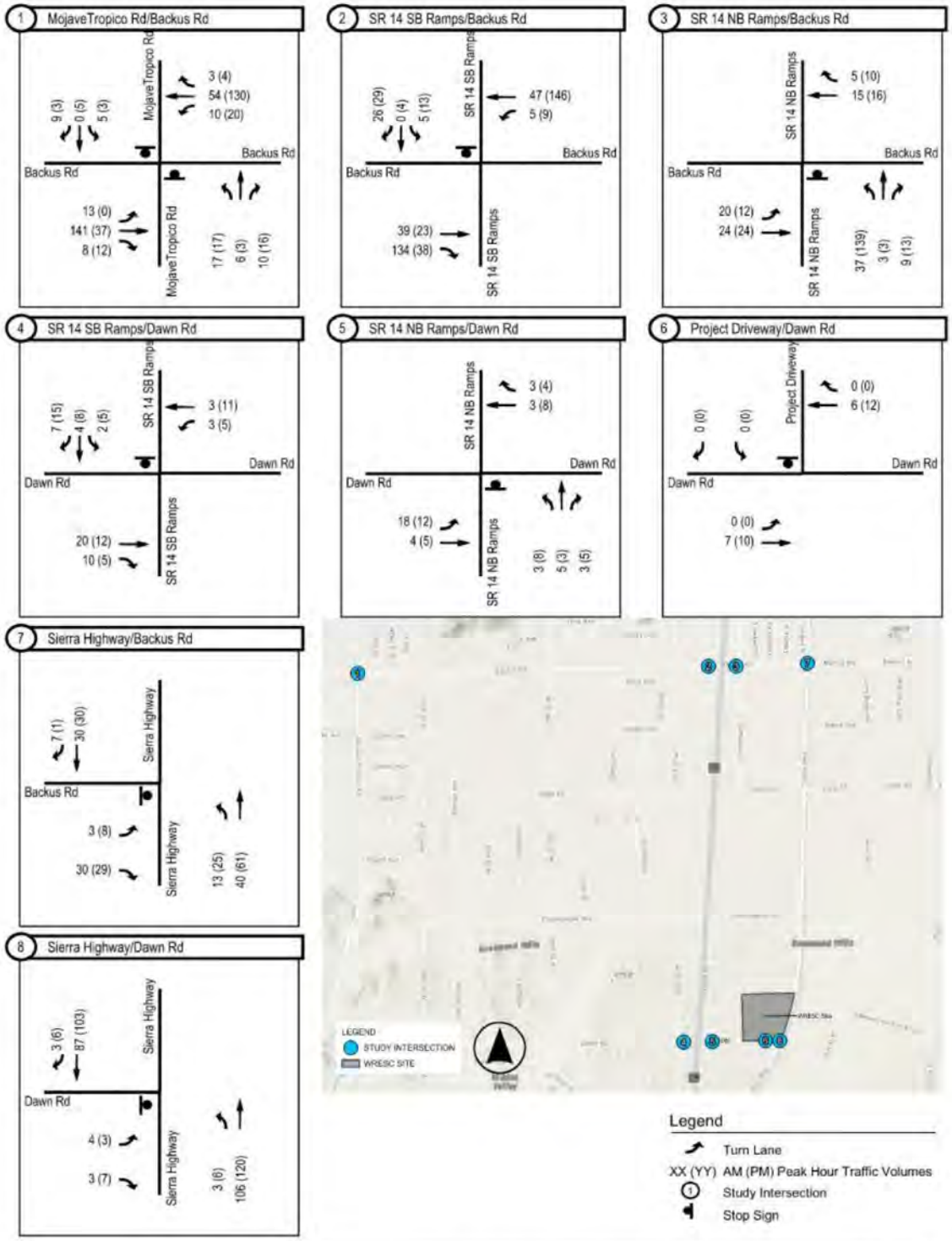

Figure 5.14-4
Year 2028 No Project Peak Hour Intersection Traffic Volumes

Sources: WSP 2024w

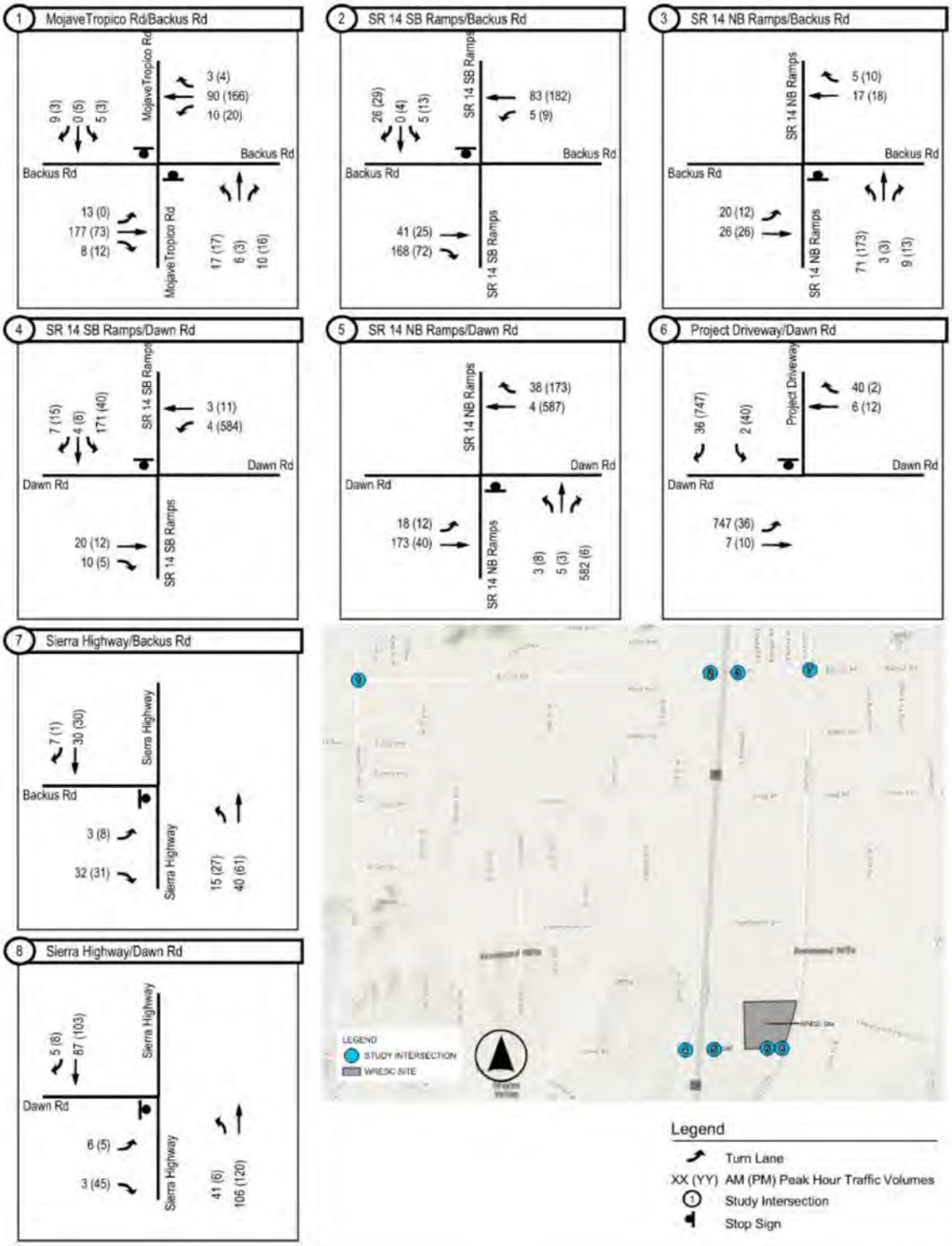

Figure 5.14-5
Year 2028 with Project Construction Peak Hour Intersection Traffic Volumes

Sources: WSP 2024w

The results of the intersection LOS assessment for Year 2028 During Construction traffic scenarios are presented below in **Table 5.14-4**. The assessment indicates that all study intersections are expected to operate acceptably (LOS D or better) with the addition of construction traffic, except for the intersection of the SR 14 Southbound Ramps and Dawn Road. This intersection is projected to operate at LOS A during the AM peak hour but degrade to LOS F during the PM peak hour. Vehicles making the southbound left-turn from the SR 14 off-ramp onto Dawn Road would experience high delays due to the addition of project generated construction traffic on Dawn Road.

TABLE 5.14-4 CONSTRUCTION CONDITION INTERSECTION LOS RESULTS

Intersection	Traffic Control	Peak Hour	Construction Conditions	
			Delay (Seconds)	LOS
Mojave Tropico Road/ Backus Road	SSSC	AM	10.9	B
		PM	10.6	B
SR 14 Southbound Ramps/Backus Road	SSSC	AM	9.0	A
		PM	9.8	A
SR 14 Northbound Ramps/Backus Road	SSSC	AM	9.4	A
		PM	10.0	B
SR 14 Southbound Ramps/Dawn Road	SSSC	AM	9.6	A
		PM	50.8	F
SR 14 Northbound Ramps/Dawn Road	SSSC	AM	20.5	C
		PM	12.7	B
Project Driveway/ Dawn Road (future intersection)	SSSC	AM	12.5	B
		PM	20.8	C
Sierra Highway/ Backus Road	SSSC	AM	8.6	A
		PM	8.8	A
Sierra Highway/ Dawn Road	SSSC	AM	9.9	A
		PM	9.2	A

Proposed Mitigation (Intersection Operations)

The project applicant would be required to prepare a Construction Traffic Management Plan (CTMP), in response to the potential effect that worker and heavy vehicle trips generated by the project would have on the existing roadway network and measures to ensure safe ingress and egress at the project access intersections. Staff has incorporated the proposed mitigation into Condition of Certification (COC) **TRANS-1**, to ensure conformance with applicable LORS.

The CTMP would include traffic control measures, such as providing flaggers during peak hours at the intersection of SR 14 Southbound Ramps and Dawn Road. Using flaggers to control the intersection can reduce average delay at the stop-controlled movements to LOS D or better during the PM peak hour. The CTMP would also provide the appropriate traffic control plans for construction phases that require approval by the appropriate reviewing agency.

Operation

Less Than Significant. Based on the assessment, the addition of project-generated traffic during project operations would not cause a substantial increase in traffic volumes within the transportation system affecting the efficiency of the transportation system, including transit, roadway, bicycle, and pedestrian facilities. Therefore, the project would not conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities, resulting in a less than significant impact.

Operation Trip Generation

The applicant anticipates the following staffing plan required to operate the proposed project 24 hours per day, seven days per week:

- 30 operators, working on different shifts to cover operations 24 hours per day, seven days per week
- 10 operators per shift, assuming three shifts per day
- five maintenance staff working five days per week and eight hours per day
- three supervisors working five days per week and eight hours per day
- one administrative professional working five days per week and eight hours per day
- one plant manager working five days per week and eight hours per day.
- Shift changes would likely occur during peak hours and all project site workers would likely drive alone to the facility.

Table 5.14-5 summarizes the weekday AM peak hour, PM peak hour, and daily trip generation estimated for the typical operation of the proposed project. An LOS analysis for the operation is not necessary, as the project would generate fewer than 50 peak-hour trips and fewer than 100 daily trips, which fall within the typical fluctuations of average peak-hour and daily traffic on the surrounding roadway system.

TABLE 5.14-5 OPERATION TRIP GENERATION

		AM Peak Hour			PM Peak Hour		
Trip Type	**Daily**	**In**	**Out**	**Total**	**In**	**Out**	**Total**
Operation	80	20	10	30	10	20	30

The operations vehicle trip generation estimates are lower than those for peak construction traffic, so the project's effects on traffic would be correspondingly lower.

b. Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?

As incorporated into section 10564.3, Public Resources Code section 21099 required changes to CEQA regarding the analysis of transportation impacts with direction that the criteria for determining the significance of transportation impacts promote the reduction of greenhouse gas emissions, the development of multimodal transportation

networks, and a diversity of land uses. Consistent with this guidance, the analysis considers the project's VMT generation relative to its overall effect on GHG emissions.

Construction

Less Than Significant. During project construction, daily trips made by workers and delivery/haul trucks to and from the project site would result in an increase in VMT and corresponding GHG emissions from transportation sources. However, this increase in VMT would be temporary in nature, only lasting the duration of the construction phase.

As documented in **Section 5.3**, **Climate Change and Greenhouse Gas Emissions**, the project would cause GHG emissions due to construction activities. Construction and eventual decommissioning activities would cause GHG emissions resulting from fossil-fuel combustion in the engines of construction equipment and the vehicles carrying construction materials and workers to and from the site. The project applicant reports an estimated 30,490 total VMT per day during construction (WSP 2024j). As documented in Section 5.3, the VMT generated by workers in addition to the VMT and GHG emissions due to site preparation, grading, and on-and-off-site construction would equate to a maximum of 30,002.6 metric tons of CO_2 equivalent ($MTCO_2e$) for the worst case 12-month period.

However, some of the renewable power generated by the proposed project would displace power produced by carbon-based fuels that would otherwise be used to meet electricity demand. The power displaced is incremental power provided by generators elsewhere on the grid, typically from natural gas power plants. While the precise quantity of GHG emissions avoided by the proposed project would depend on the operations, the project would result in the avoidance of more than 136,881 $MTCO_2e$ per year during operation, which incorporates GHG emissions resulting from the following sources:

- Operations & Maintenance Trips
- Emergency Generator Testing
- Operations & Maintenance Building Electricity Use and Solid Waste
- Operations & Maintenance Cranes and Mowers
- Water Use
- Fugitive SF6 Emissions
- Effects of Land Use Conversion

The emissions avoided would offset the combined effects of emissions from operations and construction that is estimated at 30,002.6 MTC02e per year for the worst-case 12-month period during construction. Consequently, the proposed project would not result in any net additional GHG emissions. The combined direct and indirect effects of the emissions quantified indicate that a net GHG reduction would occur primarily due to the emissions avoided by producing electricity from renewable energy.

Therefore, the proposed project's effect on VMT during construction would not conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b) and is considered a less than significant impact.

Operation

Less Than Significant. During project operation, daily trips made by workers and delivery/haul trucks to and from the project site would result in an increase in VMT. However, this increase in VMT and associated GHG emissions would be offset by emissions avoided by producing electricity from renewable energy.

As documented in **Section 5.3**, **Climate Change and Greenhouse Gas Emissions**, the proposed project would cause GHG emissions due to activities during project operation. Operation of the proposed project would cause GHG emissions from the following types of activities: worker motor vehicle trips; emergency generator testing; energy use (electricity) for the Operations and Maintenance building; mowers used for maintenance; solid waste disposal; and SF6 leaked from circuit breakers at the proposed substation site. The project applicant reports an estimated 1,628.4 VMT per day (40 employees at 40.71 VMT per employee per day) during operation (WSP 2024w), which would equate to approximately 551,620.5 VMT per year (30 employees 7 days per week and 10 employees 5 days per week). The annual 551,620.5 VMT generated by workers equates to approximately 187.8 $MTCO_2e$ per year assuming an average CO_2 emissions factor of 338.8 grams per mile for each worker (based on worker vehicle emissions factors provided in Appendix 5.1-B, Construction Emissions Data, ESHD 2024o).

However, some of the renewable power generated by the proposed project would displace power produced by carbon-based fuels that would otherwise be used to meet electricity demand. The power displaced is incremental power provided by generators elsewhere on the grid, typically from natural gas power plants. While the precise quantity of GHG emissions avoided by the proposed project would depend on the operations, the project would result in the avoidance of more than 136,881 $MTCO_2e$ per year, which incorporates GHG emissions resulting from the following sources:

- Operations & Maintenance Trips
- Emergency Generator Testing
- Operations & Maintenance Building Electricity Use and Solid Waste
- Operations & Maintenance Mowers
- Water Use
- Fugitive SF6 Emissions

The emissions avoided would offset the combined effects of emissions from operation that is estimated at 187.8 $MTCO_2e$ per year. Consequently, the proposed project would not result in any net additional GHG emissions. The combined direct and indirect effects

of the emissions quantified indicate that a net GHG reduction would occur primarily due to the emissions avoided by producing electricity from renewable energy.

Therefore, the proposed project's effect on VMT during operation would not conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b) and is considered a less than significant impact.

c. Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Construction and Operation (Access)

Less Than Significant with Mitigation Incorporated. Site access to the project site would be provided on Dawn Road. Site access design plans are not yet available; therefore, staff cannot confirm if proposed site access would substantially increase hazards due to a geometric design feature.

Construction and Operation (Goods Movement)

Less Than Significant with Mitigation Incorporated. The project could, unless mitigated, substantially increase hazards to vehicles, bicyclists, and pedestrians traveling on the surrounding roadway network, including SR 14, due to the proposed use of oversize/overweight vehicles and transport of hazardous substances. During construction and decommissioning, heavy construction equipment would be delivered to the project site using area roadways, which may require transport by oversize/overweight vehicles. Consistent with California Vehicle Code Sections 35780 – 35796, transport of oversize/overweight vehicles would require mandatory permits from Caltrans, including Variance Permits for all loads over 15 feet in width, over 17 feet in height, or over 135 feet in length.

Proposed Mitigation (Access)

The project would be required to design all site access intersections and corresponding roadway improvements according to Kern County design standards, and, where applicable, Caltrans standards, to ensure safe ingress and egress at the project access intersections during the construction and operation phases. Furthermore, prior to the commencement of construction, the applicant shall provide an irrevocable offer of dedication to Kern County for the following roadways:

- Dawn Road: 55 feet from the centerline along the entire subject property and the off-site portion from the westerly project boundary to the westerly boundary of Lot 3 of County Parcel Map No. 260.
- Sierra Highway: 45 feet from the centerline on both sides, totaling 90 feet in width.

Prior to the commencement of construction, the applicant shall also obtain an encroachment permit from the Kern County Public Works Department and construct an

asphalt concrete paved road approach at the proposed Dawn Road entrance at Sierra Highway, extending 200 feet into the project site.

Prior to the commencement of operations, the applicant shall obtain an encroachment permit from the Kern County Public Works Department and pave Dawn Road from the project entrance westerly to the Caltrans boundary at SR 14. The paving shall meet Type B Standards, including:

- 60-foot-wide roadway with paved shoulders
- Structural sections suitable for heavy truck traffic
- Asphalt concrete surfacing and necessary tie-ins

Staff has incorporated the proposed mitigation into COC **TRANS-2**, to ensure conformance with applicable LORS.

Proposed Mitigation (Goods Movement)

The applicant is required to obtain all mandatory permits from Caltrans and other relevant jurisdictions, including Kern County, required for the transport of materials to the project that exceed weight, height, and length limits, including any limitations imposed on the movement of such material. Staff has incorporated the proposed mitigation into COCs **TRANS-3** and **TRANS-4**, to ensure conformance with applicable LORS.

d. Would the project result in inadequate emergency access?

Construction

Less Than Significant. Emergency vehicles would maintain right-of-way over construction vehicles. Construction activities would not prevent access for emergency vehicles. The addition of project-generated traffic during construction along study roadways and at study intersections would have a negligible effect on emergency vehicles, as all vehicles are required to yield to emergency response vehicles.

Operation

Less Than Significant. Emergency vehicles would maintain right-of-way over vehicles. Operational activities would not prevent access for emergency vehicles. The addition of project-generated traffic during normal operations at study intersections would have a negligible effect on emergency vehicles, as all vehicles are required to yield to emergency response vehicles.

5.14.2.3 Cumulative Impacts

Less Than Significant. The State CEQA Guidelines indicate that the impact analysis for GHG emissions is global in nature, and the focus of the lead agency's analysis should be on the project's effect on climate change, rather than simply focusing on the quantity of emissions and how that quantity of emissions compares to statewide or global

emissions. The discussion of "Existing Conditions" (subsection 5.3.1) discloses the broader context of global climate change and provides information on statewide and local emissions.

The Cumulative Project Scenario and a list of cumulative projects appears in **Appendix A, Table A-1**. Past, present, and reasonably foreseeable probable future GHG emissions could be attributable to each of the cumulative projects, especially those that involve construction activities or operation and maintenance activities that involve use of fossil fuels.

The focus of this analysis is to disclose the project's effect on climate change, while presenting the quantity of GHG emissions, including those by mobile sources. The State CEQA Guidelines provide that a project's incremental contribution to a cumulative GHG emissions effect may be determined not to be significant and the effects of the project to not be cumulatively considerable if the project complies with the requirements of the state's long-term climate goals or strategies.

The proposed project would lead to a net reduction in GHG emissions across the State's electricity system, and the GHG emissions related to the project would not conflict with any plans, policies, or regulations adopted for the purpose of reducing the emissions of GHGs. Therefore, the project's GHG emissions would not be cumulatively considerable.

5.14.3 Project Conformance with Applicable LORS

Table 5.14-9 contains staff's determination of conformance with applicable federal, state, and local LORS, including any proposed COCs, where applicable, to ensure the project would comply with LORS. As shown in this table, staff concludes that with implementation of specific COCs, the proposed project would be consistent with all applicable LORS. The subsection below, "Staff Proposed Conditions of Certification," contains the full text of the referenced COCs.

TABLE 5.14-9 CONFORMANCE WITH APPLICABLE LORS

Applicable LORS	Conformance and Basis for Determination
Federal	
Code of Federal Regulations	
Title 49 CFR, Subtitle B, Sections 171-177, 350-399, and 397.4 Requires proper handling and storage of hazardous materials during transportation.	**Yes.** The project and transportation would align with all established standards for the transportation of hazardous materials. See **TRANS-4**.
Title 14 CFR, Part 77, Section 77.9 Requires notification of the Federal Aviation Administration (FAA) of any construction or alterations exceeding 200 feet above ground level. Also requires FAA notification of any construction or alteration of greater height than an imaginary surface extending outward and upward at a slope of 100 to 1 for a horizontal distance of 20,000 feet from the nearest point of the nearest runway	**Yes.** The project has received determinations of no hazard to air navigation from the FAA. (WSP 2024j)

TABLE 5.14-9 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis for Determination**
of an airport with at least one runway more than 3,200 feet in length.	
State	
California Vehicle Code (CVC) and Streets and Highways Code	
CVC Sections 13369, 15275 and 15278 Addresses the licensing of drivers and classifications of licenses required for the operation of particular types of vehicles. In addition, certificates permitting the operation of vehicles transporting hazardous materials are required.	**Yes.** The project would follow the guidelines specified in these sections of the CVC. See **TRANS-3** and **TRANS-4**.
CVC Section 25160 et seq. Addresses the safe transport of hazardous materials.	**Yes.** The project would follow the guidelines specified in these sections of the CVC. See **TRANS-4**.
CVC Sections 2500-2505 Authorizes the issuance of licenses by the Commissioner of the CHP for the transportation of hazardous materials including explosives.	**Yes.** The project would follow the guidelines specified in these sections of the CVC. See **TRANS-4**.
CVC Section 31300 et seq. Requires transporters to meet proper storage and handling standards for transporting hazardous materials on public roads.	**Yes.** Transporters would comply with standards for the transportation of hazardous materials on state highways throughout construction and operations. State Emergency Response Commission (SERC) would ensure adherence to CVC Section 31303, mandating that shippers of hazardous materials opt for the shortest route possible to and from the site. See **TRANS-3** and **TRANS-4**.
CVC Sections 31600 - 31620 Regulates the transportation of explosive materials.	**Yes.** The project would conform to CVC Sections 31600 – 31620. See **TRANS-4**.
CVC Sections 32000 - 32053 Regulates the licensing of carriers of hazardous materials and includes noticing requirements.	**Yes.** The project would conform to CVC Sections 31600 – 31620. See **TRANS-4**.
CVC Sections 32100 - 32109 and 32105 Establishes special requirements for the transportation of substances presenting inhalation hazard and poisonous gases and require that shippers of inhalation or explosive materials contact the CHP and apply for a Hazardous Material Transportation License.	**Yes.** The project would comply by mandating shippers of inhalation or explosive materials to reach out to the CHP and secure a Hazardous Materials Transportation License. See **TRANS-4**.
CVC Sections 34000 - 34121 Establishes special requirements for the transportation of flammable and combustible fluids over public roads and highways.	**Yes.** The project would conform to CVC Sections 34000 – 34121. See **TRANS-4**.
CVC Sections 34500, 34501, 34501.2, 34501.3, 34501.4, 34501.10, 34505.5–7, 34506, 34507.5 and 34510–11 Regulates the safe operation of vehicles, including those used to transport hazardous materials.	**Yes.** The project would follow the guidelines specified in these sections of the CVC. See **TRANS-4**.
CVC Sections 35780 Requires permits for any load that exceeds Caltrans weight, length, or width standards for public roadways.	**Yes.** Transporters would secure transportation permits for all overloads, as mandated. See **TRANS-3**.

TABLE 5.14-9 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis for Determination**
CVC Sections 35550 - 35559 Regulates weight and load limitations.	**Yes.** The project would follow the guidelines specified in these sections of the CVC. See **TRANS-3**.
California Streets and Highways Code	
S&HC Sections 660, 670, 1450, 1460 et seq., 1470, and 1480 Regulates right-of-way encroachment and the granting of permits for encroachments on State and County roads.	**Yes.** The project would follow the guidelines specified in these sections of the S&HC. See **TRANS-2**.
S&HC Sections 117, 660 - 711 Requires permits from Caltrans for any roadway encroachment during truck transportation and delivery.	**Yes.** Encroachment permits would be obtained by transporters, as required. See **TRANS-3**.
S&HC Sections 660 - 711 Requires permits for any load that exceeds Caltrans weight, length, or width standards for public roadways.	**Yes.** Transportation permits would be obtained by transporters for all overloads, as required. See **TRANS-3**.
California State Planning Law	
Government Code, Section 65302 Requires that the Project must conform to the General Plan.	**Yes.** The project would align with the provisions of the Kern County General Plan with preparation of Construction Traffic Management Plan and site access design that meets Kern County and Caltrans standards. See **TRANS-1** and **TRANS-2**.
Local	
Kern County General Plan	
Circulation Element Specifies long-term planning goals and procedures for transportation infrastructure system quality within Kern County.	**Yes.** The project would be consistent with the policy of the Kern County General Plan Circulation Element with preparation of Construction Traffic Management Plan and site access design that meets Kern County and Caltrans standards. See **TRANS-1** and **TRANS-2**.

5.14.4 Comments and Responses on the Preliminary Staff Assessment

Public comments on the transportation Preliminary Staff Assessment (PSA) were provided by the applicant via WSP USA Inc. (TN 264316), California Unions for Reliable Energy (TN 264343), and Kern County Planning and Natural Resources Department (TN 263490). The comments and responses are summarized below.

Applicant Comments (TN 264316)

The project applicant, through its consultant WSP USA Inc., submitted comments that were editorial in nature and requested edits to the following transportation COCs described in Section 5.14.6:

- COC **TRANS-1**, the applicant requested that the CTMP TDM measure considerations be described in the verification section.
- COC **TRANS-2**, the applicant requested that all proposed site access and parking improvement plans be shared with Kern County for review and comment. However,

they also requested that final approval of the improvements should be provided by the California Energy Commission (CEC) Compliance Project Manager (CPM).

- COC **TRANS-4**, the applicant requested that third-party vendors, in lieu of the applicant, be responsible for securing permits and/or licenses from the relevant administering agency.

All suggested edits from the project applicant, submitted via their consultant WSP USA Inc., were incorporated into the Final Staff Assessment (FSA). In response to the comment on COC **TRANS-2**, a reference to the CPM was added to the verification section to clarify their role in reviewing and approving site access and parking improvement plans. However, any improvements within the public right-of-way still require review and approval from the appropriate jurisdictional agency.

As noted in the Kern County Planning and Natural Resources Department's comments, Kern County has established site access requirements that may be phased in prior to operations. These site access requirements were also added to COC **TRANS-2** and must be designed in accordance with Kern County standards. Additionally, any temporary traffic control or permanent improvements within the state right-of-way require encroachment permits and review and approval by Caltrans.

California Unions for Reliable Energy (CURE) Comments (TN 264343)

CURE provided the following comment regarding COC **TRANS-1**:

- COC **TRANS-1**, several of the COCs in the PSA impermissibly defer the preparation of plans, reports, and/or studies as mitigation for the project's significant environmental effects until after certification and without specific performance standards. The PSA also defers to other agencies to analyze the impacts or identify mitigation measures for the Project. The following measures are improperly deferred until after the Commission has certified the Project: COC **TRANS-1**: this condition requires the Project owner to prepare a Construction Traffic Management Plan at least 30 calendar days prior to the start of construction. This plan is to address movement of workers, vehicles, equipment and materials, traffic control plans and emergency access. It also must include traffic demand management measures to reduce project generated VMT during construction.

As noted in the COC **TRANS-1** verification section, the draft Construction Traffic Management Plan (CTMP) shall be submitted to the reviewing agency at least 60 days before construction begins. Staff disagrees that these standard conditions are deferred mitigation or are inconsistent with CEQA. There is nothing unknown regarding the effectiveness of the conditions in achieving both compliance with relevant laws and in supporting CEC facility oversite. Additionally, the CEC soliciting input on the various plans from the local jurisdiction does not equate to a deferral of analysis. Staff has already identified the plans are necessary and the content of the plans are standardized. Consistent with the project description and relevant laws the CTMP addresses the movement of workers, vehicles, equipment, and materials, including

arrival and departure schedules, carpooling, a parking/staging plan, and designated workforce and delivery routes. Table 5.14-9 identifies the relevant laws **TRANS-1** ensures the project complies with. **TRANS-1** contains details and categories of information that is required to be included in the CTPM including procedures to restore damage to existing roadways caused by project construction traffic. As with the other plans, the CTMP is primarily a tool to track compliance with laws, provide logistical information, and supports the CEC compliance work. Additionally, while the CTMP may include traffic management strategies that require traffic control plans, these plans are typically not developed until near-final site access designs and construction details are available from the project team and general contractor. Since this information is not yet available, it is appropriate to develop the CTMP when detailed design and construction information is provided. Therefore, no changes were made to the timing specified in the COC **TRANS-1** verification section in response to comments from CURE.

Kern County Planning and Natural Resources Department Comments (TN 263490)

The Kern County Planning and Natural Resources Department requested that the dedication of additional necessary right-of-way and the following site access improvements be incorporated into COC **TRANS-2**:

- Prior to the commencement of construction, the applicant shall provide an irrevocable offer of dedication to Kern County for:
    - Dawn Road: 55 feet from the centerline of the road for all subject property and the off-site portion of Dawn Road from the westerly project boundary line to the westerly boundary line of Lot 3 of Parcel Map No. 260 shown on the Kern County parcel map.
    - Sierra Highway: 90 feet total; 45 feet from the centerline of the road for both sides.
- Prior to the commencement of construction, the applicant shall, under encroachment permit issued by the Kern County Public Works Department, construct an asphalt concrete paved road approach for the proposed Dawn Road entrance at Sierra Highway to the facility and for the first 200 feet.
- Prior to the commencement of operations, the applicant shall, under encroachment permit issued by the Kern County Public Works Department, pave to Type B Standards (60 feet wide with paved shoulders, including appropriate structural sections for heavy truck traffic) Dawn Road from the entrance of the project site westerly to the Caltrans boundary at SR 14. These improvements shall include, but not be limited to, asphalt concrete and necessary tie-ins.

The site frontage improvements from the site boundary to the roadway centerline, as requested by the Kern County Planning and Natural Resources Department, represent a reasonable set of requirements for new development. In response to Kern County staff comments, COC **TRANS-2** was updated to require implementation of these frontage and site access improvements prior to both the construction and operations phases of

the project. The project applicant shall coordinate with the Kern County Public Works Department to obtain the necessary permit(s) for these improvements.

5.14.5 Conclusions and Recommendations

As discussed above, with implementation of COCs, the project would have a less than significant impact related to transportation and would conform with applicable LORS. Staff recommends adopting the COCs as detailed in subsection "5.14.6 Proposed Conditions of Certification" below.

5.14.6 Proposed Conditions of Certification

The following proposed conditions of certification include measures to ensure conformance with applicable LORS.

TRANS-1 Prior to the start of construction, the project owner shall prepare a Construction Traffic Management Plan (CTMP). The CTMP shall address the movement of workers, vehicles, equipment, and materials, including arrival and departure schedules, carpooling, a parking/staging plan, and designated workforce and delivery routes. Traffic control plans shall be prepared as necessary to address construction staging, as well as any roadway or lane closures and shall include any signage or roadway lighting improvements deemed necessary during construction. The CTMP shall address means of access for emergency vehicles to the project site, as well as means of maintaining access to any adjacent residential and commercial property during the construction and maintenance of the project.

The CTMP shall include procedures to restore damage to existing roadways caused by project construction traffic, including corresponding traffic index calculations. The construction contractor shall work with Kern County and Caltrans to prepare a schedule and mitigation plan for the roadways along construction routes, in accordance with the procedures established by the CTMP.

The CTMP shall include measures to ensure safe ingress and egress at the project access intersections. Measures may include removal of vegetation to provide unobstructed line of sight, addition of advanced warning signs, and active work zone traffic control/traffic management as approved by the CPM. The CTMP shall also be submitted to Kern County and Caltrans for review and comment.

Verification: At least 60 calendar days prior to the start of construction, the project owner shall submit the CTMP to Kern County, Caltrans, and California Highway Patrol (CHP) for review and comment and to the CPM for review and approval. The project owner shall also provide the CPM with a copy of the transmittal letter to Kern County, Caltrans, and CHP requesting review and comment.

The CTMP shall include TDM measures to reduce project-generated VMT during construction. The CTMP shall outline VMT reduction measures, which may include, by way of example, the following:

- Provide information regarding lodging for specialized workers about lodging options close to the site.
- Create or promote existing carpooling programs to encourage employees to carpool.
- Offer a shuttle service for employees with pick-up points at nearby hotels housing specialized workers or park-and-ride lots.

At least 30 calendar days prior to the start of construction, the project owner shall provide copies of any comment letters received from Kern County, Caltrans, CHP, or any other interested agencies, along with any changes to the CTMP, for CPM review and approval. After CPM review and approval, the project owner shall provide completed copies of the final CTMP to Kern County, Caltrans, CHP, and any other interested agencies, sending copies of the correspondence to the CPM.

TRANS-2 The project owner shall provide an irrevocable offer of dedication to Kern County for the following roadways:

- Dawn Road: 55 feet from the centerline along the entire subject property and the off-site portion from the westerly project boundary to the westerly boundary of Lot 3 of County Parcel Map No. 260.
- Sierra Highway: 45 feet from the centerline on both sides, totaling 90 feet in width.

Prior to construction, the project owner shall also construct an asphalt concrete paved road approach at the proposed Dawn Road entrance at Sierra Highway, extending 200 feet into the project site.

Prior to the commencement of operations, the project owner shall pave Dawn Road from the project entrance westerly to the Caltrans boundary at SR 14. The paving shall meet Type B Standards, including:

- 60-foot-wide roadway with paved shoulders
- Structural sections suitable for heavy truck traffic
- Asphalt concrete surfacing and necessary tie-ins

The project owner shall ensure that site access intersections and corresponding roadway and parking improvements are designed according to standards adopted by Kern County and, where applicable, Caltrans, to ensure safe ingress and egress at the project access intersections during the construction and operation phases.

Verification: The project owner shall ensure that all proposed on-site access and parking improvement plans for both the construction and operation phases are submitted to Kern County and Caltrans for review and comment, and to the CPM for review and approval before construction begins.

The project owner shall offer right-of-way dedication for the segments of Dawn Road and Sierra Highway adjacent to the project site prior to the start of construction.

Prior to construction, the project owner shall obtain an encroachment permit from the Kern County Public Works Department to construct an asphalt concrete paved road approach at the proposed Dawn Road entrance at Sierra Highway, extending 200 feet into the project site.

Prior to the commencement of operations, the project owner shall obtain an encroachment permit from the Kern County Public Works Department and pave Dawn Road from the project entrance west to the Caltrans right-of-way at SR 14.

The project owner shall also obtain an encroachment permit from Caltrans prior to construction for any site access improvements within Caltrans right-of-way.

TRANS-3 The project owner shall comply with limitations imposed by Caltrans and other relevant jurisdictions, including the Kern County, on vehicle sizes, weights, driver licensing, and truck routes.

Verification: The project owner shall retain copies of permits and supporting documents on-site for CPM inspection if requested.

TRANS-4 The project owner shall ensure that contracts with third party vendors include a representation that any permits and/or licenses are secured from the relevant administering agency, including Kern County, Caltrans, and CHP for the transport of hazardous materials.

Verification: The project owner shall include in its monthly compliance reports copies of all permits/licenses acquired by the project owner and/or vendors concerning the transport of hazardous substances.

5.14.7 References

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WSP 2025s – Williams Sale Partnership (TN 264316). Willow Rock Preliminary Staff Assessment Comments Report, dated June 16, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-AFC-02

5.15 Visual Resources

Testimony of Mark R. Hamblin

5.15.1 Environmental Setting

The proposed project would be constructed on an approximate 89-acre portion of a 112-acre parcel that is relatively flat undeveloped land consisting of desert scrub, grasses, and 2,781 Western Joshua trees (2023 Westen Joshua Tree Census) along the corner of Dawn Road (a county unimproved road) and Sierra Highway in a rural, open space, and arid (desert) region in the northern Antelope Valley, in southeastern Kern County, California. California State Route 14, a north-south highway that connects Los Angeles to the northern Antelope Valley is about one-third of a mile to the west. Soledad Mountain (4,190 feet elevation peak) is to the north three- and three-quarter miles. The Edwards & Sanborn Solar and Energy Storage facility (4,600 acres, 1.9 million photovoltaic solar panels installed, 120,720 batteries installed) is one and a half miles to the north. Rosamond, an unincorporated community (population 20,961, 2020 U.S. Census) is about two and a half miles to the south. The Rosamond Hills (3,322 feet elevation peak) three and a half miles to the west. A portion of the west border of Edwards Air Force Base is about a half mile away to the east. The main base is approximately 11 miles further east. Rosamond Lake, a natural dry lake bed on the base is four and a half miles to the southeast.

Regulatory

Federal, state, and local government laws, ordinances, regulations, and standards (LORS) relating to aesthetics and visual resources applicable to the proposed project and project site are set forth below.[1]

Federal

Staff found no applicable federal regulations related to aesthetics/visual resources for the project site and project.

State

California Scenic Highway Program. The California Scenic Highway Program was established by the Legislature as Article 2.5 (commencing with section 260) of the Streets and Highways Code. The purpose of the program is to protect and enhance the

1 Pub. Res. Code § 25525, the California Energy Commission may not certify a facility if it does not conform with any applicable state, local, or regional laws, ordinances, regulations, and standards (LORS), "unless the commission determines that the facility is required for public convenience and necessity and that there are not more prudent and feasible means of achieving public convenience and necessity."

natural scenic beauty of California highways and adjacent corridors, through special conservation treatment.

Section 263 of the Streets and Highways Code, the "State Scenic Highway System List" provides a list of highways that have been either officially designated or are eligible for designation as a State scenic highway. (Caltrans 2024)

Local

Kern County General Plan, Land Use, Open Space and Conservation Element. The Kern County Land Use, Open Space, and Conservation Element identify the goals, policies, and standards of the General Plan that will guide the physical growth of Kern County for a variety of land uses and future economic growth while also assuring the conservation of agricultural, natural, and resource attributes.

The Land Use, Open Space, and Conservation Element, Kern County eastern section land use plan map shows the project site in Map Code 8.5 Resource Management (minimum 20-acre parcel size) (Kern County 1982).

> "**Map Code 8.5 (Resource Management)** - Primarily open space lands containing important resource values, such as wildlife habitat, scenic values, or watershed recharge areas. These areas may be characterized by physical constraints or may constitute an important watershed recharge area or wildlife habitat or may have value as a buffer between resource areas and urban areas. Other lands with this resource attribute are undeveloped, non-urban areas that do not warrant additional planning within the foreseeable future because of current population (or anticipated increase), marginal physical development, or no subdivision activity.
>
> Minimum parcel size is 20 acres gross, except lands subject to a Williamson Act Contract/Farmland Security Zone Contract, in which case the minimum parcel size shall be 80 acres gross.
>
> Uses shall include, but are not limited to, the following: Recreational activities; livestock grazing; dry land farming; ranching facilities; wildlife and botanical preserves; and timber harvesting; one single-family dwelling unit; irrigated croplands; water storage or groundwater recharge areas; mineral; aggregate; petroleum exploration and extraction; open space and recreational uses; one single-family dwelling on legal residentially zoned lots on effective date of this General Plan; land within development areas subject to significant physical constraints; State and federal lands which have been converted to private ownership." (Kern County 1982, Land Use, Open Space, and Conservation Element, p. 55)

Kern County General Plan, Energy Element. "The Kern County Energy Element is a comprehensive document which defines critical energy related issues facing the County and sets forth goals, policies, and implementation measures to protect the County's energy resources and encourage orderly energy development while affording the

maximum protection for the public's health, safety, and the environment." (Kern County 1982, Energy Element, p. 183)

5.4.7 Transmission Lines. "Transmission lines are often the most noticeable and disruptive part of energy development. Increased development of electrical generating plants will require new transmission line construction. For some kinds of technology, transmission lines can be constructed in developed areas. In resource areas, which are presently undeveloped, construction will require greater disturbance and may have more significant impacts.

Goal. To encourage the safe and orderly development of transmission lines to access Kern County's electrical resources along routes, which minimize potential adverse environmental effects.

Policies.

5. The County should discourage the siting of above-ground transmission lines in visually sensitive areas." (Kern County 1982, Energy Element, p. 212)

Kern County Zoning Ordinance. Kern County Zoning Map No. 213 shows the project site is zoned A (Exclusive Agriculture) district.[2]

"The purpose of the Exclusive Agriculture (A) District is to designate areas suitable for agricultural uses and to prevent the encroachment of incompatible uses onto agricultural lands and the premature conversion of such lands to nonagricultural uses. Uses in the A District are limited primarily to agricultural uses and other activities compatible with agricultural uses." (Kern County 2022, Chapter 19.12, section 19.12.010)

Section 19.12.030 Uses Permitted With a Conditional Use Permit.

G. Resource Extraction and Energy Development Uses

- Electrical power generating plant.

Section 19.12.070 Yards and Setbacks.

"A. Front Yard. The front-yard minimum setback for all buildings shall be as follows:

1. Fifty-five (55) feet from the legal centerline of any existing or proposed public or private local street or access easements.
2. Seventy (70) feet from the legal centerline of any existing or proposed secondary highway.
3. Eighty (80) feet from the legal centerline of any existing or proposed major highway.

2 On February 11, 2025, the Kern County Board of Supervisors adopted a zone change on the subject property changing it from A-1 (Limited Agriculture) to A (Exclusive Agriculture). (Kern County 2025)

In no case shall the front-yard minimum setback be less than twenty-five (25) feet from the right-of-way established by any Official or Specific Plan Line, street, or access easement.

B. Side Yard. There shall be a side yard on each side of a building of not less than five (5) feet, except that on the street side of corner lots, buildings shall be set back a minimum of ten (10) feet from the right-of-way of any local street, existing or proposed secondary or major highway, or the right-of-way established by any Official or Specific Plan Line.

C. Rear Yard. There shall be a rear yard of not less than five (5) feet, except that in the case of through lots, the designated rear yard shall be in accordance with the front-yard setback requirements." (Kern County 2022, Chapter 12.14, section 19.12.070)

Section 19.12.080 Height Limit.

The following height limits apply in the A District:

"B. Radio, television, communication, and microwave towers shall not exceed one hundred and fifty (150) feet in height.

C. There is no height limit on other nonresidential structures, except in areas of protected military airspace as specified in Section 19.08.160." (Kern County 2022, Chapter 19.12, section 19.12.080)

Section 19.12.110 Signs.

The following types of signs are permitted in the A District in accordance with the requirements of Chapter 19.84 of this title:

B. Temporary construction signs.

F. Institutional identification signs, when approved in conjunction with a conditional use permit.

Section 19.14.120 Landscaping.

"No landscaping is required in the A District, except where the proposed use is subject to a plot plan review pursuant to Chapter 19.80." (Kern County 2022, Chapter 19.12, section 19.12.120)

Section 19.81 Outdoor Lighting "Dark Skies Ordinance."

The ordinance states the following, "Residents in many areas of Kern County currently enjoy a dark night sky and have expressed interest in continued access to natural dark skies. To maintain the existing character of Kern County, a minimal approach shall be taken to outdoor lighting, as excessive illumination can create a glow that may obscure the night sky and excessive illumination or glare may constitute a nuisance. The purpose of this chapter is to provide requirements for outdoor lighting within specified unincorporated areas of Kern County to accomplish the following objectives:

1. Encourage a safe, secure, and less light-oriented nighttime environment for residents, businesses, and visitors.
2. Promote a reduction in unnecessary light intensity and glare, and to reduce light spillover onto adjacent properties.
3. Protect the ability to view the night sky by restricting unnecessary upward projections of light.
4. Promote energy conservation and a reduction in the generation of greenhouse gases by reducing wasted electricity that can result from excessive or unwanted outdoor lighting." (Kern County 2022, section 19.81.010)

The following applicable general standards apply to all outdoor lighting fixtures subject to this ordinance.

A. Shielding. "All outdoor lighting fixtures which utilize one hundred (100) watts or more (based on an incandescent bulb) or emit one thousand six hundred (1,600) lumens or more per fixture, shall be fully shielded per the definition listed in this chapter, unless the fixture is exempted by this chapter. All floodlights which utilize less than one hundred (100) watts per fixture must be at least partially shielded to reduce light spillover onto adjacent properties.

   Additionally, the light source (bulb) within all lighting fixtures shall be oriented downward to prevent direct uplighting, except as permitted by Section 19.81.040(F).

C. Maintenance. Outdoor light fixtures shall be kept in good working order and shall be continuously maintained in a manner that serves the original design intent of the system and ensures continued compliance with this chapter.

D. Fixture Height. All light fixtures that are mounted on a building or structure (attached lighting) and all lighting fixtures that are not attached (freestanding lighting) shall conform to the mounting height limitations as listed in the table below (Table 19.81.050.C.1). Maximum fixture height shall be measured from the finished interior grade of the mounting area to the top point of the lighting fixture.

F. Uplighting And Lighting Aimed Against Structures Or Landscaping. Direct upward lighting and lighting aimed against structures shall be prohibited except [as explained in this section for Accent lighting of architectural features, Accent lighting of other objects, All other lighting aimed against structures, and Low voltage landscape light]." (Kern County 2022, section 19.81.040)

The staff discusses the conformance of the project with applicable LORS in subsection 5.15.3 Project Conformance with Applicable LORS.

Cumulative

Table A-1, Appendix A Cumulative Impacts provides a list of the past, present, and reasonably foreseeable projects that may be relevant for a cumulative analysis for the proposed project. Effects pertaining to aesthetics and visual resources from these projects may potentially combine with effects by the Willow Rock Energy Storage

Center becoming "cumulatively considerable" as defined by the California Environmental Quality Act (CEQA) Guidelines (Cal. Code Regs., tit. 14, § 15065[a][3]).

Staff used a geographical scope involving an approximate three-mile radius[3] from the project site for this cumulative analysis and concluded the following projects were within the distance zone:

- Antonia & Jeanette Vergara – proposed construction materials recycling facility
- Babkan Safarian & Denise Rodriquez – proposed vehicle and cargo container storage facility
- Edwards & Sanborn Solar and Energy Storage – existing solar and energy storage facility
- Halterty development – proposed mixed commercial and retail development
- Investment Concepts, Inc. – proposed apartment complex
- Gem Hill Quarry project – proposed surface mining operation
- Golden Queen Mine – existing gold, silver, and aggregate mining operation
- Mojave Micro Mill project – construction of a micro steel mill facility and solar array
- Westpark, LLC – Howard Field – proposed hotel development

3 The distance zone surrounding the project may vary depending on the project size. "Based on the curve of the Earth: Standing on a flat surface with your eyes about 5 feet off the ground, the farthest edge that you can see is about 3 miles away." (Roland 2019) However, visual impact assessments performed by the U.S. Department of Agriculture Forest Service and the U.S. Department of Interior Bureau of Land Management employ greater distances, typically a five-mile distance zone or greater surrounding the project site.

5.15.2 Environmental Impacts

AESTHETICS Except as provided in Public Resources Code Section 21099[4], would the project:	**Significant and Unavoidable Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☒	☐
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☒	☐	☐	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☒	☐	☐

California Code of Regulations, Title 14, Division 6, Chapter 3, Article 20 Appendix G Environmental Checklist Form, I. Aesthetics as amended December 28, 2018.

In accordance with Public Resource Code section 21099, staff has determined the project is not an employment center project on an infill site within a transit priority area. A transit priority area is an area within a half mile (2,640 feet) of a major transit stop. Staff viewed current Google Earth aerial and street view imagery and found no major transit stop in the vicinity.

5.15.2.1 Methodology and Thresholds of Significance

The California Energy Commission (CEC) evaluates a proposed project in accordance with the California Environmental Quality Act (CEQA) codified in California Public Resources Code (Pub. Resources Code) section 21000 et seq., and the Guidelines for

4 Public Resources Code section 21099 asks is the proposed project an “employment center project” on an “infill site” within a “transit priority area” as defined in this section? A transit priority area is an area within a half mile (2,640 feet) of a major transit stop existing or planned. Public Resources Code section 21099(d)(1) states “Aesthetic and parking impacts of a residential, mixed-use residential, or employment center project on an infill site within a transit priority area shall not be considered significant impacts on the environment.”

5 The California Energy Commission “Power Facility and Site Certification” program has been a certified regulatory program under CEQA (CEQA-equivalent program) by the Secretary of the California Natural Resources Agency since 1982. (Cal. Code Regs., tit. 14, § 15251[j])

the Implementation of the California Environmental Quality Act (CEQA Guidelines) codified in the California Code of Regulations, title 14, section 15000 et seq.[5]

CEQA, states "'Environment' means the physical conditions which exist within the area which will be affected by a proposed project, including land, air, water, minerals, flora, fauna, noise, objects of historic or aesthetic significance [emphasis added]" (Pub. Resources Code, § 21060.5)

The CEQA Guidelines state "Effects analyzed under CEQA must be related to a physical change." (Cal. Code Regs., tit. 14, § 15358[b])

The CEQA Guidelines also state a "'Significant effect on the environment' means a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance [emphasis added]." (Cal. Code Regs., tit. 14, § 15382)[6]

"The determination of whether a project may have a significant effect on the environment calls for careful judgment on the part of the public agency involved, based to the extent possible on scientific and factual data. An ironclad definition of significant effect is not always possible because the significance of an activity may vary with the setting. For example, an activity which may not be significant in an urban area may be significant in a rural area." (Cal. Code Regs., tit. 14, § 15064[b][1])

The CEC must assess "... the physical environmental conditions in the vicinity of the project. This environmental setting will normally constitute the baseline physical conditions by which a lead agency [7] determines whether an impact is significant." (Cal. Code Regs., tit. 14, § 15125[a])

Object of Aesthetic Significance

An exact definition of an "object of aesthetic significance" is not provided in CEQA or the CEQA Guidelines. For the purpose of this analyses, an object of aesthetic significance can be explained as an object subjectively designated by the federal, state, or local government and unique to it. Also, an undesignated but popularly used or appreciated area or object of aesthetic claim of significance is considered within this definition. A tour book guide and road atlas of the area (e.g., AAA, Rand McNally) are helpful. A lead agency may look to local planning thresholds when defining the visual impact standard for the purpose of CEQA[8] (e.g., general plan, specific plan, zoning). A

6 In addition to Cal. Code Regs., tit. 14, § 15382 also stated in Cal. Code Regs., tit. 14, § 15360 and Public Resources Code § 21060.5.

7 "'Lead agency' means the public agency which has the principal responsibility for carrying out or approving a project." (Cal. Code Regs., tit. 14, § 15367)

8 *Mira Mar Mobile Community v. City of Oceanside* (2004) 119 Cal. App. 4th 477.

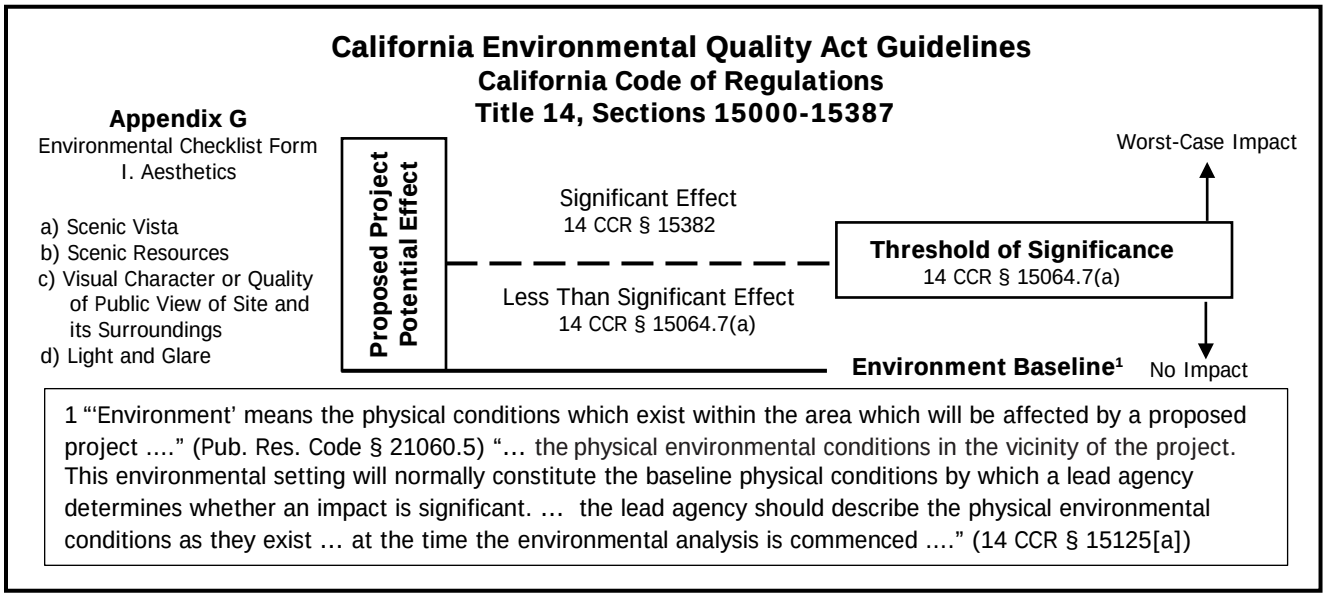
few often-designated objects of aesthetic significance at the national, state, and local government levels have included:

- A geographic feature, geologic distinguishing characteristic or structure, geomorphologic feature.
- A structure that embodies elements of architecture or engineering design, detail, materials or craftsmanship that represent a significant innovation or is unique.
- A structure of unusual historical and usually aesthetic interest.
- A tree or group of trees recognized for their aesthetic, botanical, and ecological value, and/or age, rarity, and size.
- A landscape architecture or designed landscape.

The potential physical change by the proposed project to an existing object of aesthetic significance in the area and the existing physical environment is what is analyzed.

Environmental Factor – Aesthetics

The CEQA Guidelines *Appendix G Environmental Checklist Form, I. Aesthetics* supplies questions (criteria) to answer when evaluating if a proposed project has a significant effect on the environment involving the environmental factor "Aesthetics" (shown in the table above). Staff uses these questions in this analysis. Explanations and responses to them are presented under the subheadings Scenic Vista, Scenic Resources, Visual Character or Quality of Public View of Site and its Surroundings, and Light and Glare.



"An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency ... is to be reviewed in the light of what is reasonably feasible .... The courts have looked not for perfection but for adequacy, completeness, and a good faith effort at full disclosure." (Cal. Code Regs., tit. 14 § 15151)

Threshold of Significance

The CEQA Guidelines define a *threshold of significance* as "an identifiable quantitative, qualitative or performance level of a particular environmental effect, noncompliance with which means the effect will normally be determined to be significant by the agency and compliance with which means the effect normally will be determined to be less than significant." (Cal. Code Regs., tit. 14, § 15064.7[a]) See CEQA Guidelines Level Of Effect On The Environment table below.

"Thresholds of significance ... may assist lead agencies in determining whether a project may cause a significant impact. When using a threshold, the lead agency should briefly explain how compliance with the threshold means that the project's impacts are less than significant. Compliance with the threshold does not relieve a lead agency of the obligation to consider substantial evidence indicating that the project's environmental effects may still be significant." (Cal. Code Regs., tit. 14, § 15064[b][2])

"When adopting or using thresholds of significance, a lead agency may consider thresholds of significance previously adopted or recommended by other public agencies or recommended by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence." (Cal. Code Regs., tit. 14, § 15064.7[c])

CEQA GUIDELINES LEVEL OF EFFECT ON THE ENVIRONMENT

Significant Effect on the Environment "means a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic and aesthetic significance." (Cal. Code Regs., tit. 14, § 15382) (Pub. Res. Code § 21060.5, Cal. Code Regs., tit. 14, § 15360) The physical change by the proposed project to the existing physical environment reaches the threshold of significance, "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, noncompliance with which means the effect will normally be determined to be significant by the [lead] agency...." (Cal. Code Regs., tit. 14, § 15064.7[a])

Less Than Significant Effect with Mitigation Incorporated. The physical change by the proposed project to the existing physical environment reaches the threshold of significance, "... but (1) revisions in the project plans or proposals made by, or agreed to by, the applicant before the proposed [CEQA environmental document (e.g., Negative Declaration) is] released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effect on the environment would occur, and (2) there is no substantial evidence in light of the whole record before the public agency that the project, as revised, may have a significant effect on the environment." (Pub. Res. Code § 21064.5, Cal. Code Regs., tit. 14, § 15369.5) (Pub. Res. Code § 21002)

Less Than Significant Effect. The physical change by the proposed project to the existing physical environment does not reach the threshold of significance "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, ... compliance with which means the effect normally will be determined to be less than significant." (Cal. Code Regs., tit. 14, § 15064.7[a])

Staff Method

Staff evaluates (1) the alteration to the existing *landscape* [9] by a proposed *project* [10] using the CEQA Guidelines, Appendix G, I. Aesthetics;[11] and (2) the conformance of the proposed project with aesthetics and visual resources related LORS in accordance with Public Resources Code section 25525.

Completing an evaluation typically entails: examining aerial and street view imagery, reviewing Geographic Information System (GIS) information, analyzing site and vicinity photographs including any photographs from a key observation point and photo-realistic simulation(s) of the project in the existing landscape, assessing elevations, architectural and site development plans, drawings, and renderings; reviewing applicable federal, state, and local government codes and regulations, maps and plans, consulting tour book guides and road atlases, and a visit to the project site, key observation point(s), and surrounding area to determine the CEQA Guidelines level of effect on the environment and conformance with LORS by the project.

5.15.2.2 Direct and Indirect Impacts

Scenic Vista

a. Would the project "[h]ave a substantial adverse effect on a scenic vista?"

Neither CEQA nor the CEQA Guidelines provide a definition of what constitutes a scenic vista. As already noted, lead agencies may look to local planning thresholds for guidance when defining the visual impact standard for the purposes of CEQA.[12] A general plan, specific plan, zoning, or other planning document can provide guidance.

9 Landscape is defined as "The outdoor environment, natural or built, which can be directly perceived by a person visiting and using that environment. A scene is the subset of a landscape which is viewed from one location (vantage point) looking in one direction." (Hull and Revell 1989) "The term landscape clearly focuses upon the visual properties or characteristics of the environment, these include natural and man-made elements and physical and biological resources which could be identified visually; thus non-visual biological functions, cultural/historical values, wildlife and endangered species, wilderness value, opportunities for recreation activities and a large array of tastes, smells and feelings are not included." (Daniel and Vining 1983; Amir and Gidalizon 1990)

10 A thermal or nonthermal generating facility with a capacity of 50-megawatts or more. An energy storage facility with a capacity of 200-megawatt hours or more. (See Pub. Res. Code § 25120 and 25545-25545.2)

11 California Code of Regulations, Title 14, Division 6, Chapter 3, Article 20 Appendix G Environmental Checklist Form, I. Aesthetics as amended December 28, 2018.

12 *Mira Mar Mobile Community v. City of Oceanside* (2004) 119 Cal. App. 4th 477.

The CEC in its certification (approval) for a number of thermal power plant projects has used as the definition for a *scenic vista*, "a distant view of high pictorial quality perceived through and along a corridor or opening."[13]

In this definition, "... perceived through and along a corridor or opening" refers to the potential movement into or through a portion of landscape limited by either elevated landforms bounding the observer's field of view in a rural landscape, or dominant man-made horizontal and/or vertical massed components[14] positioned at regular intervals that bound the observer's field of view in an urban landscape. No specific observer locations form the basis for defining the visual unit boundary. Instead, a distinct change in the extent and direction of views from the ground typically determines the boundary. The space within this area is inherently variable in appearance, possessing its own distinct visual character. The scenic distinction created by the combination of components within and surrounding it enables the viewer to form a unified impression (e.g., breathtaking, stunning, unsettling, repulsive).

An example of a scenic vista in a rural landscape is the view through and along the Yosemite Valley as seen from the Wawona Tunnel overlook in Yosemite National Park, California. In an urban landscape, two examples include the view through and along the National Mall from the Washington Monument in Washington, D.C., and the view through and along Capitol Mall from the Tower Bridge to the California State Capitol building in Sacramento, California.

Once a scenic vista is identified, an adverse effect is presumed when a sizable component(s) of the project physically changes the scenic vista (e.g., obstruct).

Construction and Operation

Less Than Significant Impact. The proposed project would be constructed on 89 acres of a 112-acre parcel that is relatively flat undeveloped land having desert scrub, grasses, and Western Joshua trees.

The proposed project most publicly visible structures would include six spherical hot water tanks (100-feet-tall, 87.5-foot-diameter), four low pressure exhaust stacks (100-feet-tall), two closed cooling water tanks (75-feet-tall, 60-feet diameter), two air cooled heat exchanger arrays (60-feet-tall, 100 feet-wide, 395 feet-long), one closed cooling water air cooled heat exchanger array (60-feet-tall, 100 feet-wide, 430 feet-long), and two cold water tanks (50-feet-tall, 150-foot-diameter). Also, a surface water reservoir

13 California Energy Commission Final Decision for GWF Tracy Combined Cycle Power Plant Project Docket Number 08-AFC-7, Visual Resources, p. 321; California Energy Commission Decision for Mariposa Energy Project Docket Number 09-AFC-3, Visual Resources, p. 5; California Energy Commission Decision for Blythe Solar Power Project Docket Number 09-AFC-6, Visual Resources, p. 514; California Energy Commission Decision for Genesis Solar Energy Project Docket Number 09-AFC-8, Visual Resources, p. 7-8; California Energy Commission Decision for Pio Pico Energy Center Docket Number 11-AFC-01, Visual Resources, p. 8.5-4.

14 A "component" is an individual object that makes up the landscape, physical and visible, natural and man-made which can be described, quantified, and measured (e.g., a puzzle piece in the overall picture).

(26 acres with 8-foot-tall earthen berms), a stormwater pond (270 feet long, 195 feet wide), an administration/control room and maintenance building (6,600 square feet approximately), and the potential storage onsite of crush rock resulting from the construction of the underground cavern (approximately 1.3 million cubic yards of crushed rock) being repurposed as an architectural berm (10 feet high, 500 feet wide). The gen-tie poles would be 100 feet tall and span approximately 19 miles (about 186 poles) from the project site to the Southern California Edison (SCE) Whirlwind substation (the preferred route). Refer to **Section 3, Project Description** for greater detail about the project. See **Visual Resources Figure C** – rendering of the facility on project site without the architectural berm, **Visual Resources Figure D** – rendering of the facility on project site with the architectural berm, and **Visual Resources Figure E** – rendering of the administration/control room/maintenance building, power generator pads, storage tank areas, and the air-cooled heat exchanger arrays for the project.

The Kern County General Plan dated September 22, 2009, does not show a scenic vista or have an applicable general plan policy pertaining to a scenic vista that includes the project site and the surrounding area. In addition, staff did not find a county ordinance designating a scenic vista that includes the project site.

Staff reviewed current aerial and street view imagery (Google Earth, Google Maps), United States Geological Survey (USGS) map information, area maps, and concluded the project would be on a "Low Level" — valley floor, or shoreline being the former position of an alluvial plain, lake, or shore, the northern Antelope Valley floor, and not within a scenic vista as defined.

The construction and operation of the project would create a *less than significant effect on the environment* to a scenic vista.

Scenic Resources

b. Would the project "[s]ubstantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?"

Neither CEQA nor the CEQA Guidelines provide a definition of what constitutes a scenic resource. A *scenic resource* in addition to being designated in an adopted federal, state, or local government planning document, plan, or regulation, as suggested in the above aesthetics question may be explained as a widely recognized natural or man-made feature tangible in the landscape. Hence a scenic resource includes but is not limited to the following:

- A natural feature or object that is part of the land, such as a geologic distinguishing characteristic or structure (e.g., batholith, laccolith, mesa), a geomorphologic feature produced from deposition or erosion (e.g., gorge, inselberg, moraine). A water body (e.g., lake, waterway, estuary). A tree recognized for its aesthetic, botanical, and ecological value, or age, rarity, and size.

- A man-made feature or object that embodies elements of architecture or engineering design, detail, materials, or craftsmanship that represent a significant innovation or is unique, such as the California State Capitol, Golden Gate Bridge, Hollywood sign.
- A cultural resource,[15] historic property or landmark may be included. It should be recognized that cultural and historic values differ from aesthetic or scenic values (e.g., elegance, harmonious, imposing, sublime).

This analysis evaluated if the project would substantially damage—eliminate or obstruct—public view[16] of a scenic resource, and whether the project would be situated so that it changes the visual appearance of a scenic resource by being in sharp contrast with the existing environment. The staff generally uses a three-mile[17] distance zone surrounding the project site for this analysis.

An adverse effect exists if the project would eliminate or obstruct a public view of a scenic resource, and/or change its visual appearance.

Construction and Operation

Less Than Significant Impact. The proposed project would be constructed on 89 acres of a 112-acre parcel that is relatively flat undeveloped land having desert scrub, grasses, and Western Joshua trees.

The staff review of the Kern County General Plan concluded there is no designated and protected scenic resource on the site or in the vicinity of the project site. A county ordinance identifying a specific scenic resource on the project site or in the vicinity was not found.

Staff also reviewed current aerial and street view imagery (Google Earth, Google Maps), area maps, a tour book guide, and did not find a scenic resource on the project site or in the vicinity.

15 Cultural resources encompass all the physical evidence of past human activity. These could include buildings, structures, engineering features; prehistoric sites; historic or prehistoric artifacts or objects. These nonrenewable resources often yield unique information about past societies and environments and provide answers for modern day social and conservation problems. (NRCS 2024)

16 A public view can be defined as the area visible from a location where the public has a legal and physical right of access to real property (e.g., city sidewalk, public park, town square, state highway). California Code of Regulations, Title 14, Division 6, Chapter 3, Article 20 Appendix G Environmental Checklist Form, I. Aesthetics c. states “Public views are those that are experienced from publicly accessible vantage point.” The California Courts of Appeal, Fourth District wrote "Under CEQA, the question is whether a project will affect the environment of persons in general, not whether a project will affect particular persons." (*Mira Mar Mobile Community v. City of Oceanside* (2004) 119 Cal. App. 4th 477.)

17 “Based on the curve of the Earth: Standing on a flat surface with your eyes about 5 feet off the ground, the farthest edge that you can see is about 3 miles away.” (Roland 2019)

California Streets and Highways Code Section 263, the "State Scenic Highway System List" provides a list of highways that have been either officially designated or are eligible for designation as a State scenic highway. The project site is not shown along a designated State scenic highway.

The construction and operation of the project would not eliminate or obstruct a public view of a scenic resource nor change the visual appearance of it. The project would create a *less than significant effect on the environment*.

Visual Character or Quality of Public View of Site and its Surroundings

c. Would the project "[i]n non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?"

Based on the definition of "urbanized area" per Public Resources Code section 21071,[18] staff determined the proposed project to be in a non-urbanized area.

An adverse effect exists if the project in a non-urbanized area significantly degrades the existing visual character or quality of public views of the site and its surroundings, or if in an urbanized area conflicts with zoning and other regulations governing scenic quality.[19]

Key Observation Point Evaluation

"Visual landscape assessments involve the inventory and evaluation of diverse visible attributes of the landscape for purposes of planning, design and management. ... As currently practiced, visual assessments are firmly grounded in a tradition of knowing that requires the collection of empirical (often quantitative) data for analysis through systematic means. That is ... the landscape has a physical reality independent of people that can be characterized through various measurements. The landscape also has a reality that depends on our individual perceptions. These perceptions can be characterized or measured by various means."[20]

18 An "urbanized area" means either "(a) An incorporated city that meets either of the following criteria: (1) Has a population of at least 100,000 persons. (2) Has a population of less than 100,000 persons if the population of that city and not more than two contiguous incorporated cities combined equals at least 100,000 persons." (Public Resources Code section 21071[a]) An urbanized area also includes unincorporated area that satisfies the criteria in Public Resources Code section 21071(b).
19 Pub. Res. Code § 25525 requires a project to be in conformance with applicable federal, state, and local government laws, ordinances, regulations, and standards (LORS).
20 Palmer and Robin 2001, p. 149.

Staff evaluates a proposed project in the landscape using an adapted descriptive inventory methodology, formal aesthetic model.[21] See the evaluation flowchart below.

"Because it is difficult to describe visual appearance in words, visual assessments of the existing environment and the consequences of project alternatives should be based on 'illustrations of actual views'.... Because resources and time are always limited, it is also necessary to limit the number of views analyzed: it is essential that these be 'representative views,' neither understating nor overstating the visual effects of the project." (Smardon 1986, p. 255)

The primary purpose of a visual simulation is to accurately portray in a realistic manner and context a proposed activity, modification, or change in the existing physical landscape (e.g., project). It is a photographic image that has been computer-modified to show a not-yet existing feature. A visual simulation is not a "real life view." It illustrates a two-dimensional view of a proposed activity from a particular viewpoint as depicted in a photograph and not as it would appear as a three-dimensional image as seen in the field with the human eye. That being said, a visual simulation is a useful tool to assist in the assessment and decision-making process, whereby better informed and more transparent judgements on visual related effects can be made.

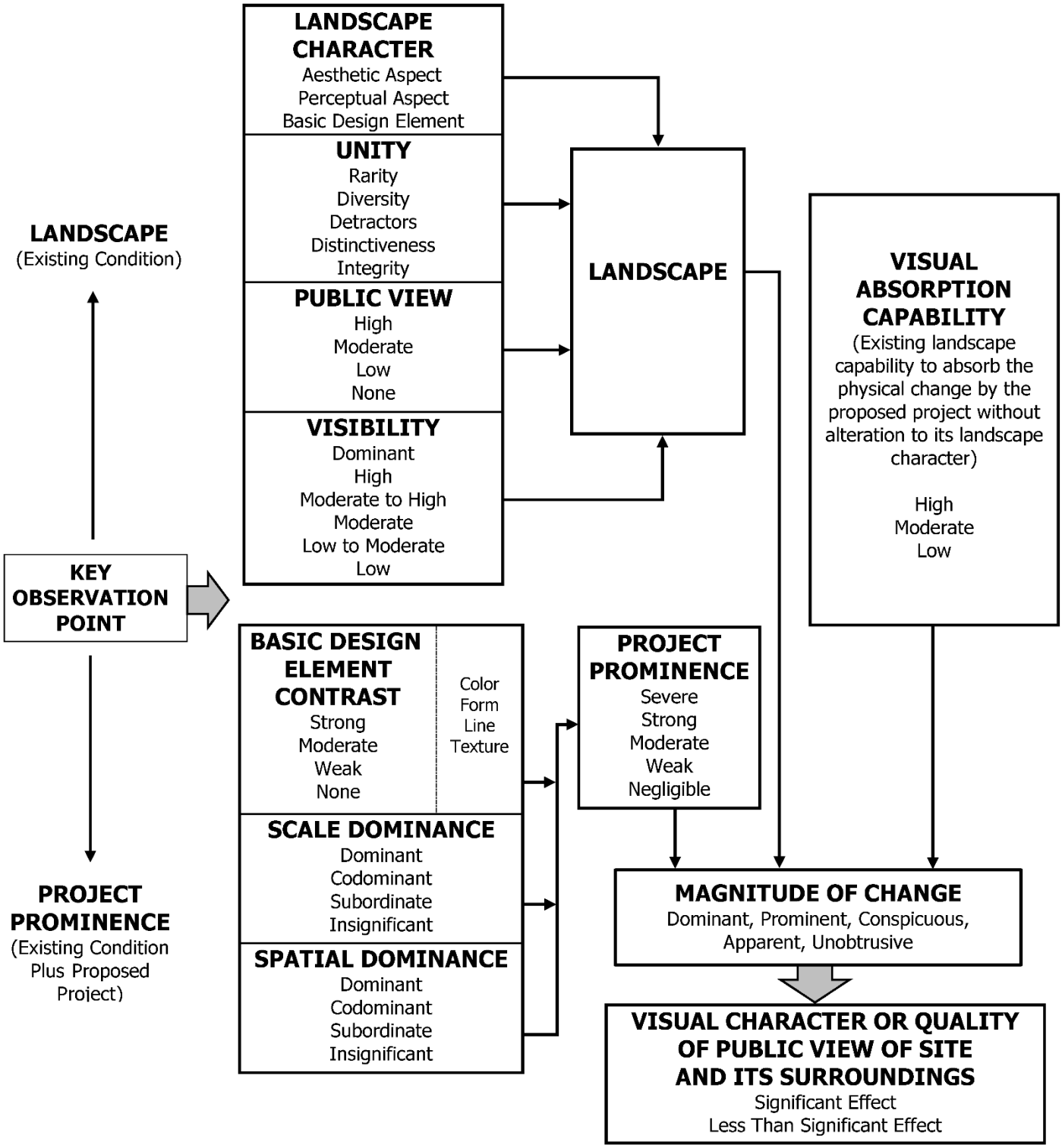
In accordance with CEQA and the CEQA Guidelines, staff evaluated the physical changes to the existing physical environment caused by the proposed project (project effect) with respect to aesthetics.

In this analysis, a key observation point (KOP) is used. A KOP is a fixed position in a publicly accessible location where a public view of the project is analyzed and evaluated in the landscape.

The applicant provided seven photographs showing the existing physical environment including the project site prior to alteration from a KOP (existing condition), and seven photo-realistic simulations of the proposed project in the existing environment from the same KOP (existing condition plus proposed project). **Visual Resources Figure 5.15-1** displays the applicant selected KOP locations. Staff did not include all of the applicant KOPs in this analysis. Staff analyzed four existing condition photographs along with their corresponding photo-realistic simulations. See **Visual Resources Figure 5.15-2** through **Visual Resources Figure 5.15-9**. Staff has provided supplement figures, see **Visual Resources Figures A** through **I**.

21 A visual landscape assessment is a process that evaluates the quality and characteristics of a landscape. Numerous techniques of landscape evaluation have been devised. These techniques can be divided into broad categories, descriptive inventories, public preference models, and quantitative holistic methods. These techniques can be further subdivided into non-quantitative and quantitative approaches including ecological, formal aesthetic, phenomenological, psychological, psychophysical models. There are also direct/indirect, quantitative/non-quantitative, and subjective/objective methods. It should be noted not all landscape evaluation techniques comply with CEQA and/or the CEQA Guidelines.

Evaluation Flowchart



Staff completed a KOP Evaluation Worksheet (worksheet) for each KOP. The completed worksheets have been attached to this section. See **Key Observation Point Evaluation Worksheets 1** through **4**. A synopsis of each worksheet is presented below.

Construction and Operation

Significant and Unavoidable Impact. Staff concludes given the existing physical landscape, the project would substantially degrade the existing visual character or quality of public views of the site and its surroundings from KOPs 2, 3, and 4.

The proposed project would be constructed on 89 acres of a 112-acre parcel that is relatively flat undeveloped land having desert scrub, grasses, and Western Joshua trees (see **Visual Resources Figure A** – Google Maps aerial view of project site showing existing physical condition, and **Visual Resources Figure B** – Google Maps street view at the corner of Dawn Road and Sierra Highway).

As previously described, the project includes construction of six 100-foot-tall spherical hot water tanks, four 100-foot-tall low pressure exhaust stacks, two 75-foot-tall closed cooling water tanks, two air cooled heat exchanger arrays (60-feet-tall, 100 feet-wide, 395 feet-long), one closed cooling water air cooled heat exchanger array (60-feet-tall, 100 feet-wide, 430 feet-long), and two 50-foot-tall cold water tanks. Also, a 26-acre surface water reservoir, a stormwater pond (270 feet long, 195 feet wide), an administration/control room and maintenance building (6,600 square feet approximately), and the potential storage onsite of crush rock resulting from the construction of the underground cavern being repurposed as an architectural berm (10 feet high, 500 feet wide). The project would have 186 gen-tie poles 100 feet tall spanning 19 miles to the SCE Whirlwind Substation. Refer to **Section 3, Project Description** for greater details. See **Visual Resources Figure C, Visual Resources Figure D**, and **Visual Resources Figure E**.

KOP 1 – State Highway 14, South of the Dawn Road Highway Overpass. The KOP is from the north bound lane of State Route 14 approximately ½-mile south of the Dawn Road highway overpass. The project site is approximately 3,000 feet to the northeast. See **Visual Resources Figure 5.15-2** - existing condition from State Route 14, and **Visual Resources Figure 5.15-3** - existing condition plus proposed project.

California State Route 14 (SR-14) is a north-south highway that connects Los Angeles to the northern Antelope Valley and western Mojave Desert. Soledad Mountain is approximately four and a half miles north of the KOP along the west side of the highway. The mountain is an approximate six-square-mile rugged topographic prominence that rises above the valley floor 4,190 feet at peak. It has been extensively mined for gold and silver since the late 1890s. The mountain is riddled with numerous shafts, adits, glory holes, and open cuts as well as tunnels, raises, and winzes. Golden

Queen Mining currently is conducting gold, silver, and aggregate mining on the mountain.

CEC staff did not identify an "object of aesthetic significance" at this KOP. Staff conducted an evaluation of the physical change to the existing physical environment by the proposed project.

From the KOP given the existing physical landscape (existing physical environment), the project prominence (basic design element contrast, scale dominance, spatial dominance) in the existing physical landscape rated strong. The visual absorption capability of the landscape rated low. The magnitude of change (dominant, prominent, conspicuous, apparent, unobtrusive) in the landscape rated conspicuous, meaning the project is clearly visible and noticeable in the view in the landscape. See the **Key Observation Point Evaluation Worksheet - Key Observation Point No. 1**.

For the CEQA Guidelines, and as set forth in Table 15 in the worksheet, this combination of ratings yields a conclusion that the project would have a *less than significant effect on the environment* in the degrading of the existing visual character or quality of the public view of the site and its surroundings.

KOP 2 – State Highway 14, Dawn Road Off-ramp East (applicant identified KOP 7, see **Visual Resources Figure 5.15-1**). The KOP is from the top of the State Route 14 off-ramp at Dawn Road. The project site is approximately 1000 feet east along an unimproved (dirt) county road segment of Dawn Road. See **Visual Resources Figure F –** Google Maps street view from the top of the State Route 14 off-ramp at Dawn Road, **Visual Resources Figure G –** Google Maps street view from the terminus of the state highway public right of way and beginning of Dawn Road, **Visual Resources Figure 5.15-4** - existing condition from State Route 14 off-ramp at Dawn Road east, **Visual Resources Figure 5.15-5** - existing condition plus proposed project.

Staff did not identify an "object of aesthetic significance" at this KOP. Staff conducted an evaluation of the physical change to the existing physical environment by the proposed project.

From the KOP given the existing physical landscape, the project prominence in the existing physical landscape rated severe. The visual absorption capability of the landscape rated low. The magnitude of change in the landscape rated dominant, meaning the project commands or controls the view in the landscape. See the **Key Observation Point Evaluation Worksheet - Key Observation Point No. 2**.

For the CEQA Guidelines, and as set forth in Table 15 in the worksheet, this combination of ratings yields a conclusion that the project would have a *significant effect on the environment* in the degrading of the existing visual character or quality of the public view of the site and its surroundings.

KOP 3 – 10th Street West, Parallel To The Project Site. The KOP is from 10th Street West, a county unimproved road that parallels the project site, Sierra Highway, and the west boundary of Edwards Air Force Base. The project site is about a ½-mile away. Soledad Mountain is in the distance view. See **Visual Resources Figure H –** Google Map aerial view of project site, **Visual Resources Figure 5.15-6 –** existing condition from 10th Street west, and **Visual Resources Figure 5.15-7 –** existing condition plus proposed project.

Staff did not identify an "object of aesthetic significance" at this KOP. Staff conducted an evaluation of the physical change to the existing physical environment by the proposed project.

From the KOP given the existing physical landscape, the project prominence in the existing landscape rated strong. The visual absorption capability of the landscape rated low. The magnitude of change in the landscape rated dominant, meaning the project commands or controls the view in the landscape. See the **Key Observation Point Evaluation Worksheet - Key Observation Point No. 3**.

For the CEQA Guidelines, and as set forth in Table 15 in the worksheet, this combination of ratings yields a conclusion that the project would have a *significant effect on the environment* in the degrading of the existing visual character or quality of the public view of the site and its surroundings.

KOP 4 – Rosamond Boulevard West, Near Los Angeles Department of Water & Power Easement (near applicant identified KOP 5). The KOP is from a spot along the applicant preferred aboveground transmission gen-tie pole structure line route on Rosamond Boulevard, near a Los Angeles Department of Water and Power (LADWP) overhead transmission line route easement. The SCE Whirlwind Substation is about six and a half miles further west. The 230 kV gen-tie pole structure line route spans approximately 19 miles from the project site to the Whirlwind Substation and having about 186 poles. See **Visual Resources Figure I –** Google Map street view along Rosamond Boulevard, **Visual Resources Figure 5.15-8** - existing condition from Rosamond Boulevard, **Visual Resources Figure 5.15-9** - existing condition plus proposed project.

The gen-tie poles structures would be made of steel, 100 feet tall and six feet in diameter at the base. The poles are expected to be spaced 600 to 900 feet from each other.

Staff did not identify an "object of aesthetic significance" at this KOP. Staff conducted an evaluation of the physical change to the existing physical environment by the proposed project.

From the KOP given the existing physical landscape, the project prominence in the existing landscape rated strong. The visual absorption capability of the landscape rated low. The magnitude of change in the landscape rated prominent, meaning the project

stands out or is striking in the view in the landscape. See the **Key Observation Point Evaluation Worksheet - Key Observation Point No. 4**.

For the CEQA Guidelines, and as set forth in Table 15 in the worksheet, this combination of ratings yields a conclusion that the project would have a *significant effect on the environment* in the degrading of the existing visual character or quality of the public view of the site and its surroundings.

Visual Resources Figure A

Aerial view showing the existing physical condition of the project site along Dawn Road and Sierra Highway. State Route 14 is to the west. Photo Credit: Google Maps, April 2024, accessed February 4, 2025.

Visual Resources Figure B

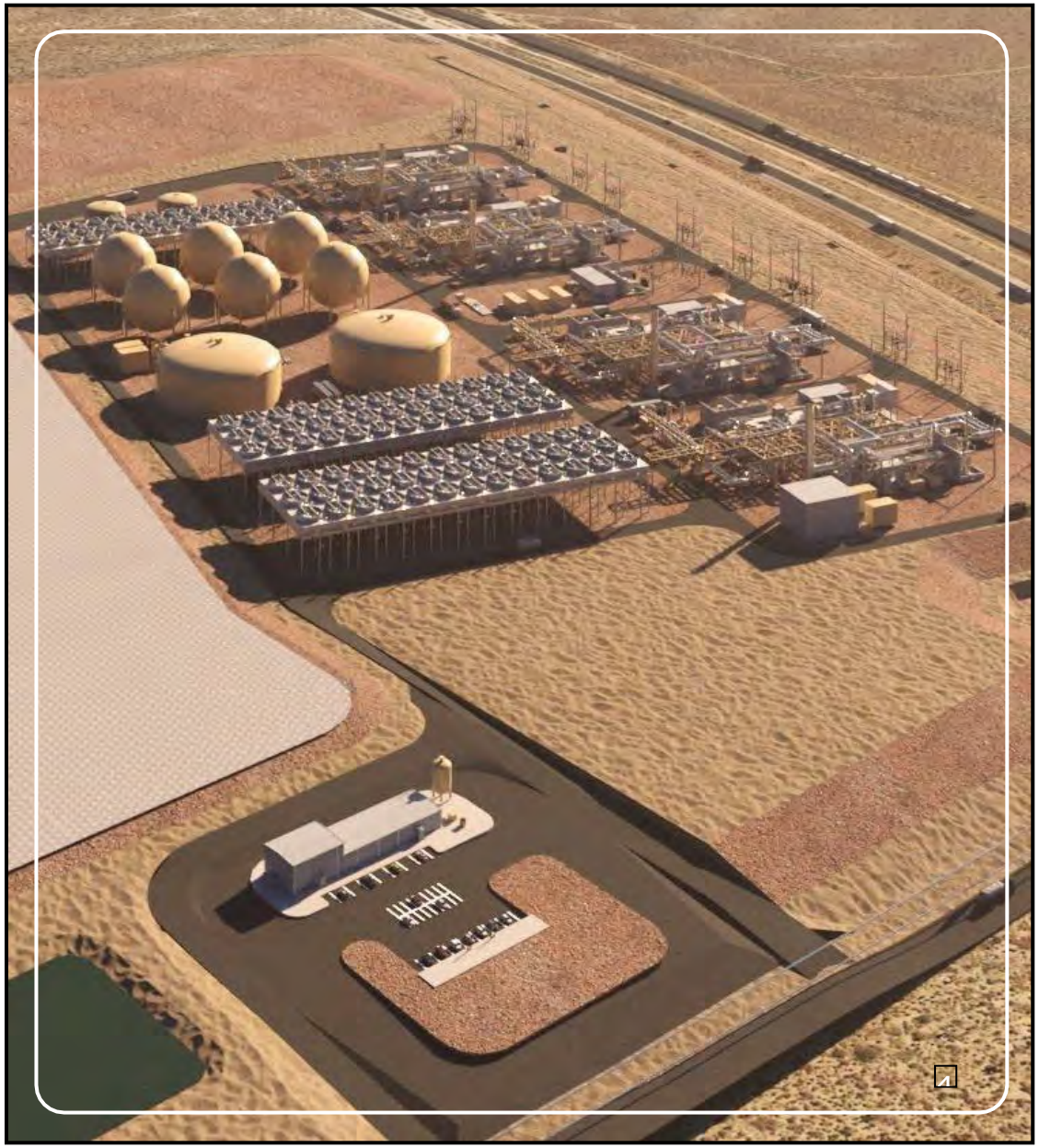
View showing the existing physical condition of the project site from the corner of Dawn Road and Sierra Highway. Soledad Mountain is in the distance view. Photo Credit: Google Maps, April 2024, accessed February 4, 2025.

Visual Resources Figure C

A rendering of the Willow Rock Energy Storage Center without the architectural berm. Source: WSP 2024a.

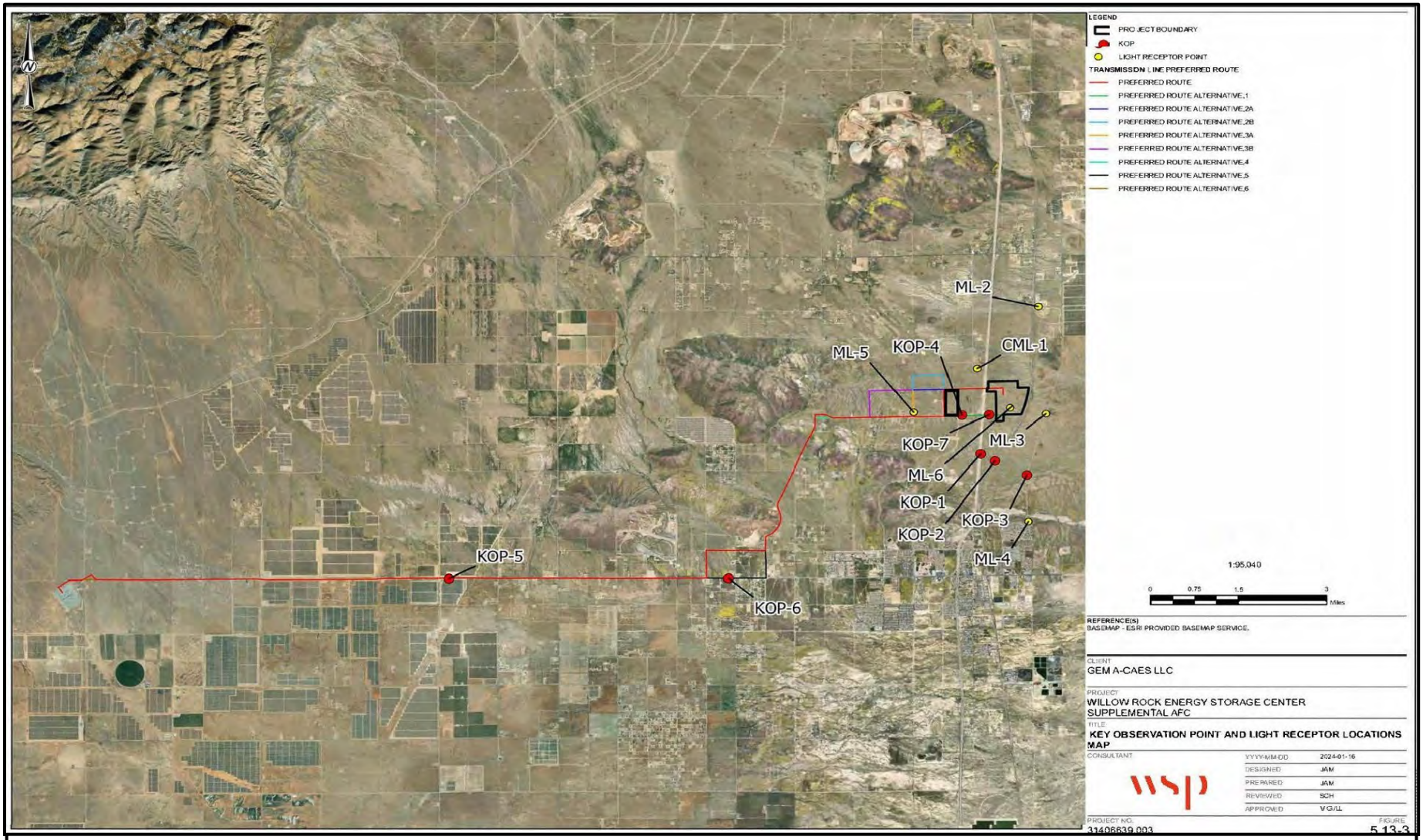
Visual Resources Figure D

A rendering of the Willow Rock Energy Storage Center with an architectural berm (1.3 million cubic yards of crushed rock). Source: WSP 2024a.



Visual Resources Figure E

A rendering of the administration/control room/maintenance building, power generator pads, storage tank areas, and the air-cooled heat exchanger arrays for the Willow Rock Energy Storage Center. Source: CEC 2024a.



Visual Resources Figure 5.15-1
Key Observation Point (KOP) and Monitoring Light (ML) Locations.
Willow Rock Energy Storage Center Project
Source: ESHD 2024h

Visual Resources Figure 5.15-2
KOP 1 – Existing condition north bound lane of State Route 14 approximately ½-mile south of the Dawn Road highway overpass.
Willow Rock Energy Storage Center Project
Source: ESHD 2024m

Visual Resources Figure 5.15-3
KOP 1 – Existing Condition Plus Proposed Project.
Willow Rock Energy Storage Center Project
Source: ESHD 2024m

Visual Resources Figure F

View from the top of the Dawn Road state highway overpass looking east, Kern County, California. Dawn Road is the unimproved county road beyond the end of the state public right-of-way. The project site is approximately 1000 feet away along the north side of Dawn Road. Photo Credit: Google Maps, April 2024, accessed February 3, 2025.

Visual Resources Figure G

View from the terminus of the state highway public right of way and the beginning of Dawn Road looking toward the proposed Willow Rock Energy Storage Center project site, Kern County, California. Photo Credit: Google Maps, April 2024, accessed February 3, 2025.

Visual Resources Figure 5.15-4
KOP 2 – Existing Condition of Project Site from State Route 14 Off-ramp at Dawn Road East.
Willow Rock Energy Storage Center Project
Source: ESHD 2024m

Visual Resources Figure 5.15-5
KOP 2 – Existing Condition Plus Proposed Project.
Willow Rock Energy Storage Center Project
Source: ESHD 2024m

Visual Resources Figure H

Aerial view showing the locations of Dawn Road, Sierra Highway, 10th Street West, and the project site in the northern Antelope Valley, eastern Kern County, California. 10th Street West is approximately ½-mile east of the project site. Photo Credit: Google Maps accessed February 4, 2025.

Visual Resources Figure 5.15-6

KOP 3 – Existing Condition from 10th Street West (an unimproved county road) that parallels the project site.
Willow Rock Energy Storage Center Project
Source: ESHD 2024m

Visual Resources Figure 5.15-7

KOP 3 – Existing Condition Plus Proposed Project.
Willow Rock Energy Storage Center Project
Source: ESHD 2024m

Visual Resources Figure I

View looking west along Rosamond Boulevard from the LADWP overhead transmission line easement crossing, Kern County, California. The preferred option for the 230-kV gen-tie pole structure route would be along the north side of the road. The SCE Whirlwind substation is about six and a half miles further west. Photo Credit: Google Maps, March 2023, accessed February 6, 2025.

Visual Resources Figure 5.15-8

KOP 4 – Existing Condition Rosamond Boulevard West Near LADWP Overhead Transmission Line Easement.
Willow Rock Energy Storage Center Project
Source: ESHD 2024m

Visual Resources Figure 5.15-9

KOP 4 – Existing Condition Plus Proposed Project.
Willow Rock Energy Storage Center Project
Source: ESHD 2024m

Publicly Visible Water Vapor Plumes

A publicly visible water vapor plume (visible plume) emitted in the atmosphere from a proposed cooling tower is analyzed to determine if the visible plume: 1) would substantially degrade the existing visual character or quality of public views of the site and its surroundings in a non-urbanized area, or conflict with applicable zoning and other regulations governing scenic quality in an urbanized area; 2) would have a substantial adverse effect on a scenic vista; 3) would substantially damage scenic resources; and 4) would it result in offsite fogging and icing.

A visible plume is a reference to the visibility and path of the effluent air stream after having exited the cooling tower that is visible and elevated.

No cooling tower is proposed for the project. The applicant is showing in their renderings of the facility air-cooled heat exchanger arrays (see **Visual Resources Figure E**). Air-cooled heat exchangers cool and/or condense process steam with ambient air as the cooling medium rather than water. They are a key element of a dry cooling system. No warm moisture filled exhaust is emitted in the atmosphere that could condense forming a visible plume.

An air-cooled heat exchanger works by passing a process fluid through tubes that are surrounded by fins, with air being forced over the fins by axial fans, allowing the heat from the fluid to transfer to the air and dissipate into the atmosphere; essentially, the air acts as a coolant to remove heat from the fluid flowing through the tubes, facilitated by the increased surface area provided by the fins.

For the CEQA Guidelines, a visible plume from the project would have a *less than significant effect on the environment* in the degrading of the existing visual character or quality of the public view of the site and its surroundings.

Fogging and Icing Offsite

Fogging is a reference to the visibility and path of the effluent air stream after having exited the cooling tower that is visible and close to the ground. No cooling tower is proposed for the project. As previously explained, renderings of the facility show air-cooled heat exchanger arrays. Fogging and icing offsite would be rare and have a *less than significant effect on the environment*.

Large Diesel Generator Backup Generation

The project would have three diesel generators to provide backup generation in case of an interruption to the normal electricity supply to or at the facility, and one diesel generator for fire water pump operation. Manufacturer performance data provided by the applicant indicates generator exhaust stack flow gas temperatures at a 100 percent load standby are 914 degrees and 1025 degrees Fahrenheit. These high temperatures quickly evaporate the necessary saturated rising moisture exiting the generator exhaust stack that could condense in the atmosphere to form a visible plume. The stack

emission would be a hot, dry air mass flow. There would be no visible aesthetic-related effect on the environment.

Light and Glare

d. Would the project "[c]reate a new source of substantial light or glare which would adversely affect day or nighttime views in the area?"

The proposed project would be constructed on 89 acres of a 112-acre parcel that is relatively flat undeveloped land having desert scrub, grasses, and Western Joshua trees.

The project requires outdoor luminaires to illuminate driveways, entrances, walkways, operation, parking and loading areas, and for safety and security. Reflectance would occur from exterior surfaces of buildings, structures, and equipment. All surfaces reflect light.

Light, glare, and reflectance emitted from a project are analyzed to determine if each would create an adverse effect to the existing physical environment offsite and skyward (light pollution and reflectance).

Light Pollution

"Light pollution is the human-made alteration of outdoor light levels from those occurring naturally." (DarkSky 2024) Light pollution "occurs when outdoor lighting is misdirected, misplaced, unshielded, excessive or unnecessary. As a result, light spills unnecessarily upward and outward, causing glare, light trespass, and a nighttime urban 'sky glow' overhead, indicating wasted energy and obscuring the stars overhead," and clutter.[22] (Dark Sky Society 2024)

DarkSky International (formerly the International Dark-Sky Association) is a recognized worldwide authority in combating light pollution. DarkSky International recognizes to minimize the harmful effects of light pollution, lighting should: only be on when needed; only light the area that needs it; be no brighter than necessary; minimize blue light emissions;[23] and be fully shielded.[24]

The DarkSky International "DarkSky Approved" program offers luminaires that significantly reduce light pollution and minimize nocturnal habitat disruption. The DarkSky Approve program provides an objective, third-party certification for lighting related products that minimize glare, reduce light trespass, and preserve the natural

22 Clutter is the bright, confusing, and excessive grouping of light sources.
23 Studies show exposure to blue light can cause eye strain, fatigue, headaches, and sleeplessness.
24 "Fully shielded**"** means a luminaire constructed in a manner that all light emitted from the fixture, either directly from the lamp or a defusing element, or indirectly by reflection or refraction from any part of the luminaire is projected below the horizontal plane, as determined by a photometric test or certified by the manufacturer.

night sky.[25] Outdoor luminaires certified by program incorporate features such as, shielding, no uplight allowance (BUG Rating U0[26]), dimming capabilities to one percent of their full rating, and emission control that limits visible light in the 380 to 520 nanometers (nm)[27] range to no more than seven percent.

Artificial Light and Nocturnal Creatures. "Scientific evidence suggests that artificial light at night has negative and deadly effects on many creatures, including amphibians, birds, mammals, insects, and plants. ... Predators use light to hunt, and prey species use darkness as cover."[28]

"Keeping the light **LOW** (mounting the fixture as low as possible) and **SHIELDED** (fully shielding the light so bulbs and/or glowing lenses are not visible) cuts down on the amount of glare and light visible to the animals, so that there is less opportunity for them to get trapped, repelled, or have their day/night patterns altered. Keeping it **LONG** wavelength (ambers and reds) actually makes the light that is visible seem dimmer to nocturnal animals that primarily use rod vision. The rod system's peak sensitivity is at 496 nm [nanometers], so a low-pressure sodium light, with its emitted light at 589 nm, should seem 1/10th as bright to an animal using purely rod vision vs. an animal that uses rods and cones to see." (FFWCC 2024)

"Some Institutes and even cities have adopted a "Lights Out" program in which exterior lighting as well as interior lights in tall buildings are dimmed or turned off during periods of bird migration. Bare bulbs or upward pointing lights are replaced with hooded fixtures that only shine downward. If lights can't be turned off, then use flat lens, and reduce the number of lights and intensity. Both the height of the pole and the intensity of the lamp should be adjusted to only direct light where needed. ..." (NIEHS 2015)

Safety and Security Lighting. "Each organization should ensure a minimum level of light for their respective property areas that complies with all applicable regulations and industry guidelines. Security lighting requirements should be specified by a lighting

25 To see a list of DarkSky Approved products, manufacturers, and retailers visit the DarkSky International website <www.darksky.org>.
26 "A BUG Rating stands for backlight, uplight, and glare. Backlight (B) is the light directed behind the fixture, uplight (U) is any light directed upward above the horizontal plane of the luminaire, and glare (G) is the amount of light emitted from the luminaire at high angles. The backlight, uplight, and glare ratings are assigned a value between 0 and 5 (with lower on the scale being more desirable) depending on the maximum amount of light in these zones based on thresholds defined by the Illuminating Engineering Society (IES) and enforced by the International Dark-Sky Association (IDA)" [now named DarkSky International]. (FirstLight 2024) The BUG rating is typically included in the product specifications.
27 The human eye can view the segment of the electromagnetic radiation spectrum wavelengths between 380 to 700 nanometers. This segment is known as "visible light."
28 DarkSky International maintains an Artificial Light at Night (ALAN) Database. It provides the latest scientific literature on how light pollution affects wildlife. (DarkSky 2024)

engineer. Ideally, lighting requirements will be identified as part of a security survey. The lighting program should consider the following:

- Lighting should not illuminate security/protection officers or patrols. Where security patrols cannot be kept out of the zones of illumination, a judgment must be made between the advantages of the lighting and the reduction in patrol effectiveness.
- Lighting must be combined with surveillance. The deterrent effect of lighting depends on the fear of detection. This may also require video surveillance or security/protection officers on static posts and mobile patrols.
- Lighting must not cause nuisances or hazards to neighbors, such as light pollution or light trespass. Lighting may adversely affect adjoining or adjacent properties such as residential properties, roadways, airports, harbors, neighboring commercial buildings, or properties.
- Lighting must be cost-effective and compatible with site conditions. It may not be economical to illuminate very large areas. Take into account both the existing lighting outside the perimeter and the lighting installed within the site for operational or safety purposes." (Fenelly and Perry 2017)

Reflectance

Reflectance is the proportion of perpendicular incident light reflected from the surface or body of a material. All surfaces reflect light. Light reflects off the surface in a very predictable manner.

"Reflectivity is defined as the property of a material to reflect the light or radiation. It is a measurement of reflectance irrespective of the thickness of a material." (Electrical4U 2020)

Exterior surface coatings and materials that diffuse illumination or collection, reflectance and scattering are of utmost importance. "An ideal coating is non-specular (to decrease geometrical effects) durable, high in reflectance and spectrally flat over a wide wavelength range to give a flat spectral response in input or output." (Labsphere, Inc. 2020) Materials with a non-shiny, textured or matt/powder finish are preferable to glossy or shiny finishes. A few examples of materials and surface treatments that should be avoided if possible: any material with a reflectance greater than 35 percent; any shiny, highly reflective materials even for small surfaces; large smooth surfaces; and large expanses of glass.

The Master Painters Institute (MPI) provides guidelines and standards for the architectural paint and coatings sector in the United States and Canada. "In order to provide Coatings Specifiers with a common language to describe Paint Finishes, MPI includes GLOSS and SHEEN measurements as part of the criteria for many of its MPI category specifications. MPI specifies seven GLOSS levels, each of which are described below, along with their GLOSS measurement range (as seen at an 85º viewing angle)

and SHEEN measurement range (as seen at a 60º viewing angle [29]).” (Rodda Paint Company 2024)

Gloss Level 1 – Flat (traditional matte finish)

Gloss Level 2 – Satin/Pearl (high side sheen Flat, “Velvet-like” finish)

Gloss Level 3 – Eggshell (traditional “Eggshell-like” finish)

Gloss Level 4 – Low Gloss (“Satin-like” finish)

Gloss Level 5 – Semi Gloss (traditional Semi-Gloss)

Gloss Level 6 – Gloss (traditional Gloss)

Gloss Level 7 – High Gloss (High Gloss)

Construction and Operation

Less Than Significant Impact. The proposed project would be constructed on 89 acres of a 112-acre parcel that is relatively flat undeveloped land having desert scrub, grasses, and Western Joshua trees. Given the existing physical environment, it is expected during nighttime there is very little emission of artificial light, and during day time very little reflectance from the subject property.

Staff reviewed the “World Atlas Night Sky Brightness” interactive map given the location of the project. The map delineates physical radiance (brightness) homogeneously over an area from a relative location by color levels (a light pollution map).[30] See **Visual Resources Figure J**. It shows brightness in the area to be relatively high.

As previously discussed under the Regulatory subsection, Kern County Zoning Ordinance section 19.81 provides requirements intended to reduce unnecessary night lighting and to minimize lighting impacts on surrounding properties.

The application for certification (AFC) states “Nighttime construction is anticipated primarily for the cavern excavation process and some intermittent localized 24-hour construction activities. When nighttime construction activity is required, all necessary

29 “A 60º viewing angle looking at a PAINT FINISH – The most common viewing angle used by the Coatings industry to describe the various levels, from Flat to High Gloss. The GLOSS of a surface is described by a number based on the reflection of light from the surface that is independent of color. The higher the number, the ‘Glossier’ the Paint Finish.” (Rodda Paint Company 2024) For more information on the MPI guidelines and standards visit the Master Painter Institute website <https://mpi.net/>, also visit the Rodda Paint Company website <https://www.roddapaint.com/how-to/selecting-gloss-level/>.

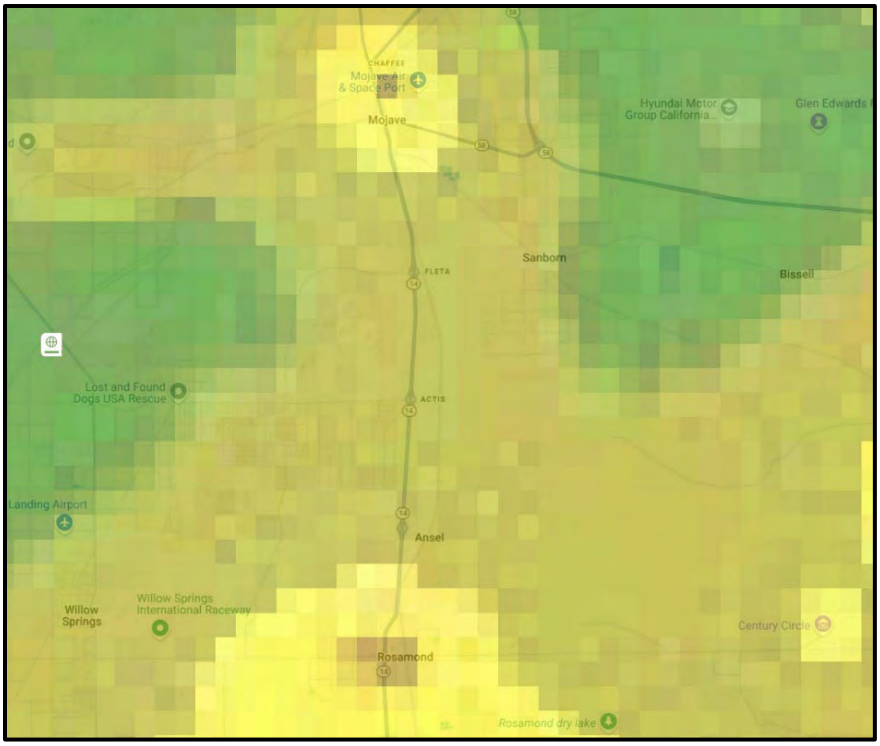
30 The “World Atlas Night Sky Brightness” is an interactive map which delineates physical radiance homogeneously over an area from a relative location by color levels provided on The Dark Sky Map: Best Locations for Stargazing website <https://www.darkskymap.com/nightSkyBrightness>. (Dark Sky Map 2025)

temporary lighting will be directed on work areas and away from sensitive receptors, such as nearby residences.

“Construction-related lighting is anticipated to be limited to the period of the cavern excavation process, which is estimated to last for 41 months during which there will be intermittent localized 24-hour construction activities.” (ESHD 2024h, p. 5.13-18) The proposed construction laydown and parking area(s) for the project ranges between 69 and 73 acres.

“Operation of the Project will require onsite lighting for safety and security and approach lighting for the substation, control equipment enclosures, and operator interface locations. This will include a combination of pole-mounted LED lighting ranging in height from 11 feet to 40 feet and wall-mounted fixtures on buildings mounted between 23 feet and 30 feet. All new lighting will include shielding and will be directed downward to minimize the potential for glare, light pollution, and skyglow.

Project lighting will use dimmable motion-sensitive and scheduling controls to minimize the use of the lights. Light level will comply with recommendations of the Illuminating Engineering Society, as well as CEC and local jurisdictions’ ordinances or codes, to ensure lighting is no brighter than necessary. The Project Lighting Plan is shown in Appendix 5.13B. The luminaire used at the WRESC [Willow Rock Energy Storage Center] will be Maxlite-led Slim Series: AR140HT3-50BK. Each luminaire includes a side shield for Dark Sky compliance, but currently does not have International Dark-Sky Association Fixture Seal of Approval.” (ESHD 2024h, p. 5.13-14)



Visual Resources Figure J

The map shows night sky brightness emitted between Rosamond and Mojave and the surrounding area in Kern County, California. The duller the color of the area on the shown figure the lower the amount of emitted illumination (artificial light). The proposed project site is north of Ansel. Source “World Atlas Night Sky Brightness,” Dark Sky Map: Best Locations for Stargazing, https://www.darkskymap.com/nightSkyBrightness, accessed on February 11, 2025.

The AFC states “Finishes for materials and surface treatments will be predominately flat and non-reflective to minimize the potential for glare” by the project. (ESHD 2024h, p. 5.13-13) See **Visual Resources Figures C**, **D**, and **E**.

AFC Table 5.13-3 names colors, materials, and gloss level for individual project components. The majority of the components would have a Beige (RAL 1001) or similar color, a semi-gloss, and involve metal materials.

Typically, 230 kV transmission overhead line pole structures are constructed from steel coated with corrosion and glare resistant material, and in this case white in color, see **Visual Resources Figure 5.15-9**.

Conclusion(s)

Kern County Zoning Ordinance section 19.81 provides requirements to reduce unnecessary night lighting and to minimize lighting impacts on surrounding properties.

New artificial light traversing off the project site and the construction laydown area(s) in the existing physical environment during nighttime would create light trespass that is a potential significant effect on the environment.

Bright night lighting could disturb wildlife using areas adjacent to the project site, such as nesting birds, foraging mammals, and flying insects. Night lighting also is suspected to attract migratory birds to areas and, if the lights are on tall structures, collisions could occur. Additionally, certain lighting may attract insects which in turn may attract birds and bats to forage.

The AFC contains statements demonstrating the intent to implement shielding, directional light, non-reflectance materials, and other light pollution and reflectance facility design measures.

Shielding is a key element in night-sky-friendly lighting. Fully shielded fixtures, also known as "full-cutoff” fixtures are the gold standard. No light escapes upward or outward and a passerby is not blinded by the glare from an exposed bulb.

The applicant supplied renderings of the facility that show a majority of the components would have a Beige or similar color, and a semi-gloss.

CEC staff concludes the level of new light, glare, and reflectance emitted by the project and from the construction laydown areas in the existing landscape with the effective implementation of the staff proposed conditions of certification shown under subsection 5.15.5 Proposed Conditions of Certification (see **VIS-1** and **VIS-3**) would conform with the county ordinance and have a *less than significant effect on the environment*.

5.15.2.3 Cumulative Impacts

Less Than Significant Impact. As previously identified under the Cumulative Projects subsection, listed projects located within a three-mile radius of the proposed project are

considered for this cumulative analysis. Effects pertaining to aesthetics/visual resources from these projects could potentially combine with effects by the proposed Willow Rock Energy Storage Center project becoming “cumulatively considerable" for “Aesthetics.”

Structures, equipment, buildings from past, present, and reasonably foreseeable projects may become cumulatively considerable for “Aesthetics” in this portion of the western Mojave high desert (northern Antelope Valley). Such physical changes by these projects could degrade the existing visual character or quality of the public views of the listed cumulative project site and surroundings. These impacts stem from incremental physical changes in the existing landscape due to “project prominence” (“basic design element contrast,” “scale dominance,” and “spatial dominance”), “visual absorption capability,” and the distance and “line-of-sight” from the WRESC.

An analysis by staff, utilizing current aerial and street view imagery (via Google Earth and Google Maps) of the Antelope Valley, and the listed cumulative projects, concludes the proposed WRESC would have an incremental effect that is not cumulatively considerable, and would result in *a less than significant effect on the environment* for “Aesthetics.” Additionally, the identified cumulative projects within the geographic scope for this analysis are located at sufficient distances from the WRESC preventing visual impacts from combining in a way that would amplify the WRESC existing visual impacts.

The incremental effect by the proposed project pertaining to construction activities could become cumulatively considerable if construction activities at any or all the identified cumulative project sites within the northern Antelope Valley were to occur at the same time, or before or after the construction of the proposed project. Construction activities including the use, storage, and movement of equipment and materials, and night lighting on or from these sites may combine with activities, equipment operation, and night light on the proposed project site. The construction activities may lead to a continued presence of construction activity including light emission in the northern Antelope Valley for several years. For the CEQA Guidelines, staff concludes for “Aesthetics” with the implementation of **VIS-3** the incremental effect by the project would not be cumulatively considerable and have a less than significant effect on the environment.

5.15.3 Project Conformance with Applicable LORS

In accordance with Public Resources Code section 25525, the staff reviewed the project for conformance with applicable laws, ordinances, regulations, and standards (LORS) relating to aesthetics and visual resources: scenic quality, scenic resources, scenic vista, lighting, glare, architectural design and site development, exterior surface coatings, colors, finishes, and materials, landscaping, and signage. Applicable LORS reviewed are shown in **Table 5.15-1** below.

Table 5.15-1 provides staff’s determination of conformance with applicable LORS, including any proposed condition of certification, where applicable, to ensure the project would comply with LORS.

TABLE 5.15-1 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
State	
California Scenic Highway Program. Section 263 of the Streets and Highways Code, the "State Scenic Highway System List" provides a list of highways that have been either officially designated or are eligible for designation as a State scenic highway.	**Yes.** The "State Scenic Highway System List" shows the project site is not along a designated State scenic highway.
Local	
Kern County General Plan	
Land Use, Open Space, and Conservation Element. "**<u>Map Code 8.5 (Resources Management)</u>** Primarily open space lands containing important resource values, such as wildlife habitat, scenic values, or watershed recharge areas. These areas may be characterized by physical constraints, or may constitute an important watershed recharge area or wildlife habitat or may have value as a buffer between resource areas and urban areas. Other lands with this resource attribute are undeveloped, non-urban areas that do not warrant additional planning within the foreseeable future because of current population (or anticipated increase), marginal physical development, or no subdivision activity. Uses shall include, but are not limited to, the following: Recreational activities; livestock grazing; dry land farming; ranching facilities; wildlife and botanical preserves; and timber harvesting; one single-family dwelling unit; irrigated croplands; water storage or groundwater recharge areas; mineral; aggregate; petroleum exploration and extraction; open space and recreational uses; one single-family dwelling on legal residentially zoned lots on effective date of this General Plan; land within development areas subject to significant physical constraints; State and federal lands which have been converted to private ownership." (Kern County 2009, Land Use, Open Space, and Conservation Element, p. 55)	**Yes.** The project site is within Map Code 8.5 (Resources Management).
Energy Element. "The Kern County Energy Element is a comprehensive document which defines critical energy related issues facing the County and sets forth goals, policies, and implementation measures to protect the County's energy	**Yes.** The project would have about 186 gen-tie poles 100 feet tall spanning 19 miles from the project site to the SCE Whirlwind substation. The proposed preferred transmission overhead line 19-mile route is not traversing a visually sensitive

TABLE 5.15-1 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
resources and encourage orderly energy development while affording the maximum protection for the public's health, safety, and the environment." (Kern County 2009, Energy Element, p. 183) **5.4.7 Transmission Lines** "Transmission lines are often the most noticeable and disruptive part of energy development. Increased development of electrical generating plants will require new transmission line construction. For some kinds of technology, transmission lines can be constructed in developed areas. In resource areas, which are presently undeveloped, construction will require greater disturbance and may have more significant impacts. ... **Goal** To encourage the safe and orderly development of transmission lines to access Kern County's electrical resources along routes, which minimize potential adverse environmental effects. ... **Policies** 5. The County should discourage the siting of above-ground transmission lines in visually sensitive areas." (Kern County 2009, Energy Element, p. 212)	area as indicated by the county General Plan, county staff, and as determined by CEC staff.
Kern County Ordinances	
Kern County Zoning Map No. 213 shows the project site is zoned A (Exclusive Agriculture) district. "The purpose of the Exclusive Agriculture (A) District is to designate areas suitable for agricultural uses and to prevent the encroachment of incompatible uses onto agricultural lands and the premature conversion of such lands to nonagricultural uses. Uses in the A District are limited primarily to agricultural uses and other activities compatible with agricultural uses." (Kern County Zoning Ordinance, Chapter 19.12, section 19.12.010) Section 19.12.030 Uses Permitted With a Conditional Use Permit. G. Resource Extraction and Energy Development Uses • Electrical power generating plant.	**Yes.** On February 11, 2025, the Kern County Board of Supervisors adopted a zone change on the subject property changing it from A-1 (Limited Agriculture) to A (Exclusive Agriculture). (Kern County 2025)

TABLE 5.15-1 CONFORMANCE WITH APPLICABLE LORS

Applicable LORS	Conformance and Basis For Determination
Section 19.12.080 Height Limit. The following height limits apply in the A District: "B. Radio, television, communication, and microwave towers shall not exceed one hundred and fifty (150) feet in height. C. There is no height limit on other nonresidential structures, except in areas of protected military airspace as specified in Section 19.08.160." (Kern County Zoning Ordinance, Chapter 19.12, section 19.12.080)	**Yes.** The project includes construction of six 100-foot-tall spherical hot water tanks, four 100-foot-tall low pressure exhaust stacks, two 75-foot-tall, closed cooling water tanks, two air cooled heat exchanger arrays (60-feet-tall), one closed cooling water air cooled heat exchanger array (60-feet-tall), and two 50-foot-tall cold-water tanks. The project also includes about 186 gen-tie poles 100 feet tall spanning 19 miles from the project site to the SCE Whirlwind substation.
Section 19.12.110 Signs. The following types of signs are permitted in the A District in accordance with the requirements of Chapter 19.84 of this title: B. Temporary construction signs. F. Institutional identification signs, when approved in conjunction with a conditional use permit.	**Yes.** A letter received from the Kern County Planning and Natural Resources Department dated October 30, 2024, included recommended conditions of approval on the proposed Willow Rock Energy Storage Center project that include the following: "29. All signs shall comply with the signage regulations of the applicable base zone district and with Chapter 19.84 of the Zoning Ordinance. 30. All signs shall be approved by the Director of the Kern County Planning and Natural Resources Department prior to installation." (KCPNRD 2024r) Section 5.13 Visual Resources in the applicant's AFC and supplemental information to it are silent regarding signs on the project site, and the construction laydown area(s). Staff has proposed **VIS-2** so that the project would be in conformance with this County ordinance requirement with its implementation.

TABLE 5.15-1 CONFORMANCE WITH APPLICABLE LORS

Applicable LORS	Conformance and Basis For Determination
Section 19.81 Outdoor Lighting "Dark Skies Ordinance." "The following general standards apply to all outdoor lighting fixtures subject to this ordinance. A. SHIELDING All outdoor lighting fixtures which utilize one hundred (100) watts or more (based on an incandescent bulb) or emit one thousand six hundred (1,600) lumens or more per fixture, shall be fully shielded per the definition listed in this chapter, unless the fixture is exempted by this chapter. All floodlights which utilize less than one hundred (100) watts per fixture must be at least partially shielded to reduce light spillover onto adjacent properties. Additionally, the light source (bulb) within all lighting fixtures shall be oriented downward to prevent direct uplighting, except as permitted by Section 19.81.040(F). ... C. MAINTANENCE Outdoor light fixtures shall be kept in good working order and shall be continuously maintained in a manner that serves the original design intent of the system and ensures continued compliance with this chapter. D. FIXTURE HEIGHT All light fixtures that are mounted on a building or structure (attached lighting) and all lighting fixtures that are not attached (freestanding lighting) shall conform to the mounting height limitations as listed in ... Table 19.81.050.C.1. Maximum fixture height shall be measured from the finished interior grade of the mounting area to the top point of the lighting fixture. E. FIXTURE TYPES The following figures illustrate examples of fully shielded and not fully shielded outdoor lighting fixtures. Note: Even those types of fixtures shown as fully shielded must be	**Yes.** A letter received from the Kern County Planning and Natural Resources Department dated October 30, 2024, included recommended conditions of approval on the proposed Willow Rock Energy Storage Center project that include the following: "22. Compliance with the Kern County Dark Sky Ordinance (Chapter 19.81 – Outdoor Lighting – Dark Skies) is required for both construction and operations. 23. All exterior lighting shall be directed away from adjacent properties and roads. The lighting standards shall be equipped with glare shields or baffles. Light fixtures shall be maintained in sound operating conditions at all times." (KCPNRD 2024r) The applicant indicates in the AFC that operational lighting on the project site would be limited to areas required for safety, would be directed on site to avoid backscatter, and would be shielded from public view to the extent practical. All lighting that is not required to be on during nighttime hours would be controlled with sensors or switches operated such that the lighting would be on only when needed. Staff has proposed **VIS-3** so that the project would be in conformance with this County ordinance requirement with its implementation.

TABLE 5.15-1 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
installed and aimed properly to comply with this chapter. F. UPLIGHTING AND LIGHTING AIMED AGAINST STRUCTURES OR LANDSCAPING Direct upward lighting and lighting aimed against structures shall be prohibited except as [explain in this subsection.] ... J. HOURS OF OPERATION (CURFEW) AND SECURITY LIGHTING ... 2. Outdoor lighting fixtures located outside of a residential zone district (E, R-1, R-2, R-3), or located more than twenty-five (25) feet from any existing single-family residence within any other zone district shall adhere to the following: a. All lighting fixtures shall be subject to the shielding provisions as listed in Section 19.81.040 of this chapter. b. Lighting fixtures listed under this provision shall not be subject to an illumination curfew." (Kern County Zoning Ordinance, Chapter 19.81, section 19.81.040)	

5.15.4 Comments and Responses to the Preliminary Staff Assessment

Applicant Comment (TN 264316)

In June 2025, the applicant (respondent) submitted as part of their Supplemental AFC (WSP 2025a), revised landscape photographs and photo-realistic simulations of the proposed project from seven key observation points (KOPs) for review by the Energy Commission and public (see attached **Visual Resources Figure 5.15-10** through **Visual Resources Figure 5.15-22**).

Staff Response: The visual related impact assessment technical approach employed by the respondent in the revision is largely based on the U.S. Department of Interior Bureau of Land Management (BLM) Visual Resource Management program.[31] The applicant's original visual impact assessment approach, as presented in their AFC visual

31 The BLM is responsible for managing public lands in a manner that protects scenic quality. This responsibility is grounded in the Federal Land Policy Management Act of 1976 and the National Environmental Policy Act of 1969 (NEPA), as amended.

resources section, was largely based on the U.S. Department of Transportation Federal Highway Administration (FHWA) prepared Guidelines for the Visual Impact Assessment of Highway Projects (2015).[32]

A visual landscape assessment involves the inventory and evaluation of diverse visible attributes of the landscape for purposes of planning, design, and management. Numerous techniques for a visual landscape assessment have been developed for this purpose which can be broadly categorized into descriptive inventories, public preference models, and quantitative holistic methods. These categories encompass both non-quantitative and quantitative approaches including ecological, formal aesthetic, phenomenological, psychological, psychophysical models. Additionally, methods may be classified as direct/indirect, quantitative/non-quantitative, and subjective/objective. It is important to note that not all visual landscape evaluation techniques are consistent with the requirements of CEQA and or the CEQA Guidelines.

The *CEQA Guidelines Appendix G Environmental Checklist Form, I. Aesthetics*, provides criteria for evaluating whether a proposed project may have a "significant effect on the environment." (Cal. Code Regs., tit. 14, art. 20 Appendix G Environmental Checklist Form, I. Aesthetics, as amended December 28, 2018) (see PSA and Final Staff Assessment (FSA), p. 5.15-7 and 9).

Completing an evaluation typically entails: examining aerial and street view imagery, reviewing Geographic Information System (GIS) information, analyzing site and vicinity photographs including any photographs from a key observation point and photo-realistic simulation(s) of the project in the existing landscape, assessing elevations, architectural and site development plans, drawings, and renderings; reviewing applicable federal, state, and local government codes and regulations, maps and plans, consulting tour book guides and road atlases, and a visit to the project site, key observation point(s), and surrounding area.

The California Energy Commission must assess "… the physical environmental conditions in the vicinity of the project. This environmental setting will normally constitute the baseline physical conditions by which a lead agency determines whether an impact is significant." (Cal. Code Regs., tit. 14, § 15125[a])

The applicable portion of the CEQA Guidelines Appendix G Environmental Checklist Form, I. Aesthetics, c, question asks would the proposed project "[i]n non-urbanized areas, substantially degrade the existing visual character or quality of public soundings." Does the proposed project effect reach the "threshold of significance" (see PSA and

32 The FHWA visual guidelines respond to the National Environmental Policy Act (NEPA) and to other Federal requirements outlined in subsequent transportation funding authorization bills, several Presidential Executive Orders related to the visual character of Federal lands and projects, and Federal Highway Administration programs and initiatives such as Scenic Byways, Context Sensitive Solutions, and Complete Streets.

FSA, p. 5.15-9-10), thereby a "significant effect on the environment" under CEQA and the CEQA Guidelines (see PSA and FSA, p. 5.15-10)?

In accordance with CEQA and the CEQA Guidelines, staff evaluated the physical change to the condition of the existing physical environment caused by the proposed project (project effect).

Staff does not evaluate viewer sensitivity—that is, the sensitivity of the viewer to the perceive change to the condition of the existing physical environment caused by the proposed project (subjective psychological feelings).[33]

Staff in conducting a Key Observation Point (KOP) evaluation for a proposed project, includes an assessment of the Basic Design Element Contrast between the proposed project and the existing physical landscape (see Key Observation Point Evaluation Worksheet Table 3).

Staff reviewed the renderings and the photo-realistic simulations of the Willow Rock Energy Storage Center in the AFC. Table 5.13-3, which lists the colors, materials, and gloss levels of project components, indicates that most components would be Beige (RAL 1001) with a semi-gloss finish (see PSA and FSA, Visual Resources Figure C, D, and E). The AFC photo-realistic simulations of the proposed 230 kV overhead transmission line poles depict white as the exterior surface color (see PSA and FSA, Visual Resources Figure 5.15-9).

The primary purpose of a photo-realistic simulation is to accurately portray in as realistic manner and context a proposed activity, modification, or change in the existing physical landscape (e.g., proposed project). It is a photographic image that has been computer-modified to show a not-yet existing feature. A photo-realistic simulation is not a "real life view." It illustrates a two-dimensional view of a proposed activity from a particular viewpoint as depicted in a photograph and not as it would appear as a three-dimensional image as seen in the field with the human eye. That being said, a photo-realistic simulation is a useful tool to assist in the assessment and decision-making process, whereby better informed and more transparent judgements on visual related effects can be made.

The applicant in June 2025 docketed a change to their originally submitted exterior surface colors for project components described in the AFC. In addition to showing the new color for the energy storage facility, the photo simulations also included two new color treatments for the overhead transmission line poles: corten steel (weathering

33 "Aesthetic claims raised under the guise of preserving "community character" or "subjective psychological feelings or social impacts" are insufficient. (*Preserve Poway v. City of Poway* (2016) 245 Cal.App.4th 560; *City of Pasadena v. State of California* (1993) 14 Cal.App.4th 810-829.) Aesthetics challenges premised on economic concerns similarly do not suffice. (e.g., *Porterville Citizens*, *supra*,157 Cal.App.4th at pp. 903-904; Guidelines, § 15131, subd. (a)).

steel) and a vertical gradient from beige to white (see **Visual Resources Figure 5.15-10** through **Visual Resources Figure 5.15-22**).

The respondent contends that because of the color change, the project effect on the existing physical environment would now have a "less than significant effect on the environment" per CEQA and the CEQA Guidelines. The respondent states,

> "Best management practices (BMPs) established by the BLM related to color and concealment are available to specifically guide the use of exterior coatings, colors, or finishes to reduce contrast with the existing landscape (i.e., Best Management Practices for Reducing Visual Impacts Associated with Renewable Energy Facilities on BLM-Administered Lands, BLM Technical Note 446 – The Use of Color for Camouflage Concealment of Facilities). These BMPs are developed for a range of diverse physical environments throughout the U.S., including the arid desert environment that surrounds the Project ...
>
> The objective of the information provided in this submission is to present updated images of the Project with the application of VIS-1 that are consistent with relevant BMPs from BLM on color and concealment to illustrate the effectiveness of this mitigation to reduce the visual impacts of the Project." (Willow Rock Energy Storage Center, Willow Rock Preliminary Staff Assessment Comments Report, Appendix C Updated Visual Simulations docketed June 16, 2025 [TN #264316], p. 74)

The respondent's discussion and analysis addresses only the exterior surface color of the proposed energy storage facility and the transmission line poles. While color is one of the "basic design elements," the discussion does not consider the other basic design elements, such as form, line, texture, scale, and spatial dominance, nor is the "visual absorption capability" of the landscape addressed. These are often among the most influential factors in determining the compatibility of a proposed landscape modification. In assessing the project effect on the existing physical environment, staff considered these factors, along with others outlined in the Evaluation Flowchart (see PSA and FSA, p. 5.15-17) and the Key Observation Point Evaluation Worksheets (see PSA and FSA, pp. 5.15-60-107). As discussed, in the Visual Resources section, staff concluded that the level of effect under the CEQA Guidelines would constitute a "significant effect on the environment" that would be unmitigable at specific KOPs.

Staff reviewed the revised photo simulations and re-evaluated the applicable KOP Evaluation Worksheets in the PSA. Staff determined that the CEQA Guidelines level of effect on the environment would be consistent with the original determinations in the PSA Visual Resources section: a "significant effect on the environment" that would be unmitigable.

CEQA "establishes a duty for public agencies to avoid or minimize environmental damage where feasible." (Cal. Code Regs., tit. 14, § 15021[a])

In accordance with the CEQA mandate above and to ameliorate the project's unmitigable "significant effect on the environment" staff drafted **VIS-1** for consideration by the Energy Commissioners.

All buildings, equipment, and structures have exterior surfaces that require surface treatments to protect against weathering, enhance durability and performance, and improve appearance.

With respect to the respondent's proposed **VIS-1** language concerning exterior surface colors, staff prefers to prioritize input from the affected local government, in this case, the County of Kern, rather than limit colors to the four shown from the list of BLM standard environmental colors. Furthermore, the respondent's proposed language may inadvertently exclude other colors, such as Beige (RAL 1001) which was originally identified in the applicant's AFC and depicted in project renderings.

Staff supports the respondent's suggestion to include use of the identified BLM standard environmental colors, as well as a provision for a study focused on selecting colors for project components that are compatible with the surrounding physical landscape. Accordingly, use of the BLM Standard Environmental Color Paint Tool has been incorporated into the condition. The Color Paint Tool includes nine standard environmental color paint cards (PC02-PC10).

The respondent also proposed language for **VIS-1** related to worker safety. Staff acknowledges that standardized color codes are employed by regulatory agencies to enhance worker safety by providing a visual language for effectively communicating hazards and safety information. Both CEC staff and the applicant are required to comply with applicable federal and state laws and regulations pertaining to worker safety, such as those by OSHA and Cal OSHA. The concern implied in the respondent's suggested language is addressed in the Worker Safety and Fire Protection section of the Staff Assessment.

APPLICANT SUPPLEMENTAL AFC

UPDATED VISUAL SIMULATIONS
JUNE 2025

Visual Resources Figures 5.10-10
to
Visual Resources Figures 5.10-22

Visual Resources Figure 5.15-10
KOP 1 – State Route 14 Northbound
(Simulated Condition with Exterior Color Treatment Mitigation)

Sources: TN #264316

Visual Resources Figure 5.15-11
KOP 2. Sierra Highway
(Simulated Condition with Exterior Color Treatment Mitigation)

Sources: TN #264316

Visual Resources Figure 5.15-12
KOP 3. 10th Street West
(Simulated Condition with Exterior Color Treatment Mitigation - No-berm Option)

Sources: TN #264316

Visual Resources Figure 5.15-13
KOP 3. 10th Street West
(Simulated Condition with Exterior Color Treatment Mitigation - Berm Option)

Sources: TN #264316

Visual Resources Figure 5.15-14
KOP 4. Dawn Road
(Simulated Condition with Exterior Color Treatment Mitigation)

Sources: TN #264316

Visual Resources Figure 5.15-15
KOP 5. Rosamond Blvd. West
(Simulated Condition with Exterior Color Treatment Mitigation – Weathering Steel Structures)

Sources: TN #264316

Visual Resources Figure 5.15-16
KOP 5. Rosamond Blvd. West
(Simulated Condition with Exterior Color Treatment Mitigation – Vertical Gradient)

Sources: TN #264316

Visual Resources Figure 5.15-17
KOP 6. Rosamond Blvd. East
(Simulated Condition with Exterior Color Treatment Mitigation – Weathering Steel Structures)

Sources: TN #264316

Visual Resources Figure 5.15-18
KOP 6. Rosamond Blvd. East
(Simulated Condition with Exterior Color Treatment Mitigation – Vertical Gradient)

Sources: TN #264316

Visual Resources Figure 5.15-19
KOP 6a. Rosamond Blvd. East (NW View)
(Simulated Condition with Exterior Color Treatment Mitigation – Weathering Steel Structures)

Sources: TN #264316

Visual Resources Figure 5.15-20
KOP 6a. Rosamond Blvd. East (NW View)
(Simulated Condition with Exterior Color Treatment Mitigation – Vertical Gradient)

Sources: TN #264316

Visual Resources Figure 5.15-21
KOP 7 Dawn Road East at SR 14 Offramp
(Simulated Condition with Exterior Color Treatment Mitigation – No-berm Option)

Sources: TN #264316

Visual Resources Figure 5.15-22
KDawn Road East at SR 14 Offramp
(Simulated Condition with Exterior Color Treatment Mitigation - Berm Option)

Sources: TN #264316

5.15.5 Conclusions and Recommendations

As discussed, and explained in this section, the proposed project would have a *significant effect on the environment* for the purposes of the CEQA Guidelines Appendix G Environmental Checklist Form, I. Aesthetics, c. and would be in *conformance* with identified LORS relating to aesthetics/visual resources per Public Resources Code section 25525.

Regarding the CEQA checklist question addressing degrading the existing visual character or quality of public views of the site and its surroundings (CEQA Guidelines, Appendix G, I. Aesthetics. c.), staff evaluated the project including the applicant submitted KOPs and concluded from KOP 2, KOP 3, and KOP 4, the "project prominence," and "visual absorption capability," given the existing physical environment, the project cannot be effectively camouflaged, disguised, or treated with exterior surface coatings, colors, or finishes to mitigate the degrading of the existing visual character or quality of the public view of the site and its surroundings. Consequently, from KOP 2, KOP 3, and KOP 4 the project would create a significant effect.

With WRESC adherence to the Kern County Outdoor Lighting "Dark Skies Ordinance" (Section 19.81), and the effective implementation of **VIS-3** and **VIS-1**, the level of new light, glare, and reflectance emitted by the project including the construction laydown areas would comply with the ordinance and have a less than significant effect.

5.15.6 Proposed Conditions of Certification

If the CEC decides to certify the proposed project, staff recommends the following conditions of certification:

VIS-1 The project owner shall use exterior surface coatings, colors, finishes, materials, and a gloss level that diffuse illumination or collection, reflectance and scattering offsite and skyward from the exterior surfaces of the project buildings, structures, and equipment (project components), and specifically include:

a. An exterior surface coating, color, finish, material, and gloss level that minimize contrast and do not introduce specular reflection in the existing physical landscape.

b. An exterior surface coating, color, finish, material, and gloss level that is in conformance with applicable adopted architectural design and site development related policies and ordinances of the County of Kern.

The project owner shall submit to the CPM for approval an exterior surface coatings, colors, finishes, and materials plan for the project buildings, structures and equipment that satisfy the above requirements and include the following:

1. A list of the large/major buildings, equipment, structures; perimeter wall and/or fence; transmission line towers and/or poles; above ground pipelines

serving the facility onsite and offsite in public view, and a list of their proposed exterior surface coatings, colors, finishes, and materials identified by vendor, name and number, and according to the RAL color matching system or similar universal designation system. The standard environmental colors (PC02-PC10) from the BLM Standard Environmental Color Paint Tool may also be used.

2. The identification of suitable colors will be determined through a study focused on selecting colors for project components compatible with the surrounding physical landscape. Prior to large-scale implementation, proposed color choices shall be tested under field conditions to confirm their effectiveness.
3. Supply one set of brochures showing coating/color chips, and/or samples of the coatings/colors or finish, materials to be applied/installed to buildings, equipment, and structures.
4. A time schedule for the completion of the application/installation of the coating, color, finish, and materials.
5. A maintenance plan that includes procedures for the upkeep of the coatings, colors, finishes, and materials for the life of the project.

The project owner shall not purchase product or service from a vendor for the project exterior surface coatings, colors, finishes, materials prior to CPM approval of the exterior surface coating, color, finish, and materials plan.

Verification:

a. The project owner shall submit an exterior surface coating, color, finish, and materials plan to the CPM for approval and simultaneously to the Director of Planning and Natural Resources Department for the County of Kern for review and comment ninety (90) days prior to executing a contract to purchase coating, color, finish and materials with a vendor. The CPM shall provide the Director of Planning and Natural Resources Department at least 30 days to review the plan and provide comments to the applicant and the CPM.

b. If the CPM determines that the exterior surface coating, color, finish, and materials plan requires a revision, the project owner shall provide to the CPM a plan with the specified revision(s) for approval by the CPM before any action or activity with the vendor is executed. Any revision to the plan must be approved by the CPM.

c. The project owner shall notify the CPM that exterior surface coatings, colors, and finishes of all listed buildings, equipment, and structures has been completed are ready for inspection. With this notification, the applicant shall supply to the CPM one set of color photographs showing the project from the key observation points evaluated for the project certification, and individual color photographs showing the completed exterior surface coatings, colors,

finishes, and materials for the following: six spherical hot water tanks, four low pressure exhaust stacks, two closed cooling water tanks, the administration/control room and maintenance building, and one aboveground transmission gen-tie pole structure on the route along Rosamond Boulevard, near LADWP overhead transmission line route easement, and any other building, equipment, and structure as requested by the CPM. Color photographs may be electronically filed or manually filed on electronic media.

d. Exterior surface coatings, colors, finishes, and materials shall be installed/applied (completed) on the exterior surfaces of the large/major buildings, equipment, and structures prior to the start of commercial operation.

e. The project owner shall supply a description of the condition (status) of the exterior surface coatings, colors, finishes, and materials for the large/major buildings, equipment, structures, and others as needed for the reporting year in the Annual Compliance Report. The report shall include:

   1. The condition of the exterior surfaces of buildings, equipment, and structures at the end of the reporting year.
   2. A listing of maintenance activities performed during the reporting year.
   3. A tentative time schedule for maintenance activities for the upcoming year.

VIS-2 Outdoor signs installed on the project site and the construction laydown, parking and storage areas shall comply with the sign regulations of the applicable base zone district and Chapter 19.84 of the County of Kern Zoning Ordinance.

The project owner shall submit to the CPM for approval and simultaneously to the Director of Planning and Natural Resources Department for the County of Kern for review and comment a sign or signage plan or equivalent plan prepared for the project, project site, and construction laydown, parking and storage areas in compliance with the above requirements and prior to the installation of any sign.

Verification:

a. The project owner shall submit a sign or signage plan to the CPM for approval and simultaneously to the Director of Planning and Natural Resources Department for the County of Kern for review and comment thirty (30) days prior to installation. The CPM shall provide the Director of Planning and Natural Resources Department at least 30 days to review the plan and provide comments to the applicant and the CPM.

   If the CPM determines that the sign or signage plan requires a revision, the project owner shall provide to the CPM a plan with the specified revision(s)

for approval by the CPM before any installation of a sign. Any revision to the plan must be approved by the CPM.

VIS-3 New outdoor light and glare emitted from the project site and construction laydown area shall not result in light being a pollutant offsite and skyward, "light pollution." The project owner shall include use of luminaires that:

a. Only be on when needed.

b. Only light the area that needs it.

c. Illuminate no brighter than necessary.

d. Minimize blue light emissions.

e. Are fully shielded (BUG Rating U0).

f. Are DarkSky International "DarkSky Approved" program products.

g. Comply with the applicable adopted outdoor lighting regulations of the County of Kern (Section 19.81 Outdoor Lighting "Dark Skies Ordinance").

The project owner shall submit to the CPM for approval and simultaneously to the Director of Planning and Natural Resources Department for the County of Kern for review and comment a light pollution control plan or equivalent plan prepared for the project that satisfy the above requirements and include the following:

1. Supply one set of product brochures and/or printouts (e.g., diagram, drawing) showing and describing the types of outdoor luminaires to be applied/installed to buildings, equipment, structures, and other locations on the project site (lighting schedule).

2. A diagram(s) or drawing(s) of the project site showing the approximate location of the installation/placement of the luminaire and its direction and angle (luminaire location).

Verification:

a. The project owner shall submit a light pollution control plan to the CPM for approval and simultaneously to the Director of Planning and Natural Resources Department for the County of Kern for review and comment ninety (90) days prior to executing a contract to purchase permanent outdoor luminaires for the project. The CPM shall provide the Director of Planning and Natural Resources Department at least 30 days to review the plan and provide comments to the applicant and the CPM.

b. If the CPM determines the light pollution control plan requires a revision, the project owner shall provide to the CPM a plan with the specified revision(s) for approval by the CPM before any action or activity with the vendor is executed. Any revision to the plan must be approved by the CPM.

c. The project owner shall notify the CPM when the installation of the luminaires has been completed and are ready for inspection. After inspection if the CPM requires a modification to a luminaire(s) (e.g., design, installation, location), the project owner shall have 30 days after receiving the notification to complete the modification and request a follow-up inspection.

d. If a light and glare complaint is filed with the project owner within 48 hours of receiving the complaint, the project owner shall supply the CPM with a completed complaint resolution form report as specified in the Compliance Conditions, a proposal to resolve the complaint and time schedule for resolution. The project owner shall notify the CPM within 48 hours after completing/resolving the complaint.

5.15.7 References

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Key Observation Point Evaluation Worksheet
Summary Sheet for Worksheet Tables

Key Observation Point 1 - State Highway 14, South of the Dawn Road Overpass

LANDSCAPE			
Table 3 LANDSCAPE CHARACTER	Aesthetic Aspect		See attached Table 3.
	Perceptual Aspect		
	Basic Design Element		
	Landscape	**Rating**	Write the rating selected in the attached Table 4.
Table 4 UNITY	Rarity	**Low to Moderate**	
	Detractors	**Low to Moderate**	
	Distinctiveness	**Low to Moderate**	
	Diversity	**Moderate**	
	Integrity	**Moderate to High**	
	Rating	**Checkbox**	Check (√) the rating selected in the attached Tables 5 and 6.
Table 5 PUBLIC VIEW	High		
	Moderate		
	Low	√	
	None		
Table 6 VISIBILITY	Dominant		
	High	√	
	Moderate to High		
	Moderate		
	Low to Moderate		
	Low		

PROJECT PROMINENCE			
Table 7 Basic Design Element Contrast			
Basic Design Element	**Rating**	**Weight**	**Points**
Color	Strong = 3	x 3	3
	Moderate = 2		
	Weak = 1		
	None = 0		
Form	Strong = 3	x 2	6
	Moderate = 2		
	Weak = 1		
	None = 0		
Line	Strong = 3	x 1	2
	Moderate = 2		
	Weak = 1		
	None = 0		
Texture	Strong = 3	x 1	2
	Moderate = 2		
	Weak = 1		
	None = 0		
		Maximum 21 points	**13**

Table 8 SCALE DOMINANCE		
Rating		**Points**
Dominant	The project is the major object in the landscape and occupies a large part of the landscape.	12
Codominant	The project is one of the major objects in the landscape or is the major object or area in a panoramic landscape.	8
Subordinate	The project is of significant size but occupies a minor part of the landscape.	4
Insignificant	The project is a small object occupying an exceedingly small area in the landscape.	0
	Single highest points / Maximum 12 points	**8**

Table 9 SPATIAL DOMINANCE			
Category	**Rating**	**Single Highest Rating**	**Points**
Spatial composition of the landscape.	prominent	Dominant 2-3 categories rated prominent.	6
	significant		
	inconspicuous	Codominant 1 category rated prominent, or 2 categories rated significant.	4
Spatial position of the project.	prominent		
	significant		
	inconspicuous	Subordinate 1 category rated significant.	2
Backdrop to the project.	prominent		
		Insignificant All categories rated inconspicuous.	0
	inconspicuous		
		Single highest points / Maximum 6 points	**4**

Table 10 PROJECT PROMINENCE RATING	
Total Points	**Rating**
32-39	Severe
24-31	Strong
16-23	Moderate
8-15	Weak
0-7	Negligible
	Rating ≡ Strong

VISUAL ABSORPTION CAPABILITY			
Table 11 CAPABILITY **Table 12 ABSORPTION**	**Rating**	**Checkbox**	The existing landscape capability to absorb the physical change by the proposed project without an alteration to its landscape character.
	High		
	Moderate		
	Low	√	

Table 13 MAGNITUDE OF CHANGE		
		Checkbox
Dominant	Project commands or controls the view in the landscape.	
Prominent	Project stands out or is striking in the view in the landscape.	
Conspicuous	Project is clearly visible and noticeable in the view in the landscape.	
Apparent	Project visible or evident in the view in the landscape.	
Unobtrusive	Project indistinct or not obvious in the view in the landscape.	

Table 14 VISUAL CHARACTER OR QUALITY OF PUBLIC VIEW OF SITE AND ITS SURROUNDINGS		
CEQA Guidelines Level of Effect on the Environment	Significant Effect	
	Less Than Significant Effect	√

Key Observation Point Evaluation Tables
Full Evaluation Worksheet Tables Displayed

Key Observation Point 1

Table 3 LANDSCAPE CHARACTER

Aesthetic	Description										Check (√) the description that best identifies the aspect of the landscape.
Balance	harmonious		balanced	√	discordant		chaotic				
Complexity	uniform		simple	√	diverse		complex				
Dynamic	sweeping		spreading	√	disperse		channeled				
Enclosure	expansive	√	open		enclosed		constrained				
Pattern (two-dims.)	formal		organized		regular	√	random				
Perceptual											
Pleasure	beautiful		attractive		pleasant	√	unpleasant		nasty		
Security	intimate		comfortable		safe	√	unsettling		threatening		
Stimulus	inspiring		challenging		interesting		bland	√	monotonous		
Tranquility	peaceful		vacant		remote	√	inaccessible		busy		
Basic Design Element											
Color	monochrome		muted	√	colorful		garish		The basic design elements in a landscape are what create the aesthetic appeal that an individual responds to when viewing a space.		
Form	angular		curvilinear		horizontal		rounded	√			
Line	straight	√	curved		vertical		horizontal				
Texture	smooth		textured	√	rough		rugged				
Scale	intimate		small		large	√	vast				

Adapted from Carys Swanwick, "Landscape Character Assessment Guidance for England and Scotland," prepared for The Countryside Agency and Scottish Natural Heritage, 2002, pp. 30-36, and Christine Tudor, "An Approach to Landscape Character Assessment, Natural England, October 2014, pp. 42-43.

Table 4 UNITY

Landscape	Rating					Guidance
	High	High to Moderate	Moderate	Moderate to Low	Low	
Rarity	rare			√	common	Is this landscape unique or familiar in the region or state?
Detractors	many			√	few	Are there man-made and/or natural landscape features out of place?
Distinctiveness	distinct			√	indistinct	Is it easy to remember this landscape? Are patterns dramatic or take some detecting?
Diversity	orderly		√		muddled	Is there a recognizable order to the landscape features or are too many patterns overlapping?
Integrity	whole	√			remnant	What patterns in the landscape are evident? Are sections missing and to what extent?

Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 36.

Table 5 PUBLIC VIEW	
Rating	
High	
	Public view includes areas where the aesthetic value is protected by federal, state, county or city, law, ordinance, regulation, or standard. Public view includes federal, state, county, city designated areas of aesthetic, cultural, and recreational claim, such as: a park, outdoor recreation area, etc.; coastal or forest reserve, open space preserve, urban green space, etc.; scenic overlook, scenic river, scenic trail, etc.; historic building, district, or site; a site having a cultural resource. Public view includes a federal or state designated scenic byway, highway, or road; designated scenic highway or road of regional importance; a segment of travel route, such as a road, rail line, pedestrian and equestrian trail, bicycle path near a designated area of aesthetic claim and leading directly to it. View approaching an area of aesthetic, cultural, and recreational claim that may be closely related to the appreciation of the aesthetic, cultural, and recreational significance at that designation. Public view includes an urban residential use area and segment of road that serves as the primary access route to it within one mile.
Moderate	
	Public view includes undesignated but popularly used or appreciated area of aesthetic, cultural, and recreational claim of significance in the region. Public view includes a highway or road locally designated as a scenic route and of importance only to the local population, or informally designated as such in road atlases, road maps, and tour book guides. Public view includes segments of travel routes, such as roads, pedestrian and equestrian trails, bicycle paths that are near and are the primary access to a popularly used undesignated area important for their aesthetic, cultural, or recreational claim. Public view includes a segment of travel route near a designated area of aesthetic claim serving as a secondary access route to the area. Public view includes a rural residential use area and segment of road that serves as the primary access route to it within one mile. Public view includes a maintained religious facility or cemetery.
Low	
√	Public view includes an agricultural, commercial, industrial, manufacturing, research and development intensive land use area. Public view includes a small aggregation of dwellings.
None	
	No public view.
Adapted from Aspen Environmental Group, “Final Environmental Impact Report Tranquillon Ridge Oil and Gas Development Project” prepared for County of Santa Barbara Planning and Development. Santa Barbara, CA, April 2008, Vol. 1, pp. 5.13-5-6, and “Final Environmental Impact Report Southern California International Gateway Project,” Appendix B Aesthetics Visual Resource Methodology, Los Angeles Harbor Department, Los Angeles, CA, March 2013.	

Table 6 VISIBILITY	
Rating	
Dominant Dominates view because project would fill most of visual field for views in its general direction. Stark contrast in form, line, color, texture, luminance, or motion may contribute to view dominance.	An object with strong visual contrast that is of such enormous size that it occupies most of the visual field, and views of it cannot be avoided except by turning the head greater than 45 degrees from a direct view of the object. The object is the major focus of visual attention, and its large apparent size is a major factor in its view dominance. In addition to size, contrast in form, line, color, and texture, bright light sources, and moving objects associated with the project may contribute substantially to drawing viewer attention. The visual prominence of the project detracts noticeably from views of other landscape components.
High √ Strongly attracts visual attention of views in general direction of project. Attention may be drawn by stark contrast in form, line, color, or texture, luminance, or motion.	An object that is not of enormous size, but contrasts with the surrounding landscape components so strongly that it is a major focus of visual attention, drawing viewer attention immediately, and tending to hold viewer attention. In addition to stark contrast in form, line, color, and texture, bright light sources, and moving objects associated with the project may contribute substantially to drawing viewer attention. The visual prominence of project interferes noticeably with views of nearby landscape components.
Moderate to High Plainly visible, could not be missed by casual observer, but does not strongly attract visual attention, or dominate view because of apparent size, for views in general direction of project.	An object that is obvious and with enough size or contrast to compete with other landscape components, but with insufficient visual contrast to strongly attract visual attention and insufficient size to occupy most of the observer's visual field.
Moderate Visible after brief glance in general direction of project and unlikely to be missed by casual observer.	An object that can be easily detected after a brief look and would be visible to most casual observers, but without enough size or contrast to compete with major landscape components.
Low to Moderate Visible when scanning in general direction of project; otherwise, likely to be missed by casual observer.	An object that is very small and/or faint, but when the observer is scanning the horizon or looking more closely at an area can be detected without extended viewing. A casual observer could sometimes notice it; however, most people would not notice it without some active looking.
Low Visible only after extended, close viewing; otherwise, invisible.	An object that is near the extreme limit of visibility. A person who was not aware of it in advance and looking for it could not see it. Even under those circumstances, the object can only be seen after looking at it closely for an extended period.
Adapted from R.G. Sullivan, L.B. Kirchler, T. Lahti, S. Roche, K. Beckman, B. Cantwell, P. Richmond, "Wind Turbine Visibility and Visual Impact Threshold Distances in Western Landscapes," University of Chicago Argonne, LLC submitted to the National Association of Environmental Professionals 37th Annual Conference Proceedings, Portland, Oregon, May 21-24, 2012, p. 17.	

Table 7 BASIC DESIGN ELEMENT CONTRAST

Design Element	Rating[1]	Weight	Points	
Color	Strong = 3 Moderate = 2 Weak = 1 None = 0	x 3	3	Color is "the light-reflecting qualities of a project's surface (for example, dark or light, blue or gray) in relation to background colors."[2] "Colors that harmonize well seem to belong together and produce pleasing visual effects. Colors that do not harmonize are disturbing to the viewer."[3] Contrast in color depends on the exterior surface degree of lightness or darkness, gradation or variety of a color, and the degree of saturation or brilliance of a color in the project compared to those existing in the landscape.
Form	Strong = 3 Moderate = 2 Weak = 1 None = 0	x 2	6	Form is "the configuration and outline of the project in terms of masses, patterns, and linear elements. For example, a structure may have a bulky, vertical, geometric silhouette which contrasts with an irregular horizontal landscape of rolling hills."[4] Forms exist in three dimensions (height, length, width). For instance, if the shape is a square, its form is a cube. Forms that are bold, regular, solid, or vertical tend to prevail in the landscape. Contrast in form depends on how similar the form(s) of the project is to those that continue to exist in the landscape.
Line	Strong = 3 Moderate = 2 Weak = 1 None = 0	x 1	2	"Line is the path, real or imagined that the eye follows when perceiving abrupt differences when objects are aligned in a one-dimensional sequence."[5] "Line in the landscape is created by the edge between two materials, the outline or silhouette of a form, or a long linear feature."[6] Properties of lines include: straight, diagonal, curved, vertical, and horizontal. Contrast in line depends on edge types and interruption or introduction of edges, bands, and silhouette lines in the project compared to those existing in the landscape.
Texture	Strong = 3 Moderate = 2 Weak = 1 None = 0	x 1	2	Texture is "the aggregation of small forms or color mixtures into a continuous surface pattern; the aggregated parts are enough that they do not appear as discrete objects in the composition of the scene."[7] "Details of the surface pattern, as in smooth polished metal surfaces versus the rough, uneven textures of the foliage of trees and bushes"[8] Contrast in texture depends on the relative dimensions of the surface variations from large to small, spacing of surface variations, and the degree of uniform recurrence and symmetrical arrangement of the surface variation in the project to those existing in the landscape.
	Overall Rating[9]		+ 13	
	Maximum 21 points			

Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, CA, 1979.

[1] **Strong** — the project contrast demands attention will not be overlooked and is dominant in the landscape. **Moderate** — the project contrast begins to attract attention and begins to dominate the characteristic landscape. **Weak** — the project contrast can be seen but does not attract attention. **None** — the project contrast is not visible or perceived. (U.S. Department of Interior Bureau of Land Management Manual 8431-Visual Resources Contrast Rating, January 17, 1986.)

[2] Stephen R.J. Sheppard, *Visual Simulation A User's Guide For Architects, Engineers, And Planners*, Van Nostrand Reinhold, New York, 1989, p. 46.

[3] U.S. Department of Transportation Federal Highway Administration, "A Guide to Visual Quality in Noise Barrier Design," Chapter 3. Visual Design Principles, n.d.

[4] Sheppard, p. 46.

[5] U.S. Department of Interior Bureau of Land Management Manual 8431-1 Visual Resources Contrast Rating, January 17, 1986.

[6] Gail Hansen, "Basic Principles of Landscape Design." Florida Cooperative Extension Service Institute of Food and Agricultural Science, University of Florida, Gainesville, Florida, July 2010.

[7] U.S. Department of Interior Bureau of Land Management Manual 8431-1 Visual Resources Contrast Rating, January 17, 1986.

[8] Sheppard, p. 47.

[9] Overall Rating is for descriptive purpose: Strong — 1-3 ratings Strong or 3 ratings Moderate; Moderate — 1-2 ratings Moderate with no higher ratings; Weak — 1-3 ratings Weak with no higher ratings; None — all ratings None.

Table 8 SCALE DOMINANCE			
Rating			**Points**
Dominant	The project is the major object in the landscape and occupies a large portion of the landscape.		12
Codominant	The project is one of the major objects in the landscape, or it is the major object/area in a panoramic landscape.		8
Subordinate	The project is of significant size but occupies a minor part of the landscape.		4
Insignificant	The project is a small object occupying an exceedingly small area in the landscape.		0
	Single highest points	Maximum 12 points	8
Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, California, 1979.			

Table 9 SPATIAL DOMINANCE

Category			Single Highest Rating
Spatial composition of the landscape	"[T]he arrangement of objects and voids in the landscape can be categorized by their spatial composition …. Some compositions, especially those which are distinctly focal, enclosed, or feature-oriented, are more vulnerable to modifications than others, depending upon how strongly the spatial configuration draws the eye to certain locations."[1]		**Dominant** 2-3 categories rated prominent = 6 points **Codominant √** 1 category rated prominent, or 2 categories rated significant = 4 points **Subordinate** 1 category rated significant = 2 points **Insignificant** All categories rated inconspicuous = 0 points
	Rating	**Description**	
	prominent	Feature[2], Focal[2], or Enclosed[2] landscape.	
	significant	Panoramic,[2] or weak focal, feature or enclosed landscape.	
	inconspicuous	Canopied,[2] indistinct or obscured landscape.	
Spatial position of the project	"Spatial position of the project in relation to the three-dimensional arrangement of objects and voids in the landscape. Important spatial aspects of the project include relationship to the skyline, location in topographic spaces such as focal valleys or broad plains, and position with regard to streetscapes and architectural arrangements."[3]		
	Rating	**Description**	
	prominent	High Level,[4] High Slope,[4] Interfluve[4]	
	significant	Low Level,[4] Lowslope,[4] Midslope[4]	
	inconspicuous	Basin Floor,[4] Footslope,[4] Toeslope[4]	
Backdrop to the project	"[T]he backdrop against which an object is seen affects its visual contrast. Modifications seen against the sky or water are usually more prominent than against a land backdrop."[5]		
	Rating	**Description**	
	prominent	All or a significant part of the project will be seen against sky or water.	
	inconspicuous	All or a significant part of the project will be seen against land.	
		Single highest points / Maximum 6 points	4

Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, California, 1979.

[1] U.S. Department of Interior Bureau of Land Management Manual H-8431-1 Visual Resources Contrast Rating, January 17, 1986.

[2] **Canopied** — landscape where features overhead (above eye level) create a canopy or ceiling. **Enclosed** — a space, large or small surrounded by continuous grouping of objects creating walls and floor. It may have a large vertical dimension, but typically a restricted horizontal one. **Feature** — landscape dominated by a feature or a group of objects in the distance to which the eye is drawn. **Focal** — converging lines in the landscape or progressions of aligned objects lead the eye to a focal point in the landscape. **Panoramic** — a broad horizontal composition. Little or no sense of boundary restriction; no apparent limit to the view. Foreground or middleground objects do not substantially block viewing of background objects. (U.S. Department of Interior Bureau of Land Management Manual H-8431-1 Visual Resources Contrast Rating, January 17, 1986.)

[3] Stephen R.J. Sheppard, *Visual Simulation A User's Guide For Architects, Engineers, And Planners*, Van Nostrand Reinhold, New York, 1989, p. 46.

[4] **Basin Floor** — nearly level to gently sloping, bottom surface of an intermontane basin. **Footslope** — the gently inclined hillslope at the foot of a hill. **High Level** — level top of plateau. **High Slope** — geomorphic part that forms the uppermost inclined surface at the top of a slope (e.g., shoulder slope, upper slope). **Interfluve** — linear top of ridge, hill or mountain. **Low Level** — valley floor, or shoreline being the former position of an alluvial plain, lake, or shore. **Lowslope** — inner gently inclined surface at the base of a slope. Surface profile is generally concave and a transition between midslope or backslope, and toeslope. **Midslope** — intermediate slope position between high and low (e.g., middle slope). (Adapted from T. Liang [1951]; J.B. Dalrymple, R.J. Blong, and A. Conacher. [1968]) **Toeslope** — the gently inclined surface at the base of a hillslope. Toeslope in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors. (USDA Soil Survey Manual Handbook No. 18, issued March 2017 as amended February 2018).

[5] U.S. Department of Interior Bureau of Land Management Manual H-8431-1.

Table 11 CAPABILITY							
Category	For each category check (√) the rating that best describes the existing landscape.						
		Rating					
		High		**Moderate**		**Low**	
Topography		High amount of topographic diversity and variety.		Moderate amount of topographic diversity and variety.		Low amount of topographic diversity and variety.	√
Land Use Pattern	If project in rural landscape	Small natural or vegetated areas. Man-made structures dominant in the view.		Natural areas of local significance. Man-made structures widespread but not dominant in the view.		Remote natural areas of regional significance. Man-made structures and features limited and scattered.	√
	If project in urban landscape	Developed areas including commercial development. Large-scale infrastructure or structures may be common and more dominant.		Suburban or mostly developed areas with components of local importance. Large-scale infrastructure or structures may be visible but not dominant.		Clustered development surrounded by rural scattered development. Large-scale infrastructure or structures limited and scattered.	
Visual Variety		Landscape exhibits a high degree of visual variety in terms of the landscape basic elements of form, line, color and texture may also exhibit high degree of variety in landforms and vegetation.		Landscape exhibits a moderate degree of visual variety in terms of the landscape basic elements of form, line, color and texture may also exhibit moderate variety in landforms and vegetation.		Landscape exhibits a low degree of visual variety in terms of the landscape basic elements of form, line, color and texture may also exhibit minimal variety in landforms and vegetation.	√
Major Focal Points or Features		Focal points or features in the viewshed that are either natural or man-made, commonly found, minimal local importance/value, or contribute little to the character of the landscape or are indistinct.	√	Focal points or features in the viewshed that are either natural or man-made, somewhat commonly found, local importance/value, or make a minor contribution to the character of the landscape.		Focal points or features in the viewshed that are either natural or man-made and are unusual or rare, regional importance/value, or make a major contribution to the character of the landscape or are somewhat distinctive.	

Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 17, and L. Blocker, T. Slider, J. Ruchman, J. Mosier, L. Kok, J. Silbemagle, J. Beard, D. Wagner, G. Brogan, D. Jones, N. Laughlinn, L. Anderson, "Landscape Aesthetic (AH 701-i) - Visual Absorption Capability (Appendix C)," United States Department of Agriculture Forest Service, 1995, pp. C-1-C-8.

Table 12 ABSORPTION	
Circle the applicable absorption rating for the project and the existing landscape: High (H), Moderate (M), Low (L).	
Exposure	**Rating**
What is the level of exposure of the project in the landscape? The higher the level of exposure, the lower the absorption.	H M (L)
What is the intensity of the observation of the project? The more the project is observed from certain intensive land uses, the lower its absorption (e.g., a view from a densely populated residential area versus a heavy manufacturing area).	(H) M L
What is the view distance to the project? The farther the viewing distance to the project from the vantage point, the lower its exposure, the higher its absorption. Is the project more than three miles away?	H M (L)
What is the project distance from an urban skyline or a natural skyline (e.g., high-rise buildings or a mountain range against a backdrop of sky)? The closer the project is to an urban or natural skyline, the lower its absorption.	(H) M L
What is the project topographic position in the landscape? As the project position increases along a vertical line or angle, its absorption decreases (e.g., toeslope to summit).	(H) M L
Focal Point	
Is the project near a focal point in the landscape? A focal point is a convergence of lines in the landscape or progressions of aligned objects that lead the eye to a point. A focal point gives the viewer something interesting to look at in the view. The closer the project is to a focal point, the greater viewer scrutiny, the lower the absorption.	(H) M L
Do the edges in the landscape have a diverse background but have the propensity to become a focal point? An edge is a transitional linear place where one space or landscape becomes part of another. An edge has a high absorption due to a diverse background, a low absorption due to the propensity to become a focal point (e.g., an urban fringe, a woodland edge, an alpine tree line, coastline).	H M (L)
Trees & Vegetation	
Are trees and vegetation in the landscape missing, deficient, or uniform? The greater the density of trees and vegetation, the greater the coverage, the greater the capacity of an area to absorb physical change.	H M (L)
What types of trees and vegetation are in the landscape? Tree and vegetation types vary the ability to absorb physical change. A uniformly tall, dense stand of trees has screening ability. Vegetation types such as evergreen shrubs and similar plants have greater absorption than dwarf shrubs, ornamental grasses, and grass-like plants. Trees and vegetation can provide high absorption in the foreground but lower absorption in the background.	H M (L)
Disturbed Surface Area	
What is the period of time to restore the project disturbed surface area to its pre-construction condition? The longer the time needed to restore the disturbed area to its original undisturbed condition, the lower the absorption: 1 year = high absorption, 2 to 3 years = moderate absorption, 3 years or more = low absorption.	H M (L)
Adapted from S. Amir, E. Gidalizon, "Expert-based method for the evaluation of visual absorption capacity of the landscape*," Journal of Environmental Management, 1990, Vol. 30, pp. 251-263, and W.C. Yeomans, "A Proposed Biophysical Approach to Visual Absorption Capability (VAC),[1]" Pacific Southwest Forest and Range Experimental Station, Berkeley, California, 1979 submitted to the National Conference on Applied Techniques for Analysis and Management of Visual Resource, Incline Village, Nevada, April 23-25, 1979, pp. 172-181.	

Table 13 MAGNITUDE OF CHANGE

Dominant	Prominent	Conspicuous	Apparent	Unobtrusive
Project commands or controls the view in the landscape.	Project stands out or is striking in the view in the landscape.	Project is clearly visible and noticeable in the view in the landscape.	Project visible or evident in the view in the landscape.	Project indistinct or not obvious in the view in the landscape.
Project causes a very large alteration to the landscape or features within the landscape such that there is a fundamental change from the existing physical environment.	Project causes a large alteration to the landscape or features within the landscape such that there is an unmistakable change from the existing physical environment.	Project causes a moderate alteration to the landscape or features within the landscape such that there is a distinct change from the existing physical environment.	Project causes a small alteration to the landscape or features within the landscape such that there is a perceptible change from the existing physical environment.	Project causes a very small alteration to the landscape, or features within the landscape such that there is a de minimis change from the existing physical environment.

Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 20.

Table 14 VISUAL CHARACTER OR QUALITY OF PUBLIC VIEW OF SITE AND ITS SURROUNDINGS

Landscape		Project Prominence		Visual Absorption Capability	Magnitude Of Change		CEQA Guidelines Level Of Effect On The Environment (See Table 15)
Table	**Rating**	**Rating**		**Rating**			
Landscape Character	See Table 3	Severe		High	Dominant		Significant Effect
Unity	See Table 4	Strong	√		Prominent		
Public View	**Low**	Moderate		Moderate	Conspicuous	√	
Visibility	**High**	Weak		(Low)	Apparent		Less Than Significant Effect
		Negligible			Unobtrusive		

Table 15 CEQA GUIDELINES LEVEL OF EFFECT ON THE ENVIRONMENT

Significant Effect on the Environment "means a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic and aesthetic significance." (14 Cal. Code Regs., [CCR] § 15382) (Pub. Res. Code § 21060.5, 14 CCR § 15360) The physical change by the proposed project to the existing physical environment reaches the threshold of significance, "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, noncompliance with which means the effect will normally be determined to be significant by the [lead] agency…." (14 CCR § 15064.7[a])

Less Than Significant Effect with Mitigation Incorporated. The physical change by the proposed project to the existing physical environment reaches the threshold of significance, "... but (1) revisions in the project plans or proposals made by, or agreed to by, the applicant before the proposed [CEQA environmental document (e.g., Negative Declaration) is] released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effect on the environment would occur, and (2) there is no substantial evidence in light of the whole record before the public agency that the project, as revised, may have a significant effect on the environment." (Pub. Res. Code § 21064.5, 14 CCR § 15369.5) (Pub. Res. Code § 21002)

Less Than Significant Effect. The physical change by the proposed project to the existing physical environment does not reach the threshold of significance "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, ... compliance with which means the effect normally will be determined to be less than significant." (14 CCR § 15064.7[a])

Key Observation Point Evaluation Worksheet
Summary Sheet for Worksheet Tables

Key Observation Point 2 - State Route 14 Off-ramp at Dawn Road East

LANDSCAPE			
Table 3 LANDSCAPE CHARACTER	Aesthetic Aspect		See attached Table 3.
	Perceptual Aspect		
	Basic Design Element		
	Landscape	**Rating**	Write the rating selected in the attached Table 4.
Table 4 UNITY	Rarity	**Moderate to Low**	
	Detractors	**Low**	
	Distinctiveness	**Moderate to Low**	
	Diversity	**Moderate**	
	Integrity	**Moderate to High**	
	Rating	**Checkbox**	Check (√) the rating selected in the attached Tables 5 and 6.
Table 5 PUBLIC VIEW	High		
	Moderate		
	Low	√	
	None		
Table 6 VISIBILITY	Dominant	√	
	High		
	Moderate to High		
	Moderate		
	Low to Moderate		
	Low		

PROJECT PROMINENCE			
Table 7 Basic Design Element Contrast			
Basic Design Element	**Rating**	**Weight**	**Points**
Color	Strong = 3	x 3	6
	Moderate = 2		
	Weak = 1		
	None = 0		
Form	Strong = 3	x 2	6
	Moderate = 2		
	Weak = 1		
	None = 0		
Line	Strong = 3	x 1	3
	Moderate = 2		
	Weak = 1		
	None = 0		
Texture	Strong = 3	x 1	3
	Moderate = 2		
	Weak = 1		
	None = 0		
		Maximum 21 points	**18**

Table 8 SCALE DOMINANCE		
Rating		**Points**
Dominant	The project is the major object in the landscape and occupies a large part of the landscape.	12
Codominant	The project is one of the major objects in the landscape or is the major object or area in a panoramic landscape.	8
Subordinate	The project is of significant size but occupies a minor part of the landscape.	4
Insignificant	The project is a small object occupying an exceedingly small area in the landscape.	0
	Single highest points / Maximum 12 points	**12**

Table 9 SPATIAL DOMINANCE			
Category	**Rating**	**Single Highest Rating**	**Points**
Spatial composition of the landscape.	prominent	Dominant 2-3 categories rated prominent.	6
	significant		
	inconspicuous	Codominant 1 category rated prominent, or 2 categories rated significant.	4
Spatial position of the project.	prominent		
	significant		
	inconspicuous	Subordinate 1 category rated significant.	2
Backdrop to the project.	prominent		
		Insignificant All categories rated inconspicuous.	0
	inconspicuous		
		Single highest points / Maximum 6 points	**4**

Table 10 PROJECT PROMINENCE RATING	
Total Points	**Rating**
32-39	Severe
24-31	Strong
16-23	Moderate
8-15	Weak
0-7	Negligible
	Rating ≡ Severe

VISUAL ABSORPTION CAPABILITY

Table 11 CAPABILITY
Table 12 ABSORPTION

Rating	Checkbox
High	
Moderate	
Low	√

The existing landscape capability to absorb the physical change by the proposed project without an alteration to its landscape character.

Table 13 MAGNITUDE OF CHANGE		
		Checkbox
Dominant	Project commands or controls the view in the landscape.	√
Prominent	Project stands out or is striking in the view in the landscape.	
Conspicuous	Project is clearly visible and noticeable in the view in the landscape.	
Apparent	Project visible or evident in the view in the landscape.	
Unobtrusive	Project indistinct or not obvious in the view in the landscape.	

Table 14 VISUAL CHARACTER OR QUALITY OF PUBLIC VIEW OF SITE AND ITS SURROUNDINGS		
CEQA Guidelines Level of Effect on the Environment	Significant Effect	√
	Less Than Significant Effect	

Key Observation Point Evaluation Tables
Full Evaluation Worksheet Tables Displayed

Key Observation Point 2

Table 3 LANDSCAPE CHARACTER

Aesthetic	Description										Check (√) the description that best identifies the aspect of the landscape.
Balance	harmonious	√	balanced		discordant		chaotic				
Complexity	uniform	√	simple		diverse		complex				
Dynamic	sweeping	√	spreading		disperse		channeled				
Enclosure	expansive	√	open		enclosed		constrained				
Pattern (two-dims.)	formal		organized		regular	√	random				
Perceptual											
Pleasure	beautiful		attractive		pleasant	√	unpleasant		nasty		
Security	intimate		comfortable	√	safe		unsettling		threatening		
Stimulus	inspiring		challenging		interesting		bland	√	monotonous		
Tranquility	peaceful		vacant		remote	√	inaccessible		busy		
Basic Design Element											
Color	monochrome		muted	√	colorful		garish		The basic design elements in a landscape are what create the aesthetic appeal that an individual responds to when viewing a space.		
Form	angular	√	curvilinear		horizontal		rounded				
Line	straight		curved		vertical		horizontal	√			
Texture	smooth		textured	√	rough		rugged				
Scale	intimate		small		large		vast	√			

Adapted from Carys Swanwick, "Landscape Character Assessment Guidance for England and Scotland," prepared for The Countryside Agency and Scottish Natural Heritage, 2002, pp. 30-36, and Christine Tudor, "An Approach to Landscape Character Assessment, Natural England, October 2014, pp. 42-43.

Table 4 UNITY

Landscape	Rating					Guidance
	High	High to Moderate	Moderate	Moderate to Low	Low	
Rarity	rare			√	common	Is this landscape unique or familiar in the region or state?
Detractors	many				√ few	Are there man-made and/or natural landscape features out of place?
Distinctiveness	distinct			√	indistinct	Is it easy to remember this landscape? Are patterns dramatic or take some detecting?
Diversity	orderly		√		muddled	Is there a recognizable order to the landscape features or are too many patterns overlapping?
Integrity	whole	√			remnant	What patterns in the landscape are evident? Are sections missing and to what extent?

Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 36.

Table 5 PUBLIC VIEW	
Rating	
High	
	Public view includes areas where the aesthetic value is protected by federal, state, county or city, law, ordinance, regulation, or standard. Public view includes federal, state, county, city designated areas of aesthetic, cultural, and recreational claim, such as: a park, outdoor recreation area, etc.; coastal or forest reserve, open space preserve, urban green space, etc.; scenic overlook, scenic river, scenic trail, etc.; historic building, district, or site; a site having a cultural resource. Public view includes a federal or state designated scenic byway, highway, or road; designated scenic highway or road of regional importance; a segment of travel route, such as a road, rail line, pedestrian and equestrian trail, bicycle path near a designated area of aesthetic claim and leading directly to it. View approaching an area of aesthetic, cultural, and recreational claim that may be closely related to the appreciation of the aesthetic, cultural, and recreational significance at that designation. Public view includes an urban residential use area and segment of road that serves as the primary access route to it within one mile.
Moderate	
	Public view includes undesignated but popularly used or appreciated area of aesthetic, cultural, and recreational claim of significance in the region. Public view includes a highway or road locally designated as a scenic route and of importance only to the local population, or informally designated as such in road atlases, road maps, and tour book guides. Public view includes segments of travel routes, such as roads, pedestrian and equestrian trails, bicycle paths that are near and are the primary access to a popularly used undesignated area important for their aesthetic, cultural, or recreational claim. Public view includes a segment of travel route near a designated area of aesthetic claim serving as a secondary access route to the area. Public view includes a rural residential use area and segment of road that serves as the primary access route to it within one mile. Public view includes a maintained religious facility or cemetery.
Low	
✓	Public view includes an agricultural, commercial, industrial, manufacturing, research and development intensive land use area. Public view includes a small aggregation of dwellings.
None	
	No public view.
Adapted from Aspen Environmental Group, “Final Environmental Impact Report Tranquillon Ridge Oil and Gas Development Project” prepared for County of Santa Barbara Planning and Development. Santa Barbara, CA, April 2008, Vol. 1, pp. 5.13-5-6, and “Final Environmental Impact Report Southern California International Gateway Project,” Appendix B Aesthetics Visual Resource Methodology, Los Angeles Harbor Department, Los Angeles, CA, March 2013.	

Table 6 VISIBILITY	
Rating	
Dominant √ Dominates view because project would fill most of visual field for views in its general direction. Stark contrast in form, line, color, texture, luminance, or motion may contribute to view dominance.	An object with strong visual contrast that is of such enormous size that it occupies most of the visual field, and views of it cannot be avoided except by turning the head greater than 45 degrees from a direct view of the object. The object is the major focus of visual attention, and its large apparent size is a major factor in its view dominance. In addition to size, contrast in form, line, color, and texture, bright light sources, and moving objects associated with the project may contribute substantially to drawing viewer attention. The visual prominence of the project detracts noticeably from views of other landscape components.
High Strongly attracts visual attention of views in general direction of project. Attention may be drawn by stark contrast in form, line, color, or texture, luminance, or motion.	An object that is not of enormous size, but contrasts with the surrounding landscape components so strongly that it is a major focus of visual attention, drawing viewer attention immediately, and tending to hold viewer attention. In addition to stark contrast in form, line, color, and texture, bright light sources, and moving objects associated with the project may contribute substantially to drawing viewer attention. The visual prominence of project interferes noticeably with views of nearby landscape components.
Moderate to High Plainly visible, could not be missed by casual observer, but does not strongly attract visual attention, or dominate view because of apparent size, for views in general direction of project.	An object that is obvious and with enough size or contrast to compete with other landscape components, but with insufficient visual contrast to strongly attract visual attention and insufficient size to occupy most of the observer's visual field.
Moderate Visible after brief glance in general direction of project and unlikely to be missed by casual observer.	An object that can be easily detected after a brief look and would be visible to most casual observers, but without enough size or contrast to compete with major landscape components.
Low to Moderate Visible when scanning in general direction of project; otherwise, likely to be missed by casual observer.	An object that is very small and/or faint, but when the observer is scanning the horizon or looking more closely at an area can be detected without extended viewing. A casual observer could sometimes notice it; however, most people would not notice it without some active looking.
Low Visible only after extended, close viewing; otherwise, invisible.	An object that is near the extreme limit of visibility. A person who was not aware of it in advance and looking for it could not see it. Even under those circumstances, the object can only be seen after looking at it closely for an extended period.
Adapted from R.G. Sullivan, L.B. Kirchler, T. Lahti, S. Roche, K. Beckman, B. Cantwell, P. Richmond, "Wind Turbine Visibility and Visual Impact Threshold Distances in Western Landscapes," University of Chicago Argonne, LLC submitted to the National Association of Environmental Professionals 37th Annual Conference Proceedings, Portland, Oregon, May 21-24, 2012, p. 17.	

Table 7 BASIC DESIGN ELEMENT CONTRAST

Design Element	Rating[1]	Weight	Points	
Color	Strong = 3 Moderate = 2 Weak = 1 None = 0	x 3	6	Color is "the light-reflecting qualities of a project's surface (for example, dark or light, blue or gray) in relation to background colors."[2] "Colors that harmonize well seem to belong together and produce pleasing visual effects. Colors that do not harmonize are disturbing to the viewer."[3] Contrast in color depends on the exterior surface degree of lightness or darkness, gradation or variety of a color, and the degree of saturation or brilliance of a color in the project compared to those existing in the landscape.
Form	Strong = 3 Moderate = 2 Weak = 1 None = 0	x 2	6	Form is "the configuration and outline of the project in terms of masses, patterns, and linear elements. For example, a structure may have a bulky, vertical, geometric silhouette which contrasts with an irregular horizontal landscape of rolling hills."[4] Forms exist in three dimensions (height, length, width). For instance, if the shape is a square, its form is a cube. Forms that are bold, regular, solid, or vertical tend to prevail in the landscape. Contrast in form depends on how similar the form(s) of the project is to those that continue to exist in the landscape.
Line	Strong = 3 Moderate = 2 Weak = 1 None = 0	x 1	3	"Line is the path, real or imagined that the eye follows when perceiving abrupt differences when objects are aligned in a one-dimensional sequence."[5] "Line in the landscape is created by the edge between two materials, the outline or silhouette of a form, or a long linear feature."[6] Properties of lines include: straight, diagonal, curved, vertical, and horizontal. Contrast in line depends on edge types and interruption or introduction of edges, bands, and silhouette lines in the project compared to those existing in the landscape.
Texture	Strong = 3 Moderate = 2 Weak = 1 None = 0	x 1	3	Texture is "the aggregation of small forms or color mixtures into a continuous surface pattern; the aggregated parts are enough that they do not appear as discrete objects in the composition of the scene."[7] "Details of the surface pattern, as in smooth polished metal surfaces versus the rough, uneven textures of the foliage of trees and bushes"[8] Contrast in texture depends on the relative dimensions of the surface variations from large to small, spacing of surface variations, and the degree of uniform recurrence and symmetrical arrangement of the surface variation in the project to those existing in the landscape.
	Overall Rating[9]		+ 18	
	Maximum 21 points			

Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, CA, 1979.

[1] **Strong** — the project contrast demands attention will not be overlooked and is dominant in the landscape. **Moderate** — the project contrast begins to attract attention and begins to dominate the characteristic landscape. **Weak** — the project contrast can be seen but does not attract attention. **None** — the project contrast is not visible or perceived. (U.S. Department of Interior Bureau of Land Management Manual 8431-Visual Resources Contrast Rating, January 17, 1986.)

[2] Stephen R.J. Sheppard, *Visual Simulation A User's Guide For Architects, Engineers, And Planners*, Van Nostrand Reinhold, New York, 1989, p. 46.

[3] U.S. Department of Transportation Federal Highway Administration, "A Guide to Visual Quality in Noise Barrier Design," Chapter 3. Visual Design Principles, n.d.

[4] Sheppard, p. 46.

[5] U.S. Department of Interior Bureau of Land Management Manual 8431-1 Visual Resources Contrast Rating, January 17, 1986.

[6] Gail Hansen, "Basic Principles of Landscape Design." Florida Cooperative Extension Service Institute of Food and Agricultural Science, University of Florida, Gainesville, Florida, July 2010.

[7] U.S. Department of Interior Bureau of Land Management Manual 8431-1 Visual Resources Contrast Rating, January 17, 1986.

[8] Sheppard, p. 47.

[9] Overall Rating is for descriptive purpose: Strong — 1-3 ratings Strong or 3 ratings Moderate; Moderate — 1-2 ratings Moderate with no higher ratings; Weak — 1-3 ratings Weak with no higher ratings; None — all ratings None.

Table 8 SCALE DOMINANCE			
Rating			**Points**
Dominant	The project is the major object in the landscape and occupies a large portion of the landscape.		12
Codominant	The project is one of the major objects in the landscape, or it is the major object/area in a panoramic landscape.		8
Subordinate	The project is of significant size but occupies a minor part of the landscape.		4
Insignificant	The project is a small object occupying an exceedingly small area in the landscape.		0
	Single highest points	Maximum 12 points	12
Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, California, 1979.			

Table 9 SPATIAL DOMINANCE

Category			Single Highest Rating
Spatial composition of the landscape	"[T]he arrangement of objects and voids in the landscape can be categorized by their spatial composition .... Some compositions, especially those which are distinctly focal, enclosed, or feature-oriented, are more vulnerable to modifications than others, depending upon how strongly the spatial configuration draws the eye to certain locations."[1]		**Dominant** 2-3 categories rated prominent = 6 points **Codominant √** 1 category rated prominent, or 2 categories rated significant = 4 points **Subordinate** 1 category rated significant = 2 points **Insignificant** All categories rated inconspicuous = 0 points
	Rating	**Description**	
	prominent	Feature[2], Focal[2], or Enclosed[2] landscape.	
	significant	Panoramic,[2] or weak focal, feature or enclosed landscape.	
	inconspicuous	Canopied,[2] indistinct or obscured landscape.	
Spatial position of the project	"Spatial position of the project in relation to the three-dimensional arrangement of objects and voids in the landscape. Important spatial aspects of the project include relationship to the skyline, location in topographic spaces such as focal valleys or broad plains, and position with regard to streetscapes and architectural arrangements."[3]		
	Rating	**Description**	
	prominent	High Level,[4] High Slope,[4] Interfluve[4]	
	significant	Low Level,[4] Lowslope,[4] Midslope[4]	
	inconspicuous	Basin Floor,[4] Footslope,[4] Toeslope[4]	
Backdrop to the project	"[T]he backdrop against which an object is seen affects its visual contrast. Modifications seen against the sky or water are usually more prominent than against a land backdrop."[5]		
	Rating	**Description**	
	prominent	All or a significant part of the project will be seen against sky or water.	
	inconspicuous	All or a significant part of the project will be seen against land.	
		Single highest points / Maximum 6 points	4

Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, California, 1979.

[1] U.S. Department of Interior Bureau of Land Management Manual H-8431-1 Visual Resources Contrast Rating, January 17, 1986.

[2] **Canopied** — landscape where features overhead (above eye level) create a canopy or ceiling. **Enclosed** — a space, large or small surrounded by continuous grouping of objects creating walls and floor. It may have a large vertical dimension, but typically a restricted horizontal one. **Feature** — landscape dominated by a feature or a group of objects in the distance to which the eye is drawn. **Focal** — converging lines in the landscape or progressions of aligned objects lead the eye to a focal point in the landscape. **Panoramic** — a broad horizontal composition. Little or no sense of boundary restriction; no apparent limit to the view. Foreground or middleground objects do not substantially block viewing of background objects. (U.S. Department of Interior Bureau of Land Management Manual H-8431-1 Visual Resources Contrast Rating, January 17, 1986.)

[3] Stephen R.J. Sheppard, *Visual Simulation A User's Guide For Architects, Engineers, And Planners*, Van Nostrand Reinhold, New York, 1989, p. 46.

[4] **Basin Floor** — nearly level to gently sloping, bottom surface of an intermontane basin. **Footslope** — the gently inclined hillslope at the foot of a hill. **High Level** — level top of plateau. **High Slope** — geomorphic part that forms the uppermost inclined surface at the top of a slope (e.g., shoulder slope, upper slope). **Interfluve** — linear top of ridge, hill or mountain. **Low Level** — valley floor, or shoreline being the former position of an alluvial plain, lake, or shore. **Lowslope** — inner gently inclined surface at the base of a slope. Surface profile is generally concave and a transition between midslope or backslope, and toeslope. **Midslope** — intermediate slope position between high and low (e.g., middle slope). (Adapted from T. Liang [1951]; J.B. Dalrymple, R.J. Blong, and A. Conacher. [1968]) **Toeslope** — the gently inclined surface at the base of a hillslope. Toeslope in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors. (USDA Soil Survey Manual Handbook No. 18, issued March 2017 as amended February 2018).

[5] U.S. Department of Interior Bureau of Land Management Manual H-8431-1.

Table 11 CAPABILITY							
Category	For each category check (√) the rating that best describes the existing landscape.						
		Rating					
		High		**Moderate**		**Low**	
Topography		High amount of topographic diversity and variety.		Moderate amount of topographic diversity and variety.		Low amount of topographic diversity and variety.	√
Land Use Pattern	If project in rural landscape	Small natural or vegetated areas. Man-made structures dominant in the view.		Natural areas of local significance. Man-made structures widespread but not dominant in the view.		Remote natural areas of regional significance. Man-made structures and features limited and scattered.	√
	If project in urban landscape	Developed areas including commercial development. Large-scale infrastructure or structures may be common and more dominant.		Suburban or mostly developed areas with components of local importance. Large-scale infrastructure or structures may be visible but not dominant.		Clustered development surrounded by rural scattered development. Large-scale infrastructure or structures limited and scattered.	
Visual Variety		Landscape exhibits a high degree of visual variety in terms of the landscape basic elements of form, line, color and texture may also exhibit high degree of variety in landforms and vegetation.		Landscape exhibits a moderate degree of visual variety in terms of the landscape basic elements of form, line, color and texture may also exhibit moderate variety in landforms and vegetation.		Landscape exhibits a low degree of visual variety in terms of the landscape basic elements of form, line, color and texture may also exhibit minimal variety in landforms and vegetation.	√
Major Focal Points or Features		Focal points or features in the viewshed that are either natural or man-made, commonly found, minimal local importance/value, or contribute little to the character of the landscape or are indistinct.	√	Focal points or features in the viewshed that are either natural or man-made, somewhat commonly found, local importance/value, or make a minor contribution to the character of the landscape.		Focal points or features in the viewshed that are either natural or man-made and are unusual or rare, regional importance/value, or make a major contribution to the character of the landscape or are somewhat distinctive.	

Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 17, and L. Blocker, T. Slider, J. Ruchman, J. Mosier, L. Kok, J. Silbemagle, J. Beard, D. Wagner, G. Brogan, D. Jones, N. Laughlinn, L. Anderson, "Landscape Aesthetic (AH 701-i) - Visual Absorption Capability (Appendix C)," United States Department of Agriculture Forest Service, 1995, pp. C-1-C-8.

Table 12 ABSORPTION	
Circle the applicable absorption rating for the project and the existing landscape: High (H), Moderate (M), Low (L).	
Exposure	**Rating**
What is the level of exposure of the project in the landscape? The higher the level of exposure, the lower the absorption.	H M (L)
What is the intensity of the observation of the project? The more the project is observed from certain intensive land uses, the lower its absorption (e.g., a view from a densely populated residential area versus a heavy manufacturing area).	H M (L)
What is the view distance to the project? The farther the viewing distance to the project from the vantage point, the lower its exposure, the higher its absorption. Is the project more than three miles away?	H M (L)
What is the project distance from an urban skyline or a natural skyline (e.g., high-rise buildings or a mountain range against a backdrop of sky)? The closer the project is to an urban or natural skyline the lower its absorption.	(H) M L
What is the project topographic position in the landscape? As the project position increases along a vertical line or angle, its absorption decreases (e.g., toeslope to summit).	(H) M L
Focal Point	
Is the project near a focal point in the landscape? A focal point is a convergence of lines in the landscape or progressions of aligned objects that lead the eye to a point. A focal point gives the viewer something interesting to look at in the view. The closer the project is to a focal point, the greater viewer scrutiny, the lower the absorption.	H (M) L
Do the edges in the landscape have a diverse background but have the propensity to become a focal point? An edge is a transitional linear place where one space or landscape becomes part of another. An edge has a high absorption due to a diverse background, a low absorption due to the propensity to become a focal point (e.g., an urban fringe, a woodland edge, an alpine tree line, coastline).	H M (L)
Trees & Vegetation	
Are trees and vegetation in the landscape missing, deficient, or uniform? The greater the density of trees and vegetation, the greater the coverage, the greater the capacity of an area to absorb physical change.	H M (L)
What type(s) of trees and vegetation are in the landscape? Tree and vegetation types vary the ability to absorb physical change. A uniformly tall, dense stand of trees has screening ability. Vegetation types such as evergreen shrubs and similar plants have greater absorption than dwarf shrubs, ornamental grasses, and grass-like plants. Trees and vegetation can provide high absorption in the foreground but lower absorption in the background.	H M (L)
Disturbed Surface Area	
What is the period of time to restore the project disturbed surface area to its pre-construction condition? The longer the time needed to restore the disturbed area to its original undisturbed condition, the lower the absorption: 1 year = high absorption, 2 to 3 years = moderate absorption, 3 years or more = low absorption.	H M (L)
Adapted from S. Amir, E. Gidalizon, "Expert-based method for the evaluation of visual absorption capacity of the landscape*," Journal of Environmental Management, 1990, Vol. 30, pp. 251-263, and W.C. Yeomans, "A Proposed Biophysical Approach to Visual Absorption Capability (VAC),[1]" Pacific Southwest Forest and Range Experimental Station, Berkeley, California, 1979 submitted to the National Conference on Applied Techniques for Analysis and Management of Visual Resource, Incline Village, Nevada, April 23-25, 1979, pp. 172-181.	

Table 13 MAGNITUDE OF CHANGE				
Dominant	**Prominent**	**Conspicuous**	**Apparent**	**Unobtrusive**
Project commands or controls the view in the landscape. Project causes a very large alteration to the landscape or features within the landscape such that there is a fundamental change from the existing physical environment.	Project stands out or is striking in the view in the landscape. Project causes a large alteration to the landscape or features within the landscape such that there is an unmistakable change from the existing physical environment.	Project is clearly visible and noticeable in the view in the landscape. Project causes a moderate alteration to the landscape or features within the landscape such that there is a distinct change from the existing physical environment.	Project visible or evident in the view in the landscape. Project causes a small alteration to the landscape or features within the landscape such that there is a perceptible change from the existing physical environment.	Project indistinct or not obvious in the view in the landscape. Project causes a very small alteration to the landscape, or features within the landscape such that there is a de minimis change from the existing physical environment.
Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 20.				

Table 14 VISUAL CHARACTER OR QUALITY OF PUBLIC VIEW OF SITE AND ITS SURROUNDINGS							
Landscape		**Project Prominence**		**Visual Absorption Capability**	**Magnitude Of Change**		**CEQA Guidelines Level Of Effect On The Environment** (See Table 15)
Table	**Rating**	**Rating**		**Rating**			
Landscape Character	See Table 3	Severe	√	High	Dominant	√	Significant Effect
Unity	See Table 4	Strong			Prominent		
Public View	**Low**	Moderate		Moderate	Conspicuous		
Visibility	**Dominant**	Weak		(Low)	Apparent		Less Than Significant Effect
		Negligible			Unobtrusive		

Table 15 CEQA GUIDELINES LEVEL OF EFFECT ON THE ENVIRONMENT

Significant Effect on the Environment "means a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic and aesthetic significance." (14 Cal. Code Regs., [CCR] § 15382) (Pub. Res. Code § 21060.5, 14 CCR § 15360) The physical change by the proposed project to the existing physical environment reaches the threshold of significance, "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, noncompliance with which means the effect will normally be determined to be significant by the [lead] agency...." (14 CCR § 15064.7[a])

Less Than Significant Effect with Mitigation Incorporated. The physical change by the proposed project to the existing physical environment reaches the threshold of significance, "... but (1) revisions in the project plans or proposals made by, or agreed to by, the applicant before the proposed [CEQA environmental document (e.g., Negative Declaration) is] released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effect on the environment would occur, and (2) there is no substantial evidence in light of the whole record before the public agency that the project, as revised, may have a significant effect on the environment." (Pub. Res. Code § 21064.5, 14 CCR § 15369.5) (Pub. Res. Code § 21002)

Less Than Significant Effect. The physical change by the proposed project to the existing physical environment does not reach the threshold of significance "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, ... compliance with which means the effect normally will be determined to be less than significant." (14 CCR § 15064.7[a])

Key Observation Point Evaluation Worksheet
Summary Sheet for Worksheet Tables

Key Observation Point 3 - 10th Street West, Parallel To The Project Site

LANDSCAPE			
Table 3 LANDSCAPE CHARACTER	Aesthetic Aspect		See attached Table 3.
	Perceptual Aspect		
	Basic Design Element		
	Landscape	**Rating**	Write the rating selected in the attached Table 4.
Table 4 UNITY	Rarity	**Low**	
	Detractors	**Moderate to Low**	
	Distinctiveness	**Moderate to Low**	
	Diversity	**Moderate**	
	Integrity	**Moderate to High**	
	Rating	**Checkbox**	Check (√) the rating selected in the attached Tables 5 and 6.
Table 5 PUBLIC VIEW	High		
	Moderate		
	Low	√	
	None		
Table 6 VISIBILITY	Dominant	√	
	High		
	Moderate to High		
	Moderate		
	Low to Moderate		
	Low		

PROJECT PROMINENCE			
Table 7 Basic Design Element Contrast			
Basic Design Element	**Rating**	**Weight**	**Points**
Color	Strong = 3	x 3	6
	Moderate = 2		
	Weak = 1		
	None = 0		
Form	Strong = 3	x 2	6
	Moderate = 2		
	Weak = 1		
	None = 0		
Line	Strong = 3	x 1	3
	Moderate = 2		
	Weak = 1		
	None = 0		
Texture	Strong = 3	x 1	3
	Moderate = 2		
	Weak = 1		
	None = 0		
		Maximum 21 points	**18**

Table 8 SCALE DOMINANCE		
Rating		**Points**
Dominant	The project is the major object in the landscape and occupies a large part of the landscape.	12
Codominant	The project is one of the major objects in the landscape or is the major object or area in a panoramic landscape.	8
Subordinate	The project is of significant size but occupies a minor part of the landscape.	4
Insignificant	The project is a small object occupying an exceedingly small area in the landscape.	0
	Single highest points / Maximum 12 points	**8**

Table 9 SPATIAL DOMINANCE			
Category	**Rating**	**Single Highest Rating**	**Points**
Spatial composition of the landscape.	prominent / significant	Dominant 2-3 categories rated prominent.	6
	inconspicuous	Codominant 1 category rated prominent, or 2 categories rated significant.	4
Spatial position of the project.	prominent / significant / inconspicuous		
Backdrop to the project.	prominent / inconspicuous	Subordinate 1 category rated significant.	2
		Insignificant All categories rated inconspicuous.	0
		Single highest points / Maximum 6 points	**4**

Table 10 PROJECT PROMINENCE RATING	
Total Points	**Rating**
32-39	Severe
24-31	Strong
16-23	Moderate
8-15	Weak
0-7	Negligible
	Rating ≡ Strong

VISUAL ABSORPTION CAPABILITY			
Table 11 CAPABILITY **Table 12 ABSORPTION**	**Rating**	**Checkbox**	The existing landscape capability to absorb the physical change by the proposed project without an alteration to its landscape character.
	High		
	Moderate		
	Low	√	

Table 13 MAGNITUDE OF CHANGE		
		Checkbox
Dominant	Project commands or controls the view in the landscape.	√
Prominent	Project stands out or is striking in the view in the landscape.	
Conspicuous	Project is clearly visible and noticeable in the view in the landscape.	
Apparent	Project visible or evident in the view in the landscape.	
Unobtrusive	Project indistinct or not obvious in the view in the landscape.	

Table 14 VISUAL CHARACTER OR QUALITY OF PUBLIC VIEW OF SITE AND ITS SURROUNDINGS		
CEQA Guidelines Level of Effect on the Environment	Significant Effect	√
	Less Than Significant Effect	

Key Observation Point Evaluation Tables
Full Evaluation Worksheet Tables Displayed

Key Observation Point 3

Table 3 LANDSCAPE CHARACTER											
Aesthetic	**Description**								Check (√) the description that best identifies the aspect of the landscape.		
Balance	harmonious		balanced	√	discordant		chaotic				
Complexity	uniform		simple	√	diverse		complex				
Dynamic	sweeping	√	spreading		disperse		channeled				
Enclosure	expansive	√	open		enclosed		constrained				
Pattern (two-dims.)	formal		organized		regular	√	random				
Perceptual											
Pleasure	beautiful		attractive		pleasant	√	unpleasant		nasty		
Security	intimate		comfortable		safe	√	unsettling		threatening		
Stimulus	inspiring		challenging		interesting		bland	√	monotonous		
Tranquility	peaceful		vacant		remote	√	inaccessible		busy		
Basic Design Element											
Color	monochrome		muted	√	colorful		garish		The basic design elements in a landscape are what create the aesthetic appeal that an individual responds to when viewing a space.		
Form	angular	√	curvilinear		horizontal		rounded				
Line	straight	√	curved		vertical		horizontal				
Texture	smooth		textured	√	rough		rugged				
Scale	intimate		small		large	√	vast				
Adapted from Carys Swanwick, "Landscape Character Assessment Guidance for England and Scotland," prepared for The Countryside Agency and Scottish Natural Heritage, 2002, pp. 30-36, and Christine Tudor, "An Approach to Landscape Character Assessment, Natural England, October 2014, pp. 42-43.											

Table 4 UNITY						
Landscape	**Rating**					**Guidance**
	High	**High to Moderate**	**Moderate**	**Moderate to Low**	**Low**	
Rarity	rare				√ common	Is this landscape unique or familiar in the region or state?
Detractors	many			√	few	Are there man-made and/or natural landscape features out of place?
Distinctiveness	distinct			√	indistinct	Is it easy to remember this landscape? Are patterns dramatic or take some detecting?
Diversity	orderly		√		muddled	Is there a recognizable order to the landscape features or are too many patterns overlapping?
Integrity	whole	√			remnant	What patterns in the landscape are evident? Are sections missing and to what extent?
Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 36.						

Table 5 PUBLIC VIEW	
Rating	
High	
	Public view includes areas where the aesthetic value is protected by federal, state, county or city, law, ordinance, regulation, or standard. Public view includes federal, state, county, city designated areas of aesthetic, cultural, and recreational claim, such as: a park, outdoor recreation area, etc.; coastal or forest reserve, open space preserve, urban green space, etc.; scenic overlook, scenic river, scenic trail, etc.; historic building, district, or site; a site having a cultural resource. Public view includes a federal or state designated scenic byway, highway, or road; designated scenic highway or road of regional importance; a segment of travel route, such as a road, rail line, pedestrian and equestrian trail, bicycle path near a designated area of aesthetic claim and leading directly to it. View approaching an area of aesthetic, cultural, and recreational claim that may be closely related to the appreciation of the aesthetic, cultural, and recreational significance at that designation. Public view includes an urban residential use area and segment of road that serves as the primary access route to it within one mile.
Moderate	
	Public view includes undesignated but popularly used or appreciated area of aesthetic, cultural, and recreational claim of significance in the region. Public view includes a highway or road locally designated as a scenic route and of importance only to the local population, or informally designated as such in road atlases, road maps, and tour book guides. Public view includes segments of travel routes, such as roads, pedestrian and equestrian trails, bicycle paths that are near and are the primary access to a popularly used undesignated area important for their aesthetic, cultural, or recreational claim. Public view includes a segment of travel route near a designated area of aesthetic claim serving as a secondary access route to the area. Public view includes a rural residential use area and segment of road that serves as the primary access route to it within one mile. Public view includes a maintained religious facility or cemetery.
Low	
√	Public view includes an agricultural, commercial, industrial, manufacturing, research and development intensive land use area. Public view includes a small aggregation of dwellings.
None	
	No public view.
Adapted from Aspen Environmental Group, “Final Environmental Impact Report Tranquillon Ridge Oil and Gas Development Project” prepared for County of Santa Barbara Planning and Development. Santa Barbara, CA, April 2008, Vol. 1, pp. 5.13-5-6, and “Final Environmental Impact Report Southern California International Gateway Project,” Appendix B Aesthetics Visual Resource Methodology, Los Angeles Harbor Department, Los Angeles, CA, March 2013.	

Table 6 VISIBILITY	
Rating	
Dominant √ Dominates view because project would fill most of visual field for views in its general direction. Stark contrast in form, line, color, texture, luminance, or motion may contribute to view dominance.	An object with strong visual contrast that is of such enormous size that it occupies most of the visual field, and views of it cannot be avoided except by turning the head greater than 45 degrees from a direct view of the object. The object is the major focus of visual attention, and its large apparent size is a major factor in its view dominance. In addition to size, contrast in form, line, color, and texture, bright light sources, and moving objects associated with the project may contribute substantially to drawing viewer attention. The visual prominence of the project detracts noticeably from views of other landscape components.
High Strongly attracts visual attention of views in general direction of project. Attention may be drawn by stark contrast in form, line, color, or texture, luminance, or motion.	An object that is not of enormous size, but contrasts with the surrounding landscape components so strongly that it is a major focus of visual attention, drawing viewer attention immediately, and tending to hold viewer attention. In addition to stark contrast in form, line, color, and texture, bright light sources, and moving objects associated with the project may contribute substantially to drawing viewer attention. The visual prominence of project interferes noticeably with views of nearby landscape components.
Moderate to High Plainly visible, could not be missed by casual observer, but does not strongly attract visual attention, or dominate view because of apparent size, for views in general direction of project.	An object that is obvious and with enough size or contrast to compete with other landscape components, but with insufficient visual contrast to strongly attract visual attention and insufficient size to occupy most of the observer's visual field.
Moderate Visible after brief glance in general direction of project and unlikely to be missed by casual observer.	An object that can be easily detected after a brief look and would be visible to most casual observers, but without enough size or contrast to compete with major landscape components.
Low to Moderate Visible when scanning in general direction of project; otherwise, likely to be missed by casual observer.	An object that is very small and/or faint, but when the observer is scanning the horizon or looking more closely at an area can be detected without extended viewing. A casual observer could sometimes notice it; however, most people would not notice it without some active looking.
Low Visible only after extended, close viewing; otherwise, invisible.	An object that is near the extreme limit of visibility. A person who was not aware of it in advance and looking for it could not see it. Even under those circumstances, the object can only be seen after looking at it closely for an extended period.
Adapted from R.G. Sullivan, L.B. Kirchler, T. Lahti, S. Roche, K. Beckman, B. Cantwell, P. Richmond, "Wind Turbine Visibility and Visual Impact Threshold Distances in Western Landscapes," University of Chicago Argonne, LLC submitted to the National Association of Environmental Professionals 37th Annual Conference Proceedings, Portland, Oregon, May 21-24, 2012, p. 17.	

Table 7 BASIC DESIGN ELEMENT CONTRAST

Design Element	Rating[1]	Weight	Points	
Color	Strong = 3 Moderate = 2 Weak = 1 None = 0	x 3	6	Color is "the light-reflecting qualities of a project's surface (for example, dark or light, blue or gray) in relation to background colors."[2] "Colors that harmonize well seem to belong together and produce pleasing visual effects. Colors that do not harmonize are disturbing to the viewer."[3] Contrast in color depends on the exterior surface degree of lightness or darkness, gradation or variety of a color, and the degree of saturation or brilliance of a color in the project compared to those existing in the landscape.
Form	Strong = 3 Moderate = 2 Weak = 1 None = 0	x 2	6	Form is "the configuration and outline of the project in terms of masses, patterns, and linear elements. For example, a structure may have a bulky, vertical, geometric silhouette which contrasts with an irregular horizontal landscape of rolling hills."[4] Forms exist in three dimensions (height, length, width). For instance, if the shape is a square, its form is a cube. Forms that are bold, regular, solid, or vertical tend to prevail in the landscape. Contrast in form depends on how similar the form(s) of the project is to those that continue to exist in the landscape.
Line	Strong = 3 Moderate = 2 Weak = 1 None = 0	x 1	3	"Line is the path, real or imagined that the eye follows when perceiving abrupt differences when objects are aligned in a one-dimensional sequence."[5] "Line in the landscape is created by the edge between two materials, the outline or silhouette of a form, or a long linear feature."[6] Properties of lines include: straight, diagonal, curved, vertical, and horizontal. Contrast in line depends on edge types and interruption or introduction of edges, bands, and silhouette lines in the project compared to those existing in the landscape.
Texture	Strong = 3 Moderate = 2 Weak = 1 None = 0	x 1	3	Texture is "the aggregation of small forms or color mixtures into a continuous surface pattern; the aggregated parts are enough that they do not appear as discrete objects in the composition of the scene."[7] "Details of the surface pattern, as in smooth polished metal surfaces versus the rough, uneven textures of the foliage of trees and bushes"[8] Contrast in texture depends on the relative dimensions of the surface variations from large to small, spacing of surface variations, and the degree of uniform recurrence and symmetrical arrangement of the surface variation in the project to those existing in the landscape.
	Overall Rating[9]		+ 18	
	Maximum 21 points			

Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, CA, 1979.

[1] **Strong** — the project contrast demands attention will not be overlooked and is dominant in the landscape. **Moderate** — the project contrast begins to attract attention and begins to dominate the characteristic landscape. **Weak** — the project contrast can be seen but does not attract attention. **None** — the project contrast is not visible or perceived. (U.S. Department of Interior Bureau of Land Management Manual 8431-Visual Resources Contrast Rating, January 17, 1986.)

[2] Stephen R.J. Sheppard, *Visual Simulation A User's Guide For Architects, Engineers, And Planners*, Van Nostrand Reinhold, New York, 1989, p. 46.

[3] U.S. Department of Transportation Federal Highway Administration, "A Guide to Visual Quality in Noise Barrier Design," Chapter 3. Visual Design Principles, n.d.

[4] Sheppard, p. 46.

[5] U.S. Department of Interior Bureau of Land Management Manual 8431-1 Visual Resources Contrast Rating, January 17, 1986.

[6] Gail Hansen, "Basic Principles of Landscape Design." Florida Cooperative Extension Service Institute of Food and Agricultural Science, University of Florida, Gainesville, Florida, July 2010.

[7] U.S. Department of Interior Bureau of Land Management Manual 8431-1 Visual Resources Contrast Rating, January 17, 1986.

[8] Sheppard, p. 47.

[9] Overall Rating is for descriptive purpose: Strong — 1-3 ratings Strong or 3 ratings Moderate; Moderate — 1-2 ratings Moderate with no higher ratings; Weak — 1-3 ratings Weak with no higher ratings; None — all ratings None.

Table 8 SCALE DOMINANCE			
Rating			**Points**
Dominant	The project is the major object in the landscape and occupies a large portion of the landscape.		12
Codominant	The project is one of the major objects in the landscape, or it is the major object/area in a panoramic landscape.		8
Subordinate	The project is of significant size but occupies a minor part of the landscape.		4
Insignificant	The project is a small object occupying an exceedingly small area in the landscape.		0
	Single highest points	Maximum 12 points	8
Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, California, 1979.			

Table 9 SPATIAL DOMINANCE

Category				Single Highest Rating
Spatial composition of the landscape	"[T]he arrangement of objects and voids in the landscape can be categorized by their spatial composition …. Some compositions, especially those which are distinctly focal, enclosed, or feature-oriented, are more vulnerable to modifications than others, depending upon how strongly the spatial configuration draws the eye to certain locations."[1]			**Dominant** 2-3 categories rated prominent = 6 points **Codominant** 1 category rated prominent, or 2 categories rated significant = 4 points **Subordinate** 1 category rated significant = 2 points **Insignificant** All categories rated inconspicuous = 0 points
	Rating	**Description**		
	prominent	Feature[2], Focal[2], or Enclosed[2] landscape.		
	significant	Panoramic,[2] or weak focal, feature or enclosed landscape.		
	inconspicuous	Canopied,[2] indistinct or obscured landscape.		
Spatial position of the project	"Spatial position of the project in relation to the three-dimensional arrangement of objects and voids in the landscape. Important spatial aspects of the project include relationship to the skyline, location in topographic spaces such as focal valleys or broad plains, and position with regard to streetscapes and architectural arrangements."[3]			
	Rating	**Description**		
	prominent	High Level,[4] High Slope,[4] Interfluve[4]		
	significant	Low Level,[4] Lowslope,[4] Midslope[4]		
	inconspicuous	Basin Floor,[4] Footslope,[4] Toeslope[4]		
Backdrop to the project	"[T]he backdrop against which an object is seen affects its visual contrast. Modifications seen against the sky or water are usually more prominent than against a land backdrop."[5]			
	Rating	**Description**		
	prominent	All or a significant part of the project will be seen against sky or water.		
	inconspicuous	All or a significant part of the project will be seen against land.		
		Single highest points	Maximum 6 points	4

Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, California, 1979.

[1] U.S. Department of Interior Bureau of Land Management Manual H-8431-1 Visual Resources Contrast Rating, January 17, 1986.

[2] **Canopied** — landscape where features overhead (above eye level) create a canopy or ceiling. **Enclosed** — a space, large or small surrounded by continuous grouping of objects creating walls and floor. It may have a large vertical dimension, but typically a restricted horizontal one. **Feature** — landscape dominated by a feature or a group of objects in the distance to which the eye is drawn. **Focal** — converging lines in the landscape or progressions of aligned objects lead the eye to a focal point in the landscape. **Panoramic** — a broad horizontal composition. Little or no sense of boundary restriction; no apparent limit to the view. Foreground or middleground objects do not substantially block viewing of background objects. (U.S. Department of Interior Bureau of Land Management Manual H-8431-1 Visual Resources Contrast Rating, January 17, 1986.)

[3] Stephen R.J. Sheppard, *Visual Simulation A User's Guide For Architects, Engineers, And Planners*, Van Nostrand Reinhold, New York, 1989, p. 46.

[4] **Basin Floor** — nearly level to gently sloping, bottom surface of an intermontane basin. **Footslope** — the gently inclined hillslope at the foot of a hill. **High Level** — level top of plateau. **High Slope** — geomorphic part that forms the uppermost inclined surface at the top of a slope (e.g., shoulder slope, upper slope). **Interfluve** — linear top of ridge, hill or mountain. **Low Level** — valley floor, or shoreline being the former position of an alluvial plain, lake, or shore. **Lowslope** — inner gently inclined surface at the base of a slope. Surface profile is generally concave and a transition between midslope or backslope, and toeslope. **Midslope** — intermediate slope position between high and low (e.g., middle slope). (Adapted from T. Liang [1951]; J.B. Dalrymple, R.J. Blong, and A. Conacher. [1968]) **Toeslope** — the gently inclined surface at the base of a hillslope. Toeslope in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors. (USDA Soil Survey Manual Handbook No. 18, issued March 2017 as amended February 2018).

[5] U.S. Department of Interior Bureau of Land Management Manual H-8431-1.

Table 11 CAPABILITY							
Category	For each category check (√) the rating that best describes the existing landscape.						
		Rating					
		High		**Moderate**		**Low**	
Topography		High amount of topographic diversity and variety.		Moderate amount of topographic diversity and variety.		Low amount of topographic diversity and variety.	√
Land Use Pattern	If project in rural landscape	Small natural or vegetated areas. Man-made structures dominant in the view.		Natural areas of local significance. Man-made structures widespread but not dominant in the view.		Remote natural areas of regional significance. Man-made structures and features limited and scattered.	√
	If project in urban landscape	Developed areas including commercial development. Large-scale infrastructure or structures may be common and more dominant.		Suburban or mostly developed areas with components of local importance. Large-scale infrastructure or structures may be visible but not dominant.		Clustered development surrounded by rural scattered development. Large-scale infrastructure or structures limited and scattered.	
Visual Variety		Landscape exhibits a high degree of visual variety in terms of the landscape basic elements of form, line, color and texture may also exhibit high degree of variety in landforms and vegetation.		Landscape exhibits a moderate degree of visual variety in terms of the landscape basic elements of form, line, color and texture may also exhibit moderate variety in landforms and vegetation.		Landscape exhibits a low degree of visual variety in terms of the landscape basic elements of form, line, color and texture may also exhibit minimal variety in landforms and vegetation.	√
Major Focal Points or Features		Focal points or features in the viewshed that are either natural or man-made, commonly found, minimal local importance/value, or contribute little to the character of the landscape or are indistinct.	√	Focal points or features in the viewshed that are either natural or man-made, somewhat commonly found, local importance/value, or make a minor contribution to the character of the landscape.		Focal points or features in the viewshed that are either natural or man-made and are unusual or rare, regional importance/value, or make a major contribution to the character of the landscape or are somewhat distinctive.	

Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 17, and L. Blocker, T. Slider, J. Ruchman, J. Mosier, L. Kok, J. Silbemagle, J. Beard, D. Wagner, G. Brogan, D. Jones, N. Laughlinn, L. Anderson, "Landscape Aesthetic (AH 701-i) - Visual Absorption Capability (Appendix C)," United States Department of Agriculture Forest Service, 1995, pp. C-1-C-8.

Table 12 ABSORPTION	
Circle the applicable absorption rating for the project and the existing landscape: High (H), Moderate (M), Low (L).	
Exposure	**Rating**
What is the level of exposure of the project in the landscape? The higher the level of exposure, the lower the absorption.	H M (L)
What is the intensity of the observation of the project? The more the project is observed from certain intensive land uses, the lower its absorption (e.g., a view from a densely populated residential area versus a heavy manufacturing area).	H M (L)
What is the view distance to the project? The farther the viewing distance to the project from the vantage point, the lower its exposure, the higher its absorption. Is the project more than three miles away?	H M (L)
What is the project distance from an urban skyline or a natural skyline (e.g., high-rise buildings or a mountain range against a backdrop of sky)? The closer the project is to an urban or natural skyline the lower its absorption.	H (M) L
What is the project topographic position in the landscape? As the project position increases along a vertical line or angle, its absorption decreases (e.g., toeslope to summit).	H M (L)
Focal Point	
Is the project near a focal point in the landscape? A focal point is a convergence of lines in the landscape or progressions of aligned objects that lead the eye to a point. A focal point gives the viewer something interesting to look at in the view. The closer the project is to a focal point, the greater viewer scrutiny, the lower the absorption.	H (M) L
Do the edges in the landscape have a diverse background but have the propensity to become a focal point? An edge is a transitional linear place where one space or landscape becomes part of another. An edge has a high absorption due to a diverse background, a low absorption due to the propensity to become a focal point (e.g., an urban fringe, a woodland edge, an alpine tree line, coastline).	H M (L)
Trees & Vegetation	
Are trees and vegetation in the landscape missing, deficient, or uniform? The greater the density of trees and vegetation, the greater the coverage, the greater the capacity of an area to absorb physical change.	H M (L)
What type(s) of trees and vegetation are in the landscape? Tree and vegetation types vary the ability to absorb physical change. A uniformly tall, dense stand of trees has screening ability. Vegetation types such as evergreen shrubs and similar plant have greater absorption than dwarf shrubs, ornamental grasses, and grass-like plants. Trees and vegetation can provide high absorption in the foreground but lower absorption in the background.	H M (L)
Disturbed Surface Area	
What is the period of time to restore the project disturbed surface area to its pre-construction condition? The longer the time needed to restore the disturbed area to its original undisturbed condition, the lower the absorption: 1 year = high absorption, 2 to 3 years = moderate absorption, 3 years or more = low absorption.	H M (L)
Adapted from S. Amir, E. Gidalizon, "Expert-based method for the evaluation of visual absorption capacity of the landscape*," Journal of Environmental Management, 1990, Vol. 30, pp. 251-263, and W.C. Yeomans, "A Proposed Biophysical Approach to Visual Absorption Capability (VAC),[1]" Pacific Southwest Forest and Range Experimental Station, Berkeley, California, 1979 submitted to the National Conference on Applied Techniques for Analysis and Management of Visual Resource, Incline Village, Nevada, April 23-25, 1979, pp. 172-181.	

Table 13 MAGNITUDE OF CHANGE				
Dominant	**Prominent**	**Conspicuous**	**Apparent**	**Unobtrusive**
Project commands or controls the view in the landscape. Project causes a very large alteration to the landscape or features within the landscape such that there is a fundamental change from the existing physical environment.	Project stands out or is striking in the view in the landscape. Project causes a large alteration to the landscape or features within the landscape such that there is an unmistakable change from the existing physical environment.	Project is clearly visible and noticeable in the view in the landscape. Project causes a moderate alteration to the landscape or features within the landscape such that there is a distinct change from the existing physical environment.	Project visible or evident in the view in the landscape. Project causes a small alteration to the landscape or features within the landscape such that there is a perceptible change from the existing physical environment.	Project indistinct or not obvious in the view in the landscape. Project causes a very small alteration to the landscape, or features within the landscape such that there is a de minimis change from the existing physical environment.
Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 20.				

Table 14 VISUAL CHARACTER OR QUALITY OF PUBLIC VIEW OF SITE AND ITS SURROUNDINGS

Landscape		**Project Prominence**		**Visual Absorption Capability**	**Magnitude Of Change**		**CEQA Guidelines Level Of Effect On The Environment** (See Table 15)
Table	**Rating**	**Rating**		**Rating**			
Landscape Character	See Table 3	Severe		High	Dominant	√	Significant Effect
Unity	See Table 4	Strong	√		Prominent		
Public View	**Low**	Moderate		Moderate	Conspicuous		
Visibility	**Dominant**	Weak		Low	Apparent		Less Than Significant Effect
		Negligible			Unobtrusive		

Table 15 CEQA GUIDELINES LEVEL OF EFFECT ON THE ENVIRONMENT
Significant Effect on the Environment "means a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic and aesthetic significance." (14 Cal. Code Regs., [CCR] § 15382) (Pub. Res. Code § 21060.5, 14 CCR § 15360) The physical change by the proposed project to the existing physical environment reaches the threshold of significance, "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, noncompliance with which means the effect will normally be determined to be significant by the [lead] agency...." (14 CCR § 15064.7[a]) **Less Than Significant Effect with Mitigation Incorporated**. The physical change by the proposed project to the existing physical environment reaches the threshold of significance, "... but (1) revisions in the project plans or proposals made by, or agreed to by, the applicant before the proposed [CEQA environmental document (e.g., Negative Declaration) is] released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effect on the environment would occur, and (2) there is no substantial evidence in light of the whole record before the public agency that the project, as revised, may have a significant effect on the environment." (Pub. Res. Code § 21064.5, 14 CCR § 15369.5) (Pub. Res. Code § 21002) **Less Than Significant Effect**. The physical change by the proposed project to the existing physical environment does not reach the threshold of significance "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, ... compliance with which means the effect normally will be determined to be less than significant." (14 CCR § 15064.7[a])

Key Observation Point Evaluation Worksheet
Summary Sheet for Worksheet Tables

Key Observation Point 4 – Rosamond Blvd. Near LADWP Easement

LANDSCAPE			
Table 3 LANDSCAPE CHARACTER	Aesthetic Aspect		See attached Table 3.
	Perceptual Aspect		
	Basic Design Element		
	Landscape	**Rating**	Write the rating selected in the attached Table 4.
Table 4 UNITY	Rarity	**Low**	
	Detractors	**Moderate to Low**	
	Distinctiveness	**Moderate to Low**	
	Diversity	**Moderate**	
	Integrity	**Moderate to High**	
	Rating	**Checkbox**	Check (√) the rating selected in the attached Tables 5 and 6.
Table 5 PUBLIC VIEW	High		
	Moderate		
	Low		
	None	√	
Table 6 VISIBILITY	Dominant		
	High	√	
	Moderate to High		
	Moderate		
	Low to Moderate		
	Low		

PROJECT PROMINENCE			
Table 7 Basic Design Element Contrast			
Basic Design Element	**Rating**	**Weight**	**Points**
Color	Strong = 3	x 3	6
	Moderate = 2		
	Weak = 1		
	None = 0		
Form	Strong = 3	x 2	6
	Moderate = 2		
	Weak = 1		
	None = 0		
Line	Strong = 3	x 1	2
	Moderate = 2		
	Weak = 1		
	None = 0		
Texture	Strong = 3	x 1	2
	Moderate = 2		
	Weak = 1		
	None = 0		
		Maximum 21 points	**16**

Table 8 SCALE DOMINANCE		
Rating		**Points**
Dominant	The project is the major object in the landscape and occupies a large part of the landscape.	12
Codominant	The project is one of the major objects in the landscape or is the major object or area in a panoramic landscape.	8
Subordinate	The project is of significant size but occupies a minor part of the landscape.	4
Insignificant	The project is a small object occupying an exceedingly small area in the landscape.	0
	Single highest points / Maximum 12 points	**8**

Table 9 SPATIAL DOMINANCE			
Category	**Rating**	**Single Highest Rating**	**Points**
Spatial composition of the landscape.	prominent	Dominant 2-3 categories rated prominent.	6
	significant		
	inconspicuous	Codominant 1 category rated prominent, or 2 categories rated significant.	4
Spatial position of the project.	prominent		
	significant		
	inconspicuous	Subordinate 1 category rated significant.	2
Backdrop to the project.	prominent		
		Insignificant All categories rated inconspicuous.	0
	inconspicuous		
		Single highest points / Maximum 6 points	**4**

Table 10 PROJECT PROMINENCE RATING	
Total Points	**Rating**
32-39	Severe
24-31	Strong
16-23	Moderate
8-15	Weak
0-7	Negligible
	Rating ≡ Strong

VISUAL ABSORPTION CAPABILITY			
Table 11 CAPABILITY **Table 12 ABSORPTION**	**Rating**	**Checkbox**	The existing landscape capability to absorb the physical change by the proposed project without an alteration to its landscape character.
	High		
	Moderate		
	Low	√	

Table 13 MAGNITUDE OF CHANGE		
		Checkbox
Dominant	Project commands or controls the view in the landscape.	
Prominent	Project stands out or is striking in the view in the landscape.	√
Conspicuous	Project is clearly visible and noticeable in the view in the landscape.	
Apparent	Project visible or evident in the view in the landscape.	
Unobtrusive	Project indistinct or not obvious in the view in the landscape.	

Table 14 VISUAL CHARACTER OR QUALITY OF PUBLIC VIEW OF SITE AND ITS SURROUNDINGS		
CEQA Guidelines Level of Effect on the Environment	Significant Effect	√
	Less Than Significant Effect	

Key Observation Point Evaluation Tables
Full Evaluation Worksheet Tables Displayed

Key Observation Point 4

Table 3 LANDSCAPE CHARACTER											
Aesthetic	**Description**								Check (√) the description that best identifies the aspect of the landscape.		
Balance	harmonious		balanced	√	discordant		chaotic				
Complexity	uniform		simple	√	diverse		complex				
Dynamic	sweeping		spreading	√	disperse		channeled				
Enclosure	expansive		open	√	enclosed		constrained				
Pattern (two-dims.)	formal		organized	√	regular		random				
Perceptual											
Pleasure	beautiful		attractive		pleasant	√	unpleasant		nasty		
Security	intimate		comfortable		safe	√	unsettling		threatening		
Stimulus	inspiring		challenging		interesting		bland	√	monotonous		
Tranquility	peaceful		vacant		remote	√	inaccessible		busy		
Basic Design Element											
Color	monochrome		muted	√	colorful		garish		The basic design elements in a landscape are what create the aesthetic appeal that an individual responds to when viewing a space.		
Form	angular	√	curvilinear		horizontal		rounded				
Line	straight	√	curved		vertical	√	horizontal				
Texture	smooth	√	textured		rough		rugged				
Scale	intimate		small		large	√	vast				

Adapted from Carys Swanwick, "Landscape Character Assessment Guidance for England and Scotland," prepared for The Countryside Agency and Scottish Natural Heritage, 2002, pp. 30-36, and Christine Tudor, "An Approach to Landscape Character Assessment, Natural England, October 2014, pp. 42-43.

Table 4 UNITY						
Landscape	**Rating**					**Guidance**
	High	**High to Moderate**	**Moderate**	**Moderate to Low**	**Low**	
Rarity	rare				√ common	Is this landscape unique or familiar in the region or state?
Detractors	many			√	few	Are there man-made and/or natural landscape features out of place?
Distinctiveness	distinct			√	indistinct	Is it easy to remember this landscape? Are patterns dramatic or take some detecting?
Diversity	orderly		√		muddled	Is there a recognizable order to the landscape features or are too many patterns overlapping?
Integrity	whole	√			remnant	What patterns in the landscape are evident? Are sections missing and to what extent?

Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 36.

Table 5 PUBLIC VIEW	
Rating	
High	
	Public view includes areas where the aesthetic value is protected by federal, state, county or city, law, ordinance, regulation, or standard. Public view includes federal, state, county, city designated areas of aesthetic, cultural, and recreational claim, such as: a park, outdoor recreation area, etc.; coastal or forest reserve, open space preserve, urban green space, etc.; scenic overlook, scenic river, scenic trail, etc.; historic building, district, or site; a site having a cultural resource. Public view includes a federal or state designated scenic byway, highway, or road; designated scenic highway or road of regional importance; a segment of travel route, such as a road, rail line, pedestrian and equestrian trail, bicycle path near a designated area of aesthetic claim and leading directly to it. View approaching an area of aesthetic, cultural, and recreational claim that may be closely related to the appreciation of the aesthetic, cultural, and recreational significance at that designation. Public view includes an urban residential use area and segment of road that serves as the primary access route to it within one mile.
Moderate	
	Public view includes undesignated but popularly used or appreciated area of aesthetic, cultural, and recreational claim of significance in the region. Public view includes a highway or road locally designated as a scenic route and of importance only to the local population, or informally designated as such in road atlases, road maps, and tour book guides. Public view includes segments of travel routes, such as roads, pedestrian and equestrian trails, bicycle paths that are near and are the primary access to a popularly used undesignated area important for their aesthetic, cultural, or recreational claim. Public view includes a segment of travel route near a designated area of aesthetic claim serving as a secondary access route to the area. Public view includes a rural residential use area and segment of road that serves as the primary access route to it within one mile. Public view includes a maintained religious facility or cemetery.
Low	
✓	Public view includes an agricultural, commercial, industrial, manufacturing, research and development intensive land use area. Public view includes a small aggregation of dwellings.
None	
	No public view.
Adapted from Aspen Environmental Group, “Final Environmental Impact Report Tranquillon Ridge Oil and Gas Development Project” prepared for County of Santa Barbara Planning and Development. Santa Barbara, CA, April 2008, Vol. 1, pp. 5.13-5-6, and “Final Environmental Impact Report Southern California International Gateway Project,” Appendix B Aesthetics Visual Resource Methodology, Los Angeles Harbor Department, Los Angeles, CA, March 2013.	

Table 6 VISIBILITY	
Rating	
Dominant Dominates view because project would fill most of visual field for views in its general direction. Stark contrast in form, line, color, texture, luminance, or motion may contribute to view dominance.	An object with strong visual contrast that is of such enormous size that it occupies most of the visual field, and views of it cannot be avoided except by turning the head greater than 45 degrees from a direct view of the object. The object is the major focus of visual attention, and its large apparent size is a major factor in its view dominance. In addition to size, contrast in form, line, color, and texture, bright light sources, and moving objects associated with the project may contribute substantially to drawing viewer attention. The visual prominence of the project detracts noticeably from views of other landscape components.
High √ Strongly attracts visual attention of views in general direction of project. Attention may be drawn by stark contrast in form, line, color, or texture, luminance, or motion.	An object that is not of enormous size, but contrasts with the surrounding landscape components so strongly that it is a major focus of visual attention, drawing viewer attention immediately, and tending to hold viewer attention. In addition to stark contrast in form, line, color, and texture, bright light sources, and moving objects associated with the project may contribute substantially to drawing viewer attention. The visual prominence of project interferes noticeably with views of nearby landscape components.
Moderate to High Plainly visible, could not be missed by casual observer, but does not strongly attract visual attention, or dominate view because of apparent size, for views in general direction of project.	An object that is obvious and with enough size or contrast to compete with other landscape components, but with insufficient visual contrast to strongly attract visual attention and insufficient size to occupy most of the observer's visual field.
Moderate Visible after brief glance in general direction of project and unlikely to be missed by casual observer.	An object that can be easily detected after a brief look and would be visible to most casual observers, but without enough size or contrast to compete with major landscape components.
Low to Moderate Visible when scanning in general direction of project; otherwise, likely to be missed by casual observer.	An object that is very small and/or faint, but when the observer is scanning the horizon or looking more closely at an area can be detected without extended viewing. A casual observer could sometimes notice it; however, most people would not notice it without some active looking.
Low Visible only after extended, close viewing; otherwise, invisible.	An object that is near the extreme limit of visibility. A person who was not aware of it in advance and looking for it could not see it. Even under those circumstances, the object can only be seen after looking at it closely for an extended period.
Adapted from R.G. Sullivan, L.B. Kirchler, T. Lahti, S. Roche, K. Beckman, B. Cantwell, P. Richmond, "Wind Turbine Visibility and Visual Impact Threshold Distances in Western Landscapes," University of Chicago Argonne, LLC submitted to the National Association of Environmental Professionals 37th Annual Conference Proceedings, Portland, Oregon, May 21-24, 2012, p. 17.	

Table 7 BASIC DESIGN ELEMENT CONTRAST

Design Element	Rating[1]	Weight	Points	
Color	Strong = 3 Moderate = 2 Weak = 1 None = 0	x 3	6	Color is "the light-reflecting qualities of a project's surface (for example, dark or light, blue or gray) in relation to background colors."[2] "Colors that harmonize well seem to belong together and produce pleasing visual effects. Colors that do not harmonize are disturbing to the viewer."[3] Contrast in color depends on the exterior surface degree of lightness or darkness, gradation or variety of a color, and the degree of saturation or brilliance of a color in the project compared to those existing in the landscape.
Form	Strong = 3 Moderate = 2 Weak = 1 None = 0	x 2	6	Form is "the configuration and outline of the project in terms of masses, patterns, and linear elements. For example, a structure may have a bulky, vertical, geometric silhouette which contrasts with an irregular horizontal landscape of rolling hills."[4] Forms exist in three dimensions (height, length, width). For instance, if the shape is a square, its form is a cube. Forms that are bold, regular, solid, or vertical tend to prevail in the landscape. Contrast in form depends on how similar the form(s) of the project is to those that continue to exist in the landscape.
Line	Strong = 3 Moderate = 2 Weak = 1 None = 0	x 1	2	"Line is the path, real or imagined that the eye follows when perceiving abrupt differences when objects are aligned in a one-dimensional sequence."[5] "Line in the landscape is created by the edge between two materials, the outline or silhouette of a form, or a long linear feature."[6] Properties of lines include: straight, diagonal, curved, vertical, and horizontal. Contrast in line depends on edge types and interruption, or introduction of edges, bands, and silhouette lines in the project compared to those existing in the landscape.
Texture	Strong = 3 Moderate = 2 Weak = 1 None = 0	x 1	2	Texture is "the aggregation of small forms or color mixtures into a continuous surface pattern; the aggregated parts are enough that they do not appear as discrete objects in the composition of the scene."[7] "Details of the surface pattern, as in smooth polished metal surfaces versus the rough, uneven textures of the foliage of trees and bushes"[8] Contrast in texture depends on the relative dimensions of the surface variations from large to small, spacing of surface variations, and the degree of uniform recurrence and symmetrical arrangement of the surface variation in the project to those existing in the landscape.
	Overall Rating[9]		+ 14	
	Maximum 21 points			

Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, CA, 1979.

[1] **Strong** — the project contrast demands attention will not be overlooked and is dominant in the landscape. **Moderate** — the project contrast begins to attract attention and begins to dominate the characteristic landscape. **Weak** — the project contrast can be seen but does not attract attention. **None** — the project contrast is not visible or perceived. (U.S. Department of Interior Bureau of Land Management Manual 8431-Visual Resources Contrast Rating, January 17, 1986.)

[2] Stephen R.J. Sheppard, *Visual Simulation A User's Guide For Architects, Engineers, And Planners*, Van Nostrand Reinhold, New York, 1989, p. 46.

[3] U.S. Department of Transportation Federal Highway Administration, "A Guide to Visual Quality in Noise Barrier Design," Chapter 3. Visual Design Principles, n.d.

[4] Sheppard, p. 46.

[5] U.S. Department of Interior Bureau of Land Management Manual 8431-1 Visual Resources Contrast Rating, January 17, 1986.

[6] Gail Hansen, "Basic Principles of Landscape Design." Florida Cooperative Extension Service Institute of Food and Agricultural Science, University of Florida, Gainesville, Florida, July 2010.

[7] U.S. Department of Interior Bureau of Land Management Manual 8431-1 Visual Resources Contrast Rating, January 17, 1986.

[8] Sheppard, p. 47.

[9] Overall Rating is for descriptive purpose: Strong — 1-3 ratings Strong or 3 ratings Moderate; Moderate — 1-2 ratings Moderate with no higher ratings; Weak — 1-3 ratings Weak with no higher ratings; None — all ratings None.

Table 8 SCALE DOMINANCE			
Rating			**Points**
Dominant	The project is the major object in the landscape and occupies a large portion of the landscape.		12
Codominant	The project is one of the major objects in the landscape, or it is the major object/area in a panoramic landscape.		8
Subordinate	The project is of significant size but occupies a minor part of the landscape.		4
Insignificant	The project is a small object occupying an exceedingly small area in the landscape.		0
	Single highest points	Maximum 12 points	8
Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, California, 1979.			

Table 9 SPATIAL DOMINANCE

Category			Single Highest Rating
Spatial composition of the landscape	"[T]he arrangement of objects and voids in the landscape can be categorized by their spatial composition .... Some compositions, especially those which are distinctly focal, enclosed, or feature-oriented, are more vulnerable to modifications than others, depending upon how strongly the spatial configuration draws the eye to certain locations."[1]		**Dominant** 2-3 categories rated prominent = 6 points **Codominant** 1 category rated prominent, or 2 categories rated significant = 4 points **Subordinate** 1 category rated significant = 2 points **Insignificant** All categories rated inconspicuous = 0 points
	Rating	**Description**	
	prominent	Feature[2], Focal[2], or Enclosed[2] landscape.	
	significant	Panoramic,[2] or weak focal, feature or enclosed landscape.	
	inconspicuous	Canopied,[2] indistinct or obscured landscape.	
Spatial position of the project	"Spatial position of the project in relation to the three-dimensional arrangement of objects and voids in the landscape. Important spatial aspects of the project include relationship to the skyline, location in topographic spaces such as focal valleys or broad plains, and position with regard to streetscapes and architectural arrangements."[3]		
	Rating	**Description**	
	prominent	High Level,[4] High Slope,[4] Interfluve[4]	
	significant	Low Level,[4] Lowslope,[4] Midslope[4]	
	inconspicuous	Basin Floor,[4] Footslope,[4] Toeslope[4]	
Backdrop to the project	"[T]he backdrop against which an object is seen affects its visual contrast. Modifications seen against the sky or water are usually more prominent than against a land backdrop."[5]		
	Rating	**Description**	
	prominent	All or a significant part of the project will be seen against sky or water.	
	inconspicuous	All or a significant part of the project will be seen against land.	
	Single highest points	Maximum 6 points	4

Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, California, 1979.

[1] U.S. Department of Interior Bureau of Land Management Manual H-8431-1 Visual Resources Contrast Rating, January 17, 1986.

[2] **Canopied** — landscape where features overhead (above eye level) create a canopy or ceiling. **Enclosed** — a space, large or small surrounded by continuous grouping of objects creating walls and floor. It may have a large vertical dimension, but typically a restricted horizontal one. **Feature** — landscape dominated by a feature or a group of objects in the distance to which the eye is drawn. **Focal** — converging lines in the landscape or progressions of aligned objects lead the eye to a focal point in the landscape. **Panoramic** — a broad horizontal composition. Little or no sense of boundary restriction; no apparent limit to the view. Foreground or middleground objects do not substantially block viewing of background objects. (U.S. Department of Interior Bureau of Land Management Manual H-8431-1 Visual Resources Contrast Rating, January 17, 1986.)

[3] Stephen R.J. Sheppard, *Visual Simulation A User's Guide For Architects, Engineers, And Planners*, Van Nostrand Reinhold, New York, 1989, p. 46.

[4] **Basin Floor** — nearly level to gently sloping, bottom surface of an intermontane basin. **Footslope** — the gently inclined hillslope at the foot of a hill. **High Level** — level top of plateau. **High Slope** — geomorphic part that forms the uppermost inclined surface at the top of a slope (e.g., shoulder slope, upper slope). **Interfluve** — linear top of ridge, hill or mountain. **Low Level** — valley floor, or shoreline being the former position of an alluvial plain, lake, or shore. **Lowslope** — inner gently inclined surface at the base of a slope. Surface profile is generally concave and a transition between midslope or backslope, and toeslope. **Midslope** — intermediate slope position between high and low (e.g., middle slope). (Adapted from T. Liang [1951]; J.B. Dalrymple, R.J. Blong, and A. Conacher. [1968]) **Toeslope** — the gently inclined surface at the base of a hillslope. Toeslope in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors. (USDA Soil Survey Manual Handbook No. 18, issued March 2017 as amended February 2018).

[5] U.S. Department of Interior Bureau of Land Management Manual H-8431-1.

Table 11 CAPABILITY							
Category	For each category check (√) the rating that best describes the existing landscape.						
		Rating					
		High		**Moderate**		**Low**	
Topography		High amount of topographic diversity and variety.		Moderate amount of topographic diversity and variety.		Low amount of topographic diversity and variety.	√
Land Use Pattern	If project in rural landscape	Small natural or vegetated areas. Man-made structures dominant in the view.		Natural areas of local significance. Man-made structures widespread but not dominant in the view.		Remote natural areas of regional significance. Man-made structures and features limited and scattered.	√
	If project in urban landscape	Developed areas including commercial development. Large-scale infrastructure or structures may be common and more dominant.		Suburban or mostly developed areas with components of local importance. Large-scale infrastructure or structures may be visible but not dominant.		Clustered development surrounded by rural scattered development. Large-scale infrastructure or structures limited and scattered.	
Visual Variety		Landscape exhibits a high degree of visual variety in terms of the landscape basic elements of form, line, color and texture may also exhibit high degree of variety in landforms and vegetation.		Landscape exhibits a moderate degree of visual variety in terms of the landscape basic elements of form, line, color and texture may also exhibit moderate variety in landforms and vegetation.		Landscape exhibits a low degree of visual variety in terms of the landscape basic elements of form, line, color and texture may also exhibit minimal variety in landforms and vegetation.	√
Major Focal Points or Features		Focal points or features in the viewshed that are either natural or man-made, commonly found, minimal local importance/value, or contribute little to the character of the landscape or are indistinct.	√	Focal points or features in the viewshed that are either natural or man-made, somewhat commonly found, local importance/value, or make a minor contribution to the character of the landscape.		Focal points or features in the viewshed that are either natural or man-made and are unusual or rare, regional importance/value, or make a major contribution to the character of the landscape or are somewhat distinctive.	

Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 17, and L. Blocker, T. Slider, J. Ruchman, J. Mosier, L. Kok, J. Silbemagle, J. Beard, D. Wagner, G. Brogan, D. Jones, N. Laughlinn, L. Anderson, "Landscape Aesthetic (AH 701-i) - Visual Absorption Capability (Appendix C)," United States Department of Agriculture Forest Service, 1995, pp. C-1-C-8.

Table 12 ABSORPTION	
Circle the applicable absorption rating for the project and the existing landscape; High (H), Moderate (M), Low (L).	
Exposure	**Rating**
What is the level of exposure of the project in the landscape? The higher the level of exposure, the lower the absorption.	H M (L)
What is the intensity of the observation of the project? The more the project is observed from certain intensive land uses, the lower its absorption (e.g., a view from a densely populated residential area versus a heavy manufacturing area).	H (M) L
What is the view distance to the project? The farther the viewing distance to the project from the vantage point, the lower its exposure, the higher its absorption. Is the project more than three miles away?	H M (L)
What is the project distance from an urban skyline or a natural skyline (e.g., high-rise buildings or a mountain range against a backdrop of sky)? The closer the project is to an urban or natural skyline, the lower its absorption.	(H) M L
What is the project topographic position in the landscape? As the project position increases along a vertical line or angle, its absorption decreases (e.g., toeslope to summit).	(H) M L
Focal Point	
Is the project near a focal point in the landscape? A focal point is a convergence of lines in the landscape or progressions f aligned objects that lead the eye to a point. A focal point gives the viewer something interesting to look at in the view. The closer the project is to a focal point, the greater viewer scrutiny, the lower the absorption.	(H) M L
Do the edges in the landscape have a diverse background but have the propensity to become a focal point? An edge is a transitional linear place where one space or landscape becomes part of another. An edge has a high absorption due to a diverse background, a low absorption due to the propensity to become a focal point (e.g., an urban fringe, a woodland edge, an alpine tree line, coastline).	H M (L)
Trees & Vegetation	
Are trees and vegetation in the landscape missing, deficient, or uniform? The greater the density of trees and vegetation, the greater the coverage, the greater the capacity of an area to absorb physical change.	H M (L)
What type(s) of trees and vegetation are in the landscape? Tree and vegetation types vary the ability to absorb physical change. A uniformly tall, dense stand of trees has screening ability. Vegetation types such as evergreen shrubs and similar plants have greater absorption than dwarf shrubs, ornamental grasses, and grass-like plants. Trees and vegetation can provide high absorption in the foreground but lower absorption in the background.	H M (L)
Disturbed Surface Area	
What is the period of time to restore the project disturbed surface area to its pre-construction condition? The longer the time needed to restore the disturbed area to its original undisturbed condition, the lower the absorption: 1 year = high absorption, 2 to 3 years = moderate absorption, 3 years or more = low absorption.	(H) M L
Adapted from S. Amir, E. Gidalizon, "Expert-based method for the evaluation of visual absorption capacity of the landscape*," Journal of Environmental Management, 1990, Vol. 30, pp. 251-263, and W.C. Yeomans, "A Proposed Biophysical Approach to Visual Absorption Capability (VAC),[1]" Pacific Southwest Forest and Range Experimental Station, Berkeley, California, 1979 submitted to the National Conference on Applied Techniques for Analysis and Management of Visual Resource, Incline Village, Nevada, April 23-25, 1979, pp. 172-181.	

Table 13 MAGNITUDE OF CHANGE				
Dominant	**Prominent**	**Conspicuous**	**Apparent**	**Unobtrusive**
Project commands or controls the view in the landscape. Project causes a very large alteration to the landscape or features within the landscape such that there is a fundamental change from the existing physical environment.	Project stands out or is striking in the view in the landscape. Project causes a large alteration to the landscape or features within the landscape such that there is an unmistakable change from the existing physical environment.	Project is clearly visible and noticeable in the view in the landscape. Project causes a moderate alteration to the landscape or features within the landscape such that there is a distinct change from the existing physical environment.	Project visible or evident in the view in the landscape. Project causes a small alteration to the landscape or features within the landscape such that there is a perceptible change from the existing physical environment.	Project indistinct or not obvious in the view in the landscape. Project causes a very small alteration to the landscape, or features within the landscape such that there is a de minimis change from the existing physical environment.
Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 20.				

Table 14 VISUAL CHARACTER OR QUALITY OF PUBLIC VIEW OF SITE AND ITS SURROUNDINGS							
Landscape		**Project Prominence**		**Visual Absorption Capability**	**Magnitude Of Change**		**CEQA Guidelines Level Of Effect On The Environment** (See Table 15)
Table	**Rating**	**Rating**		**Rating**			
Landscape Character	See Table 3	Severe		High	Dominant		Significant Effect
Unity	See Table 4	Strong	√		Prominent	√	
Public View	**Low**	Moderate		Moderate	Conspicuous		
Visibility	**High**	Weak		Low	Apparent		Less Than Significant Effect
		Negligible			Unobtrusive		

Table 15 CEQA GUIDELINES LEVEL OF EFFECT ON THE ENVIRONMENT

Significant Effect on the Environment "means a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic and aesthetic significance." (14 California Code of Regulations [CCR] § 15382) (Pub. Res. Code § 21060.5, 14 CCR § 15360) The physical change by the proposed project to the existing physical environment reaches the threshold of significance, "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, noncompliance with which means the effect will normally be determined to be significant by the [lead] agency...." (14 CCR § 15064.7[a])

Less Than Significant Effect with Mitigation Incorporated. The physical change by the proposed project to the existing physical environment reaches the threshold of significance, "... but (1) revisions in the project plans or proposals made by, or agreed to by, the applicant before the proposed [CEQA environmental document (e.g., Negative Declaration) is] released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effect on the environment would occur, and (2) there is no substantial evidence in light of the whole record before the public agency that the project, as revised, may have a significant effect on the environment." (Pub. Res. Code § 21064.5, 14 CCR § 15369.5) (Pub. Res. Code § 21002)

Less Than Significant Effect. The physical change by the proposed project to the existing physical environment does not reach the threshold of significance "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, ... compliance with which means the effect normally will be determined to be less than significant." (14 CCR § 15064.7[a])

5.16 Water Resources

Testimony of James Ackerman

5.16.1 Environmental Setting

The proposed Willow Rock Energy Storage Center (WRESC or project) would be constructed approximately four miles north of Rosamond, California, immediately east of State Route (SR) 14. It would consist of an 88.6-acre power plant facility within a 112-acre parcel. The project would include 19 miles of 230 kilovolt generation tie line interconnecting to the Southern California Edison (SCE) Whirlwind Substation. Hydrostor's advanced compressed air energy storage (A-CAES) system would store power during off-peak electricity conditions by pumping compressed air into an underground cavern. The air would be held and compressed in the cavern by a column of water from a hydrostatic compensation reservoir at the ground surface. To recoup power, the compressed air would be released from the cavern. The system would have a net power storage capacity of 500 megawatts (MWs) or 4,000 megawatt-hours (MWh) (ESHD 2024i, WSP 2025g).

Surface Water and Stormwater Drainage

The project would be within the Town of Rosamond watershed (HUC12 180902062404), which drains into the dry Rosamond lakebed approximately 4 miles to the southeast (USGS 2024). There are no water bodies within this watershed and therefore, no impaired water bodies to identify according to Section 303 (d) of the Clean Water Act (CWA) (USEPA 2024). Currently, the project site generally slopes to the southeast (USGS 2021).

During operations, onsite stormwater flows would not be discharged outside the project site boundary. Stormwater within the project site would be conveyed by sheet flow and system flow (catch basins, swales, and stormwater conveyance piping) to an unlined stormwater pond on the southeast corner of the site.

The applicant is considering the option of incorporating an architectural berm into the project layout to manage rock waste generated during underground cavern construction. Whether or not the addition of an architectural berm is included in the project layout, offsite stormwater flow would be diverted around the project facility by drainage channels along the north and west. Stormwater conveyed by the west drainage channel would flow south and then discharge to the ditch along Dawn Road. Stormwater conveyed by the north drainage channel would flow east and then discharge to the ditch along the Sierra Highway. Drainage channels would be sized to carry more than the discharge of a 100-year storm event (ESHD 2024i).

Groundwater

The northeast portion of the project site is within the Fremont Valley groundwater basin (6-046), which is bounded on the northwest by the Garlock fault zone against

impermeable crystalline rocks of the El Paso Mountains and the Sierra Nevada, on the east by Summit Range and other small mountain ranges including the Rosamond Hills, on the southwest by the Antelope Valley Groundwater Basin. Groundwater is of sodium bicarbonate or calcium-sodium sulfate character in the southwest part of the basin where the project site is located, and total dissolved solids (TDS) content ranges from 800 to 1,000 mg/L (DWR 2004). The remainder of the site is within the Rosamond Hills, not within a groundwater basin identified by DWR bulletin 118 (DWR 2004). The Fremont Valley groundwater basin is a low priority basin and is not under a Groundwater Sustainability Plan (GSP) overseen by a Groundwater Sustainability Agency (GSA) per the Sustainable Groundwater Management Act (SGMA) (DWR 2020).

Although the project site includes the Fremont Valley groundwater basin, approximately 6 percent of the water supplied by the proposed water purveyor Antelope Valley-East Kern Water Agency (AVEK) is produced from the Antelope Valley groundwater basin (6-044) according to 2023 records (AVW 2024). The Antelope Valley groundwater basin is a very low priority basin with respect to overdraft (DWR 2020) and thus a groundwater sustainability plan is not required according to the SGMA; however, as of 1999, uncontrolled production and competing interests resulted in a 16-year court case that was finally resolved in December 2015 (AVW 2024). The ruling defined the Antelope Valley Adjudication Area and created the Antelope Valley Watermaster Board (AVWB) that administers adjudication water rights and manages the groundwater resource. An AVEK representative is one of the permanent members of the AVWB, and AVEK staff perform administrative functions. In addition, groundwater producers were required to reduce their allotment over a seven-year period. According to the ordered rampdown schedule, AVEK's groundwater allotment was reduced from 4,000 acre-feet per year (AFY) to 3,550 AFY in 2023. As a result of a property purchase, AVEK's annual groundwater allotment was revised to 4,250 AFY (AVW 2024).

Based on soil boring data included in the geotechnical characterization report (ESHD 2024g), a 3 to 7.5 foot thick veneer of residual soil overlies the quartz monzonite for the Rosamond Hills and covers most of the project site, except for the southwest corner where the quartz monzonite is exposed. The upper 20 to 45 feet of the quartz monzonite is decomposed to heavily weathered. Based on limited measurements, depth to groundwater is approximately 40 feet below ground surface (bgs). The cross-sections of the geotechnical characterization report depict depth to groundwater and infer a general groundwater flow direction to the southeast toward Rosamond Dry Lake.

According to the GeoTracker website sponsored by the State Water Resources Control Board (SWRCB), there are no past or present contaminated groundwater cleanup sites in the vicinity of the project site (SWRCB 2025).

Flooding

The proposed project area is within Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Map (FIRM) panel 06029C3675E, which is noted as within the Kern County Unincorporated Areas Zone X. Zone X is defined as areas determined to be

outside the 0.2 percent (or 500-year) annual chance floodplain (FEMA 2008).

According to the *Dam Breach Inundation Map Web Publisher* sponsored by the California Department of Water Resources (DWR), there are no dams in the region that could cause inundation of the project area (DWR 2025). However, the embankment of the proposed hydrostatic compensation reservoir qualifies as a dam subject to design and safety standards of DWR, Division of Safety of dams (DSOD) under California Water Code (CWC) Sections 6002 and 6003 since the embankment exceeds 6 feet in height and would impound more than 50 acre-feet (AF). Hypothetically, a failure of the hydrostatic compensation reservoir embankment at its base could result in an estimated release of 409 AF of water that would inundate local drainages and possibly impact local roadways, railroads and developments in eastern Rosamond (See Section 5.16-2.2 c ii for further discussion).

The project area is also not within an area mapped as vulnerable to sea level rise in the National Oceanic and Atmospheric Administration's (NOAA) *Digital Coast, Sea Level Rise Viewer* (NOAA 2024). Since the project area is not near the coast or a large body of water, there is no danger of a tsunami or seiche.

Water Supply

Water supply during both the construction and the operation phases of the project would be provided by AVEK. Based on 2023 records, approximately 94 percent of AVEK water deliveries are sourced from the State Water Project (SWP) via the California Aqueduct; the remainder is produced from wells in the Antelope Valley groundwater basin (AVW 2024). Water would be conveyed to the project by a 36-inch water pipeline approximately 300 feet east of the project site. A new turn-out would be constructed along the pipeline to serve the project. During the 5-year construction period, an estimated 1,400 AF would be needed; 700 AF to support construction activities, and 700 AF to fill the compensation reservoir, accounting for evaporation. Although the applicant expects a positive water balance of 3.65 AFY, annual consumption of AVEK delivered water is expected at 2.2 AFY for offices, maintenance facilities, service water, fire system re-filling, and make-up water for cooling and thermal system water (ESHD 2024h).

Wastewater

During project construction, sanitary wastewater needs would be addressed by portable toilets. Lined ponds would be required to contain approximately three times the volume of drill cuttings produced during two phases of access shaft installation: 1) Drilling access shafts for A-CAES cavern construction 2) Drilling access shafts to initiate A-CAES cavern operation (ESHD 2024i). During project operation, industrial related wastewater would be contained in tanks and periodically disposed off-site by a third-party vendor (CLEG 2025). Sanitary waste from the administration/control building would be collected in a septic tank and either dispersed by a standard leach-line system, or periodically pumped out and disposed off-site by a third party vendor (ESHD 2024h).

Regulatory

Federal

Clean Water Act and California's Porter-Cologne Water Quality Control Act. The SWRCB and its nine Regional Water Quality Control Boards (RWQCBs) are responsible for the regulation and enforcement of the water quality protection requirements of the federal Clean Water Act (CWA) and the state's Porter-Cologne Water Quality Control Act (Porter-Cologne). The National Pollutant Discharge Elimination System (NPDES) is the permitting program that allows point source dischargers to comply with the CWA Section 402 and Porter-Cologne laws. This regulatory framework protects the beneficial uses of the state's surface and groundwater resources for public benefit and environmental protection. Protection of water quality could be achieved by ensuring the proposed project complies with applicable NPDES permits from the SWRCB or the Lahontan RWQCB. Because the project does not discharge waste into waters of the U.S., no federally delegated permit issued by the SWRCB or Lahontan RWQCB is required, rather the waste discharge requirements will be included in the CEC's certification.

Section 404(a) of the CWA identifies the U.S. Army Corp of Engineers (USACE) as the authority to issue permits for the discharge of fill and dredging material into navigable waters, defined as waters of the United States (CWA Section 502 [7]). Under Section 401(a) of the CWA, any applicant of a permit under the CWA must provide a state certification to the Federal permitting agency. In the region of the project, the Lahontan RWQCB would be the Section 401 certifying state agency. The applicant conducted a survey for waters under USACE jurisdiction. Based on the U.S. Supreme Court decision in the case of Sackett v. Environmental Protection Agency there are no USACE jurisdictional waters since all the drainage features are considered ephemeral and have no hydrologic connection to any downstream relatively permanent waters or traditionally navigable waterways (WSP 2025i).

Under Section 303(d) of the CWA, states are required to identify impaired surface water bodies and develop total maximum daily loads (TMDLs) for contaminants of concern. The TMDL is the quantity of pollutant that can be assimilated by a water body without violating water quality standards. There are no water bodies within the Town of Rosamond watershed and therefore no impaired water bodies to identify according to CWA Section 303 (d) (USEPA 2024).

Federal Emergency Management Agency Flood Insurance Program. The magnitude of flood used nationwide as the standard for floodplain management is a flood having a probability of occurrence of one percent in any given year, also known as the 100-year flood, or base flood. FIRM, the official map created and distributed by FEMA for the National Flood Insurance Program that shows areas subject to inundation by the base flood for participating communities. FIRMs contain flood risk information based on historic, meteorologic, hydrologic, and hydraulic data, as well as open-space

conditions, flood control works, and development. As stated above, the proposed project area is in Zone X and outside the 0.2 percent (or 500-year) annual chance floodplain.

State

Sustainable Groundwater Management Act (AB 1739, SB 1168 & SB 1319). The 2014 Sustainable Groundwater Management Act (SGMA) requires local public agencies and Groundwater Sustainability Agencies (GSAs) in high and medium priority basins to develop and implement Groundwater Sustainability Plans (GSPs) or alternatives to GSPs. GSPs are detailed road maps for how groundwater basins shall be managed to reach long-term sustainability.

California Water Code (CWC)

Sections 6002 & 6003. According to these sections of the CWC, a jurisdiction dam is defined as an artificial barrier that is either greater than 6 feet in height and impounds at least 50 AF of water, or 25 feet high and impounds 15 AF of water. The embankment of the hydrostatic compensating reservoir would have a maximum height of 23 feet from native grade to the top of the embankment (ESHD 2024l) and would impound more than 50 AF of water, and meets the definition of a jurisdictional dam.

Section 6077. This section of the CWC states that it is unlawful to construct, enlarge, repair, alter, remove, maintain, or operate any dam or reservoir except upon approval of the DSOD.

Section 6200. This CWC section requires an owner to obtain approval from the DSOD of the plans and specifications prior to commencing dam construction.

SWRCB Water Quality Order No. 2003-0003-DWQ, Statewide General Waste Discharge Requirements (WDRs) for Discharges to Land with a Low Threat to Water Quality (GENERAL WDRs). Section 13260(a) of the CWC requires that any person discharging waste or proposing to discharge waste, other than to a community sewer system, which could affect the quality of the waters of the State, to file a report of waste discharge (ROWD). As listed in Table 1 of SWRCB Order No. 2003-0003-DWQ, boring waste discharges are considered a low threat to water quality due to low volume and minimal pollutant concentrations. In addition, boring waste discharges are exempt from CCR Title 27 requirements. This would apply to the drill cutting ponds that would be necessary during installation of the cavern access shafts.

Onsite Wastewater Treatment Systems. The Federal CWA, the California Water Code, and the Porter-Cologne Act authorize SWRCB and associated regional boards to regulate discharges that have the potential to impact surface or groundwater. SWRCB in turn delegates this authority to local agencies with respect to onsite wastewater treatment systems (OWTS) through the Local Agency Management Program (LAMP). The Kern County Environmental Health Division (KCEPH) is the local agency responsible for OWTS such as septic systems. Wastewater from the project administration/control

building would be collected in a septic tank and either pumped out and disposed off-site by truck, or dispersed by a standard leach-line system.

Local

Kern County Ordinance, Title 8, Chapter 8.62, Sections 8.62.010 thru 8.62.330. This county ordinance establishes standards for the approval, installation, and operation of onsite wastewater treatment systems (OWTS) within Kern County. This ordinance would apply if the proposed septic tank was connected to a leach-line system.

Kern County Ordinance, Title 14, Chapter 14.26, Article IV Section 14.22.270. According to this county ordinance, no person shall discharge, or cause to be discharged, any industrial wastewaters directly or indirectly to the county's stormwater systems, surface canals or any waterway within the county.

Kern County Ordinance, Title 17, Chapter 17.28, Section 17.28.140. This county ordinance provides standards for erosion control during grading activities.

5.16.2 Environmental Impacts

WATER RESOURCES Would the project:	**Potentially Significant Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a. Violate water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☒	☐	☐
b. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☒	☐
c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces in a manner which would:				
i. result in substantial erosion or siltation, on- or offsite;	☐	☒	☐	☐
ii. substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	☐	☒	☐	☐
iii. create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide	☐	☒	☐	☐

WATER RESOURCES Would the project:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
substantial additional sources of polluted runoff; or				
iv. impede or redirect flood flows?	☐	☒	☐	☐
d. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☒	☐	☐
e. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☒	☐	☐
f. Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☒	☐	☐
g. Result in a determination by the wastewater treatment provider which serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☒	☐	☐

Environmental checklist established by CEQA Guidelines, Appendix G, hydrology and water quality.

5.16.2.1 Methodology and Thresholds of Significance

The California Environmental Quality Act (CEQA) guidelines, Appendix G, provide a checklist of questions that lead agencies typically address when assessing impacts related to water resources (or hydrology and water quality in CEQA). To assess potential impacts concerning water resources, staff has reviewed online sources of maps, literature and information of the surrounding area, as well as site-specific information provided by the project applicant. For most impacts to water resources, the threshold of significance is any discharge from the project site that could contaminate surface or groundwater resources and violate water quality standards. Thus, mitigation is to control such discharges.

5.16.2.2 Direct and Indirect Impacts

a. Would the project violate water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

Construction

Less Than Significant Impact with Mitigation. The entire proposed project including well pads, linear tasks and support areas would disturb approximately 88.6 acres and 100,320 feet (19 miles) of linear facilities during construction. COC **WATER-1** requires

a drainage, erosion and sedimentation control plan (DESCP) be prepared for both the construction and operational phases of the project. With the implementation of the DESCP, development of the site would not cause substantial degradation in the quality, or an increase in the rate or volume, of stormwater runoff from the site during construction.

According to the application's project description, the deepest excavation during construction of surface facilities would be the hydrostatic compensating reservoir at a maximum anticipated depth of 45 feet below grade. The hydrostatic compensating reservoir was designed to be above the water table; thus it is unlikely that groundwater would be encountered during excavation activities and dewatering would not be necessary. However, if dewatering is necessary, a special permit through the Lahontan RWQCB would be necessary depending on the nature of the contamination, requiring the applicant to treat the water before discharging or hauling away the untreated water by a permitted service provider.

The lined drill cuttings ponds required to install access shafts would be subject to the WDRs included as Appendix 1 and implemented per COC **WATER-2**. During project construction, temporary toilet and sanitary facilities would be provided and served by a third-party contractor.

Thus, the project would not be expected to violate water quality standards or waste discharge requirements during construction, and impacts would be less than significant.

Operation

Less Than Significant Impact with Mitigation. During project operation, onsite stormwater would not be discharged offsite but would be directed to a retention pond in the southeast portion of facility compound. Regardless of whether an architectural berm is constructed, offsite stormwater flow would be diverted around the project site perimeter by drainage channels along the north and west. Stormwater from drainage channels would be discharged to ditches along either Dawn Road or Sierra Highway. Drainage channels would be sized to carry more than the discharge of a 100-year storm event (ESHD 2024i).

The applicant did not explain how offsite stormwater would impact existing drainages after converging at the intersection of Dawn Road and Sierra Highway. A project DESCP would be prepared to monitor and manage both onsite and offsite stormwater events per COC **WATER-1**. The DESCP should include details of stormwater management during project operations, such as the impact of offsite stormwater flow to existing drainages.

During WRESC operations, industrial related wastewater would be contained in tanks and periodically disposed off-site by a third-party vendor (CLEG 2025). Offsite disposal of industrial wastewater should be documented per COC **WATER-3**.

Sanitary waste from the administration/control building would be collected in in a septic tank and either dispersed by a standard leach-line system, or periodically pumped out and disposed off-site by a third-party vendor (ESHD 2024h). If the applicant elects to treat sanitary waste using a leach-line system, the KCEPH as the local agency under LAMP has the responsibility to evaluate septic system design and site conditions to ensure the proposed facility would conform with OWTS requirements and would confer with the CEC per COC **WATER-4**. If the applicant does not elect to treat sanitary waste using a leach-line system, off-site disposal of sanitary wastewater would be documented per COC **WATER-3**.

The project would not be expected to violate water quality standards or waste discharge requirements during operation, and impacts would be less than significant with mitigation.

b. Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

Construction and Operation

Less Than Significant Impact. AVEK would supply water during both the construction and the operation phases of the project. AVEK's groundwater production allotment as of 2023 is 4,025 AFY (AVW 2024). This would comprise approximately 0.006 percent of the estimated 68,000,000 AF of the total Antelope Valley groundwater basin storage (DWR 2004). The annual project demand of approximately 280 AFY for construction (over 5 years), is 7 percent of AVEK's current annual groundwater allotment. However, since groundwater constitutes 6 percent of AVEK water deliveries, only about 17 AFY of the total annual water demand would be sourced from Antelope Valley basin groundwater which would constitute approximately 0.4 percent of AVEK's groundwater allotment. The estimated 2 AFY of operational water demand would have a negligible impact on AVEK's annual groundwater allotment.

Regarding the decrease of groundwater supplies, AVEK participates in several programs banking water from the SWP. In 2023, AVEK banked 71,511 AF of SWP water to replenish portions of the Antelope Valley groundwater basin (AVW 2024).

With respect to sustainable groundwater management of the basin, as mentioned in the groundwater portion of Section 5.16.1, per the 2015 court judgement established the AVWB that administers adjudication water rights and manages the groundwater resource.

Therefore, the project would not be expected to decrease groundwater supplies, interfere with groundwater recharge, nor impede sustainable groundwater management.

c. Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces in a manner which would:

i. Result in substantial erosion or siltation, on- or offsite;

Construction and Operation

Less Than Significant Impact with Mitigation. As discussed in criteria (a), the impact of erosion during project construction would be addressed by the DESCP prepared per **WATER-1**. During operations, the facility would drain internally into a retention basin and stormwater runoff would be further addressed by the project operations DESCP prepared per **WATER-1**.

The project would not be expected to cause substantial erosion during either construction or operation, and impacts would be less than significant with mitigation.

ii. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;

Construction and Operation

Less Than Significant Impact with Mitigation. As discussed in criteria (a), the impact of on or off-site flooding due to surface water runoff from construction activities would be addressed by the DESCP prepared per COC **WATER-1**.

During operations the onsite stormwater runoff would drain internally into a retention basin and offsite stormwater runoff diverted around the facility would be further addressed by the project DESCP prepared per COC **WATER-1**.

Assuming full reservoir capacity, water level drop to the base of the HC-reservoir embankment, and failure of the drain to the underground chamber, a possible failure of the hydrostatic compensation reservoir embankment could result in the release of an estimated 409 AF of water that would likely inundate local drainages and possibly impact local roadways, railroads and developments in eastern Rosamond. To avoid a failure scenario, the hydrostatic compensation reservoir embankment would be designed and monitoring during construction in accordance with DWR's DSOD requirements per COCs **WATER-5** and **WATER-6**.

With implementation of proposed mitigation, the project would not be expected to cause on- or off-site flooding due to surface water runoff during construction or operation.

iii. Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff; or

Construction and Operation

Less Than Significant Impact with Mitigation. As discussed in item (a) above, stormwater runoff during construction would be minimized by the practices employed per the construction DESCP (per **WATER-1**). As discussed in item (c. ii) above, during operations the facility's onsite stormwater would drain internally into a retention basin. Offsite stormwater runoff would be diverted around the facility and would be further addressed by the project operations DESCP prepared per **WATER-1**.

Therefore, with implementation of the proposed mitigation measures, the project would not be expected to create surface water runoff that would exceed stormwater drainage capacity either during construction or operation.

iv. Impede or redirect flood flows?

Construction and Operation

Less Than Significant Impact with Mitigation. Currently, the project site is within Zone X according to the FEMA Flood Insurance Rate Map panel 06029C3675E. Zone X is defined as areas outside of the 0.2 percent (or 500-year) annual chance floodplain (FEMA 2008). As discussed in item (a) above, flood water flow would be addressed during construction and operations by **WATER-1**. Therefore, the project's construction and operation would not be expected to impede or redirect flood flows.

d. Would the project in flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

Construction and Operation

Less Than Significant Impact with Mitigation. As discussed in criterion (c) (iv), the project lies outside of the 500-year flood zone and the likelihood of accumulating flood water is low. While unlikely, if flooding did occur, it would be addressed during construction and operations by **WATER-1**; therefore, the impact would be less than significant with mitigation.

According to the DWR's *Dam Breach Inundation Map Web Publisher*, there are no dams in the region that could cause inundation of the project area in case of a breach (DWR 2025). Since the project area is not near the coast or a large body of water, there is no danger of a tsunami, seiche, or vulnerability to sea level rise. As discussed in Item (c. ii), a possible failure of the hydrostatic compensation reservoir embankment could result in an estimated release of 409 AF of water. To avoid damage from a possible failure scenario, the hydrostatic compensation reservoir embankment would be

designed and monitoring during construction in accordance with DSOD requirements per COCs **WATER-5** and **WATER-6**.

Therefore, the overall impacts of flood hazard, tsunamis or seiches affecting the project during construction and operation would be less than significant with mitigation.

e. Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

Construction and Operation

Less Than Significant Impact with Mitigation. The impact of the project on water quality due to erosion during construction and operations would be mitigated by the DESCP prepared per **WATER-1**. As discussed in Item (b), the Antelope Valley groundwater basin is being sustainably managed by AVWB in accordance with the 2015 court judgement.

Therefore, the overall impacts of the project on groundwater management and water quality control plans during construction and operation would be less than significant with mitigation.

f. Would the project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?

Construction and Operation

Less Than Significant Impact with Mitigation. Water supply during both the construction and operation phases of the project would be provided by AVEK. Based on 2023 records, approximately 94 percent of AVEK water deliveries are sourced from the SWP via the California Aqueduct, and 6 percent are sourced from wells in the Antelope Valley groundwater basin (AVW 2024). Annual project demand is estimated at 280 AFY for construction (over 5 years) and 2 AFY for project operations (ESHD 2024h). As of 2023, AVEK's annual allocation of SWP water is 144,844 AFY (AVEK 2021a), while the groundwater production allotment is 4,025 AFY (AVW 2024), for a total of 148,869 AFY from both sources. Annual construction water demand represents approximately 0.2 percent, while operational annual water demand represents approximately 0.001 percent, of AVEK's annual allotment of both surface and groundwater sources.

The reliability of AVEK water supplies during normal and drought conditions is discussed in AVEK's urban water management plan (AVEK 2021a) and water shortage contingency plan (AVEK 2021b). AVEK water supply is expected to remain reliable during drought conditions due to the water banking programs AVEK has initiated. As of 2020, AVEK had banked 90,000 AF in the Antelope Valley groundwater basin (AVEK 2021a).

Use of AVEK water would be documented per COC **WATER-7**.

Therefore, AVEK would provide sufficient water supply for the project during normal and drought conditions. Incorporation of COC **WATER-7** would ensure the CPM can verify efficient use of project water supply.

g. Would the project result in a determination by the wastewater treatment provider which serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

Construction and Operation

No Impact. There are no wastewater treatment providers in the project proximity that could feasibly service the facility. As described in item (a) above, wastewater generated during construction would be accommodated by portable toilets. During project operations, industrial related wastewater would be contained in tanks and periodically disposed off-site by a third-party vendor (CLEG 2025). Off-site disposal of industrial wastewater would be documented per COC **WATER-3**.

Sanitary waste from the administration/control building would be collected in a septic tank and either dispersed by a standard leach-line system or periodically pumped out and disposed off site by a third-party vendor. If the applicant elects to treat sanitary waste using a leach-line system, the KCEPH has the responsibility to evaluate the septic system design and site conditions to ensure the proposed facility would conform with OWTS requirements and would confer with the CEC per COC **WATER-4**. If the applicant elects not to treat the sanitary waste using a leach-line system, off-site disposal of sanitary wastewater would be documented per COC **WATER-3**.

The project would not be expected to violate water quality standards or waste discharge requirements during construction or operation, and impacts would be less than significant with mitigation.

5.16.2.3 Cumulative Impacts

Appendix A, Table A-1 lists 37 projects under review by the Kern County Planning Commission, or currently in development. With the exclusion of those EIRs associated with a plan, rezoning or variance, there are 23 active projects either approved or under evaluation by Kern County. Thirteen of the projects associated with either commercial or housing, are not listed on the Kern County Planning Department environmental document website (Kern County 2025). Of the remaining 10 projects, only the five following projects have similar water supply conditions to the subject project; with either AVEK as the purveyor, or groundwater extraction from the Antelope Valley basin:

- Solar Energy
  - Bullhead Solar
  - Capella Solar
  - Gettysburg Solar/AV Apollo

  - SSI Rosamond Solar
- Manufacturing – Mojave Micro Mill

Operational water demand for the four solar energy projects ranges from 4.6 to 10 AFY. The Mojave Micro Mill project, which is a proposed steel mill that would produce structural rebar from scrap metal, has a much higher water demand of 1,018 AFY. The estimated operational water demand for the subject project of 2 AFY is at a similar magnitude to the solar energy project. However, the total construction water demand of 1,400 AF over 5 years exceeds the range of construction water demand (13 to 450 AF) for the other projects. This is due to the one-time demand of approximately 700 AF to fill the hydrostatic compensation reservoir, which would take place during construction, prior to project operation. Excluding the demand for the initial fill of the compensation reservoir, the annual construction water demand for the subject project is on par with the other projects. The cumulative annual operational water demand of the five projects evaluated, plus the subject project is approximately 1,049 AFY. This cumulative operational water demand represents 0.7 percent of AVEK's annual allotment (148,869 AFY). Thus, the project would not result in a cumulative impact on water resources in the region.

5.16.3 Applicable LORS and Project Conformance

Table 5.16-1 staff's determination of conformance with applicable local, state and federal LORS, including any proposed Conditions of Certification (COCs), where applicable, to ensure the project would comply with LORS. As shown in this table, staff concludes that with implementation of specific COCs, the proposed project would be consistent with all applicable LORS. The subsection below, "Proposed Conditions of Certification," contains the full text of the referenced COCs.

TABLE 5.16-1 CONFORMANCE WITH APPLICABLE LORS

Applicable LORS	Conformance and Basis For Determination
Federal	
Clean Water Act, U.S. Code § 1342 (b) allows states to establish programs to issue NPDES permits.	**Yes.** Since the project does not discharge stormwater to water of the US, no NPDES permit is required. However, in order to mitigate potential water quality impacts during construction and operation of the project, the CEC requires the project to prepare a DESCP as described in **WATER-1.** The DESCP would include best management practices similar to those included in a SWPPP.
State	
Sustainable Groundwater Management Act	**Yes.** Project water supply during construction and operation would be provided by AVEK. As established in a 2015 court judgement, the Antelope Valley Watermaster Board (AVWB) administrates adjudication water rights and manages the groundwater resource.

TABLE 5.16-1 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
California Water Code § 6200. Requires the DSOD to approve all plans and specifications prior to commencing dam construction.	**Yes.** Per COCs **WATER-6** and **WATER-7,** hydrostatic compensation reservoir embankment design would be reviewed and approved by the DSOD. DSOD staff would inspect embankment construction.
California Water Code (CWC) § 13263, 13300, 13301, 13304, and 13350.	**Yes.** Per COC **WATER-2** the drill cuttings ponds would required to comply with Sections 13300, 13301, 13304, and 13350 of the CWC.
Local Agency Management Program (LAMP) for Onsite Wastewater Treatment Systems (OWTS)	**Yes.** If the applicant elects to construct an onsite leach line septic system, COC Water-5 would require the OWTS to comply with SWRCB OTWS design requirements.
Local	
Kern County Ordinances: 8.62.010; Establishes OWTS standards and requirements.	**Yes.** If the applicant elects to construct an onsite leach line septic system, the KCEPH would determine if the proposed septic system conforms with SWRCB OWTS requirements per **WATER-5**.
§ 14.22.270; Prohibition of uncontrolled industrial wastewater discharge	**Yes.** Industrial related wastewater would be contained in tanks and periodically disposed off-site by a third party vendor would be documented per COC **WATER-4**.
§ 17.28.140; Establishes standards for erosion control during grading activities.	**Yes.** Erosion control standards would be incorporated into the DESCP prepared prior to construction per **WATER-1**.

5.16.4 Comments and Responses on the Preliminary Staff Assessment

Comment Letter, TN 264316 WSP USA Inc., on Behalf of the Applicant

Response to TN 264316, Page 5.16-1, Surface Water and Stormwater Drainage

2nd Paragraph Comment. Applicant requests to revise text to add "during operations" in the first sentence. The text has been edited.

Response to TN 264316, Page 5.16-3, Groundwater, 2nd Paragraph Comment. Applicant requests that the term AVECK, be corrected to AVEK in the fourth sentence. The term has been corrected.

Response to TN 264316, Page 5.16-3, Flooding, 2nd Paragraph Comment. Applicant requests that the last sentence referring to a hypothetical flood resulting from a failure of the hydrostatic compensation reservoir embankment be omitted. Typically, in this section of the Environmental Setting, a discussion of possible local dam failures inundating the project is included. In this case, the possible impact comes from within the project. As this is part of the environment analysis of the project, the sentence will not be omitted. However, the sentence has been modified for clarity.

Response to TN 264316, Page 5.16-3, Wastewater, 1st Paragraph Comment. The applicant requests that the reference to the drill cutting ponds containing three times the volume of anticipated drill cuttings be eliminated. It should be noted that both the original and revised project description of the application (TN 254806 and TN 261563, respectively), stated that the drill cutting ponds would be sized three times the volume of the shafts to support boring operations. Since the reference originates from the project application, it was not omitted.

Response to TN 264316, Page 5.16-10, Section 5.16.2.2 (c) ii, 3rd Paragraph Comment. The applicant requests that the reference to a hypothetical flood resulting from a failure of the hydrostatic compensation reservoir embankment be omitted. As stated in the response to the Page 5.16-3, Flooding, 2nd Paragraph Comment, this is part of the environment analysis, and the reference was not omitted. However, the sentence has been modified to include the assumptions to formulate the magnitude of a hypothetical failure of the hydrostatic compensation reservoir embankment.

Response to TN 264316, Pages 5.16-11 & 5.16-12, Section 5.16.2.2 (d), 2nd Paragraph Comment. The applicant would like to remove "estimated" and "409 AF" from the fourth sentence. Based on previous response to comments, these details are not removed from the sentence.

Response to TN 264316, Pages 5.16-15, Table 6.15-1 Comment.

1. The applicant notes an error; the acronym for Onsite Wastewater Treatment System is presented as "OTWS" and should be OWTS. The mistake has been corrected.
2. The applicant notes that stormwater management for grading operations would be addressed by the stormwater pollution prevention plan (SWPPP) associated with the Construction General NPDES Permit (CGP) included in COC **WATER-1**. However, to address comments from the Lahontan Regional Water Quality Control Board (LRWQCB), COC **WATER-1** has been revised to replace the CGP with a drainage, erosion and sedimentation control plan (DESCP) for both the construction and operational phases of the project. Table 6.15-1 has been modified accordingly.

Response to TN 264316, Page 5.16-15, COC WATER-1. The applicant would like to add dredge and fill requirements to this COC. However, dredge and fill requirements are included in the waste discharge requirements (WDRs) prepared by LRWQCB. Therefore, this modification was not made.

Response to TN 264316, Page 5.16-15, COC WATER-1. The applicant would like to add dredge and fill verification to this COC. This verification is not appropriate to add the COC **WATER-1**; however, the suggested verification addition has been made to COC **WATER-3** (Now COC **WATER-2**).

Response to TN 264316, Page 5.16-16, COC WATER-2. The applicant would like to change the heading, text and verification for this COC. However, as a result of addressing LRWQCB comments, this COC no longer exists.

Response to TN 264316, Page 5.16-17, COC WATER-3, Heading. The applicant would like to make changes to the heading of COC WATER-3 (Now WATER-2). However, the heading for this COC has already been modified to address LRWQCB comments.

Response to TN 264316, Page 5.16-17, COC WATER-3, Paragraph 2. The applicant suggests changing "drilling cuttings" to "drill cuttings" in the first sentence of the second paragraph. CEC Staff concur with this change, and it was incorporated into the text of the COC.

Response to TN 264316, Page 5.16-17, COC WATER-3, Verification. The applicant would like to specify that the construction period is just for the drill cutting ponds and that the Project Completion Report will be filed. However, the timing for this condition is for all construction, not just the drill cutting ponds, and submission of the Project Completion Report is included in the LRWQCB WDRs. Thus, no changes were made.

Response to TN 264316, Page 5.16-18, COC WATER-4. The Applicant has identified a typographic error in the third sentence of the COC **WATER-4** (Now COC **WATER-3**) text. "steam" was corrected to "stream".

Response to TN 264316, Page 5.16-19, COC WATER-6, Dam Safety Program Requirements, bullet 4. The applicant would like to omit the term "application fees" from this bullet item. However, both application and annual fees are required per Section 6300 of the California Water Code (CWC). DSOD's review of the geotechnical information and design relating to the impoundment features are necessary and will be in lieu of the DCBO's review. The required fees will facilitate DSOD's work and ensure the CEC complies with Public Resources Code section 25532 which requires the CEC to assure that facilities are constructed and operated in compliance with applicable regulations which include seeking cooperation and assistance with relevant state agencies. Thus, no changes were made.

Response to TN 264316, Page 5.16-19, COC WATER-6, Dam Safety Program Requirements, bullet 5. The applicant suggests adding a requirement for the project owner, CEC CPM and Division of Safety of Dams (DSOD) to coordinate "how to properly account for the project's underground storage capacity". The issue the applicant identifies can be resolved through the DSOD design approval process and is not necessary to include as a requirement in a condition of certification. Thus, no changes were made.

Note: COC **WATER-6** is now COC **WATER-5**.

Response to TN 264316, Page 5.16-19, COC WATER-6, Dam Safety Program Requirements, bullet 6. The applicant suggests adding a requirement for the project owner, CEC CPM and Division of Safety of Dams (DSOD) to coordinate to determine "how to properly account for the project's underground storage capacity". The issue the

applicant identifies can be resolved through the DSOD design approval process and is not necessary to include as a requirement in a condition of certification. Thus, no changes were made.

Response to TN 264316, Page 5.16-20, COC WATER-6, Paragraph 4. The applicant proposes to modify this section to specify construction of "the HC-reservoir embankment" and eliminate the reference to "filing fee" in Item 1. The "HC-Reservoir" was added to the text of the noted section, but the term filing fee remains.

Response to TN 264316, Page 5.16-20, COC WATER-6, Paragraphs 5 and 6. The applicant proposes to amend these sections to specify construction of "the HC-reservoir embankment" and modify the requirements to commence HC Reservoir construction within one year of DSOD design approval. The "HC-Reservoir" was added to the text of the noted section; however, no modifications were made to paragraph 6 since this requirement is based on statute (CWC 6265).

Response to TN 264316, Page 5.16-21, COC WATER-6, Dam Safety Program Requirements, Verification Paragraph 3. The applicant proposes to modify this section to specify the reference to "annual fees" instead of application fees.

As explained in response to *Page 5.16-19, COC WATER-6, Dam Safety Program Requirements, bullet 4*, both application and annual fees are required per CWC Section 6300 and the section was not modified.

Response to TN 264316, Page 5.16-21, COC WATER-7, Paragraphs 1, 2 & 3. The applicant proposes modifications to the first three paragraphs of COC **WATER-7** text (please note that COC **WATER-7** is now COC **WATER-6**). The applicant proposes to eliminate the opening paragraph of the first paragraph. The second paragraph of COC **WATER-7** text has been modified to address DSOD comments and will not be altered further. References to the "HC-reservoir" were added to the third paragraph. However, the engineering drawings submitted to the DCBO should be 100 percent per the DSOD design approval process.

Response to TN 264316, Page 5.16-21, COC WATER-7, Verification, First and Fifth Paragraphs. The applicant proposes to add the term "HC-reservoir embankment" to several instances in the first paragraph of COC **WATER-7** (now **WATER-6**). The term "HC-reservoir" was inserted. Also, the first paragraph has been revised to address DSOD comments. The applicant proposes to specify the filling of the HC reservoir "above the toe of the HC-reservoir embankment"; however, CEC staff believes statute (CWC 6355) pertains to the whole HC-reservoir structure, not just above the toe of the embankment. Therefore, this modification was not made.

Response to TN 264316, Page 5.16-22, COC **WATER-8** (now **WATER-7**). The applicant proposes modifications to the text of COC **WATER-8** (now **WATER-7**) that would clarify use of AVEK water supply during construction and omit the requirement for reporting water use. CEC staff has altered the COC text regarding annual limits of

water use during project construction, but water use reporting requirements was not modified.

Response to TN 264316, Page 5.16-25, Soil and Water Resources Attachment A, Title. The applicant would like to insert "BORING WASTE DISCHARGES FOR" into the title for the LRWQCB WDRs. Since the WDRs are not exclusively for the impoundment of the drill cuttings, the Attachment A title was not modified.

Response to TN 264316, Page 5.16-26, Soil and Water Resources Attachment A, Introduction. The applicant would like to modify the introduction to the WDRs. As noted in the previous response to comments, the WDRs are not exclusively for the impoundment of the drill cuttings; therefore, most of the modifications requested for the WDR introduction were not incorporated. However, CEC Staff notes that there has been a mistake in the company name of the prospective project owner, and this was corrected.

Response to TN 264316, Pages 5.16-29 to 5.16-32, Soil and Water Resources Attachment A, Sections D and E. As noted in the previous response to comments, the WDRs are not exclusively for the impoundment of the drill cuttings; therefore, Sections D & E were not removed from the WDRs.

Response to TN 264316, Page 5.16-32, Soil and Water Resources Attachment A, Section F. The applicant would like to change Section F to Section E due to the deletion of Section D & E. See previous response to comments.

Response to TN 264316, Page 5.16-32, Soil and Water Resources Attachment A, Section F, Items 1 & 10. The applicant would like to remove the phrase "as part of the Preliminary Site Assessment" from these items. CEC Staff believes this term is still applicable and will remain in Section F, Items 1 & 10 of the WDRs.

Response to TN 264316, Page 5.16-33, Soil and Water Resources Attachment A, Section G. The applicant would like to change Section G to Section E due to the deletion of Section D & E. See previous response to comments.

Response to TN 264316, Page 5.16-34, Soil and Water Resources Attachment A, Section H. The applicant would like to change Section H to Section F due to the deletion of Section D & E. See previous response to comments.

Response to TN 264316, Page 5.16-35, Soil and Water Resources Attachment A, Section H, Item 2. The applicant would like to remove all references to waste discharge requirements for applications other than drill cuttings impoundment from requirements for the Project Completion Report. As noted in the previous response to comments, the WDRs are not exclusively for the impoundment of the drill cuttings; therefore, this modification to the WDRs was not made.

Response to TN 264316, Page 5.16-36, Best Management Practices Plan Guidance Attachment 1. The applicant would like to remove the stormwater management best management practices (BMPs) presented as Attachment 1 (Renamed Appendix 1) of the WDRs. However, the BMPs presented by LRWQCB are still applicable to the project and will not be removed.

Comment Letter, TN 264309 – Julie A. Vance, Regional Manager, California Department of Fish and Wildlife

Response to TN 264309. CDFW recommends that a specific COC be dedicated to ensuring the project will comply with the Antelope Valley groundwater basin adjudication. Staff does not agree that the proposed provision is necessary because water for the project will be supplied by AVEK. AVEK is an active member of the Antelope Valley Watermaster Board (AVWB), and AVEK as the water supplier will ensure compliance with the Antelope Valley groundwater basin adjudication. Therefore, no additions to the COCs are necessary.

Comment Letter, TN 264322 – Jan Zimmerman, Supervising Engineering Geologist, California Lahontan Regional Water Quality Control Board

Response to TN 264322, Section 5.16.1, Environmental Setting. The LRWQCB indicates that the statement there are no water bodies in the project water shed is incorrect. Although there may be ephemeral streams that are under State jurisdiction, there are no water bodies identified on the USEPA website for CWA Section 303 (d) impaired waterways for the local watershed (HUC 180902062404). The second paragraph of Section 5.15.1 was modified for clarity.

Response to TN 264322, Section 5.16.1, Environmental Setting. As pointed out by the LRWQCB, there are no water of the United States to discharge and the Construction General NPDES permit (CGP) would not apply. Therefore, COC **WATER-1** will be revised to require a drainage, erosion and sediment control plan (DESCP) for the construction phase of the project, along with referencing the Waste Discharge Requirements (WDRs).

Response to TN 264322, **Section 5.16.1, Regulatory.** LRWQCB requests that the SWRCB Water Quality Order No. 2003-0003-DWQ, Statewide General Waste Discharge Requirements for Discharges to Land with a Low Threat to Water Quality to apply specifically to the drill cutting ponds. Although the WDRs prepared by LRWQCB staff contain substantive requirements to regulate the drill cutting ponds, the SWRCB Water Quality Order No. 2003-0003-DWQ identifies the drill cutting waste as a low threat to water quality and should be included in the regulatory background section.

Response to TN 264322, **Section 5.16.2.2. a, *Construction*.** As stated in the response to LRWQCB comment **TN 264322, Section 5.16.1, Environmental**

Setting, COC **WATER-1** has been revised to require a construction DESCP and reference WDR Section E and Appendix 1.

Response to TN 264322, **Section 5.16.2.2.c.i-ii and 5.16.2.2.e,** ***Construction and Operation.*** Reference to the CGP will be removed from the sections noted.

Response to TN 264322, **Table 5.16-1, Conformance with Applicable LORS [Laws, Ordinances, Regulations, and Standards].** Since the CGP NPDES permit is not applicable, it has been removed from Table 5.16-1.

Response to TN 264322, **Section 5.16.5, Proposed Conditions of Certification.** See response to **TN 264322, Section 5.16.1, Environmental Setting.**

Comment Letter, TN 264237 – Shawn O. Jones, Acting Division Manager, California Division of Safety of Dams

Response to TN 264237-1. CEC Staff concurs with the addition to the second paragraph of COC **WATER-6**, Page 5.16-19.

Response to TN 264237-2. CEC staff agrees with DSOD's statement that inspection of dam safety requirements would include all appurtenant structures associated with the HC-reservoir embankment structure. Therefore, the DSOD suggested edits have been made to COC **WATER-7**, Page 5.16-21.

Response to TN 264237-3. CEC Staff concurs with the addition to the second paragraph of COC **WATER-7**, Page 5.16-21.

Response to TN 264237-4. CEC Staff concurs with the suggested modifications to the first paragraph of the COC **WATER-7**, Verification section, Page 5.16-21.

Response to TN 264237-5. CEC Staff agrees DSOD should approve additions or deletions of major structures and equipment. Therefore, the suggested modification have been made to the third paragraph of the COC **WATER-7**, Verification section, Page 5.16-22.

5.16.5 Conclusions and Recommendations

As discussed above, with implementation of staff's recommended COCs, the project would have a less than significant impact related to water resources and would conform with applicable LORS. Staff recommends adopting the COCs as detailed in subsection "5.16.6 Proposed Conditions of Certification" below.

5.16.6 Proposed Conditions of Certification

The following proposed COCs include measures to both mitigate environmental impacts and ensure conformance with applicable LORS.

CONSTRUCTION DRAINAGE, EROSION AND SEDIMENTATION CONTROL PLAN

WATER-1 Prior to site mobilization, the Project owner shall obtain approval from the Compliance Project Manager (CPM) of the Drainage Erosion and Sedimentation Control Plan (DESCP) for managing stormwater during Project construction and operations. The DESCP must ensure proper protection of water quality and soil resources, demonstrate no increase in off-site flooding potential, include provisions for sediment and stormwater retention from both the main facility and transmission right of way, and identify all monitoring and maintenance activities. The DESCP shall contain, at minimum, the elements presented below that outline site management activities and erosion and sediment-control BMPs to be implemented during site mobilization, excavation, construction, and post construction (operating) activities.

A. **Vicinity Map** – A map(s), at a minimum scale 1 inch=500 feet, shall be provided indicating the location of all Project elements (construction sites, laydown area, pipelines) with depictions of all significant geographic features including swales, storm drains, and sensitive areas.

B. **Site Delineation** – All areas subject to soil disturbance for the proposed Project (Project phases, laydown area, all linear facilities, landscaping areas, and any other Project elements) shall be delineated showing boundary lines of all construction areas and the location of all existing and proposed structures, pipelines, roads, and drainage facilities.

C. **Watercourses and Critical Areas** – The DESCP shall show the location of all nearby watercourses including swales, storm drains, and drainage ditches. It shall indicate the proximity of those features to the proposed Project construction, laydown, and landscape areas and all transmission and pipeline construction corridors.

D. **Drainage Map** – The DESCP shall provide a topographic site map(s), at a minimum scale of 1 inch=200 feet, showing existing, interim, and proposed drainage swales and drainage systems and drainage-area boundaries. On the map, spot elevations are required where relatively flat conditions exist. The spot elevations and contours shall be extended off site for a minimum distance of 100 feet.

E. **Drainage of Project Site Narrative** – The DESCP shall include a narrative of the drainage measures necessary to protect the site and potentially affected soil and water resources within the drainage downstream of the site. The narrative shall include the summary pages from the hydraulic analysis prepared by a professional engineer and erosion control specialist. The narrative shall state the watershed size(s) in acres that was used in the calculation of drainage features.

F. **Clearing and Grading Plans** – The DESCP shall provide a delineation of all areas to be cleared of vegetation and areas to be preserved. The plan shall

provide elevations, slopes, locations, and extent of all proposed grading as shown by contours, cross sections, or other means. The locations of any disposal areas, fills, or other special features shall also be shown. Existing and proposed topography shall be illustrated by tying in proposed contours with existing topography.

G. **Clearing and Grading Narrative** – The DESCP shall include a table with the estimated quantities of material excavated or filled for the site and all Project elements (Project site, laydown area, transmission and pipeline corridors, roadways, and bridges) whether such excavation or fill is temporary or permanent, and the amount of such material to be imported or exported.

H. **Soil Wind and Water Erosion Control** - The plan shall address exposed soil treatments to be used during construction and operation of the proposed Project for both road and non-road surfaces including specifically identifying all chemical based dust palliatives, soil bonding, and weighting agents appropriate for use at the proposed Project site that would not cause adverse effects to vegetation. BMPs shall include measures designed to prevent wind and water erosion including application of chemical dust palliatives after rough grading to limit water use. All dust palliatives, soil binders, and weighting agents shall be approved by the CPM prior to use.

I. **Best Management Practices Plan** – The DESCP shall identify on the topographic site map(s) the location of the site specific BMPs to be employed during each phase of construction (initial grading, Project element excavation and construction, and final grading/stabilization). BMPs shall include measures designed to control dust, stabilize construction access roads and entrances, and control storm water runoff and sediment transport.

J. **Best Management Practices Narrative** – The DESCP shall show the location (as identified in (I) above), timing, and maintenance schedule of all erosion- and sediment-control BMPs to be used prior to initial grading, during all Project element (site, pipelines) excavations and construction, final grading/stabilization, and operation. Separate BMP implementation schedules shall be provided for each Project element for each phase of construction. The maintenance schedule shall include post-construction maintenance of structural-control BMPs, or a statement provided about when such information would be available.

K. **Project Schedule** – The DESCP shall identify on the topographic site map the location of the site-specific BMPs to be employed during each phase of construction (initial grading, Project element construction, and final grading/stabilization). Separate BMP implementation schedules shall be provided for each Project element for each phase of construction.

L. **Erosion Control Drawings** – The erosion-control drawings and narrative shall be designed, stamped and sealed by a professional engineer or erosion control specialist.

M. **Agency Comments** – The DESCP shall include copies of recommendations, conditions, and provisions from the California Department of Fish and Wildlife (CDFW) and LRWQCB.

N. **Monitoring Plan** – Monitoring activities shall include routine measurement of the volume of accumulated sediment in the onsite drainage ditches, and storm water diversions.

Verification: No later than thirty (30) days prior to start of site mobilization, the Project owner shall submit a copy of the final DESCP to the CPM for review and to Kern County and the LRWQCB if required. The CPM shall consider comments if received by the county and LRWQCB before approval of the DESCP. The DESCP shall be consistent with the grading and drainage plan as required by Condition of Certification **CIVIL-1**, and relevant portions of the DESCP shall clearly show approval by the chief building official. The Project owner shall provide in the monthly compliance report with a narrative on the effectiveness of the drainage, erosion, and sediment-control measures and the results of monitoring and maintenance activities. Once operational, the Project owner shall update and maintain the DESCP for the life of the Project and shall provide in the annual compliance report information on the results of monitoring and maintenance activities.

WASTE DISCHARGE REQUIREMENTS FOR DRILL CUTTING PONDS

WATER-2 The project owner shall comply with the Waste Discharge Requirements (WDRs) established in Attachment A. These requirements relate to discharges, or potential discharges, of waste that could affect the quality of waters of the state, and were developed in consultation with the State Water Resources Control Board and/or the applicable California Regional Water Quality Control Board (hereafter "Water Boards"). The WDRs established in Attachment A serve as if they were prescribed under Water Code section 13263 by the Water Boards. These requirements are enforceable by both the Commission and the Water Boards. The Water Boards are authorized to verify compliance of these WDRs, including conducting investigations and inspections and requiring technical and monitoring reports. The Water Boards are also authorized, in coordination with the Commission, to enforce the WDRs pursuant but not limited to Water Code sections 13300, 13301, 13304, and 13350. The Commission and the Water Boards shall confer with each other and coordinate, as needed, in the enforcement of the requirements, consistent with Public Resources Code section 25532. The project owner shall pay the annual waste discharge permit fee associated with this facility to the Water Boards. The project owner shall make payments to the State Water Resources Control Board, based upon a fee schedule in California Code of Regulations, Title 23, section 2200 for a Discharge to Land with a Threat to Water Quality Rating of 2 and Complexity Rating of C.

Verification: At least sixty (60) days prior to construction, the project owner shall submit to LRWQCB all necessary information and applicable fees, submitting

copies of all application submittals to the CPM. At least thirty (30) days prior to construction of the Gen-tie line, the project owner shall submit to the CPM and LRWQCB for review and approval all plans to control the potential for fill and excavation discharges of wastewater associated with construction of the Gen-tie line. Within ten (10) days of its mailing or receipt, the project owner shall submit to the CPM any correspondence with the SWRCB or the LRWQCB regarding discharge of wastewater associated with this activity. The project owner shall notify the CPM in writing of any violations and include these in the annual compliance report. Any monitoring documentation associated with the SWRCB Order shall be included in the annual compliance report.

OFFSITE WASTEWATER DISPOSAL

WATER-3 The project owner proposes that industrial related wastewater would be contained in tanks and periodically disposed off-site by a third party vendor during project operation (CLEG 2025). If the project owner does not elect to treat sanitary wastewater using an onsite leach-line septic system, this wastewater shall also be disposed offsite. To verify operational wastewater streams are to be disposed in accordance with Federal, State and local regulations, the project owner shall document all aspects of offsite wastewater disposal.

Verification: No later than 30 days prior to project operation, the project owner shall provide a copy of the service agreement with the vendor selected for offsite industrial wastewater disposal, and/or sanitary wastewater disposal if applicable. Within ten (10) days of offsite shipment, the project owner shall submit to the CPM any non-hazardous manifest, bill-of-lading, or any other shipping documentation associated with offsite wastewater disposal. Within ten (10) days of its mailing or receipt, the project owner shall submit to the CPM any correspondence with the third party offsite wastewater disposal vendor, and any agencies or interested parties regarding offsite wastewater disposal. The project owner shall notify the CPM in writing of any violations and include these in the annual compliance report. The project owner shall include all offsite wastewater disposal shipping documentation in the annual compliance report.

ONSITE SEPTIC SYSTEM PERMIT REQUIREMENTS

WATER-4 If the project owner elects to treat sanitary wastewater using an onsite leach-line septic system, an on-site septic system designed for site-specific soil and percolation conditions shall be installed. The septic system design shall comply with the SWRCB's onsite wastewater treatment system (OWTS) policy (SWRCB 2023) and Kern County Environmental Health Division (KCEPH) OWTS ordinance Chapter 8.62. The project owner shall operate the septic system following an operations and maintenance manual prepared by a qualified professional. If the site conditions are unfavorable to support a conventional leach field system, the project owner shall work with the KCEPH and the CPM to evaluate a viable alternative.

Verification: No later than 90 days prior to project operation, the project owner shall submit to the CPM evidence that that the septic system design has been reviewed by the KCEPH and the approval of the chief building official (CBO). No later than 60 days prior to project operation, the project owner shall submit the operations and maintenance manual to the KCEPH for review and comment. No later than 30 days prior to project operation, the project owner shall submit the operations and maintenance manual to the CPM for review and approval. The submittal shall include copies of any agency comments the project owner has received. The wastewater system shall be monitored following either the general standards adopted in SWRCB's OWTS regulations or the procedures outlined in the CPM-approved operations and maintenance manual. Any testing results or correspondence exchanged between the project owner and the KCEPH, or any other state or local agency, during operations shall be provided to the CPM in the annual compliance report.

JURISDICTIONAL DAM CONSTRUCTION REQUIREMENTS

WATER-5 The outer embankment of the hydrostatic compensation reservoir (HC-reservoir) meets the definition of a jurisdictional dam per California Water Code (CWC) Sections 6002 and 6003. Therefore, the HC-reservoir embankment is subject to the review and approval of all design and specifications by the Department of Water Resources, Division of Safety of Dams (DWR-DSOD) The project owner is an "owner" under Water Code section 6005.

As it relates to this project (HC-reservoir embankment), the project owner shall comply with the requirements set forth in Division 3, Part 1 of the Water Code and California Code of Regulations, Title 23, Division 2, Chapter 1 (collectively referred to as "Dam Safety Program Requirements") and any design specifications directed by DWR-DSOD which will administer the Dam Safety Program Requirements on behalf of the CEC. The Project Owner shall comply with any future changes to statute or regulations of the Dam Safety Program Requirements.

To facilitate the project and project owner's compliance with the Dam Safety Program Requirements, the following requirements are identified. These Dam Safety Program Requirements are identified to provide information and do not limit or otherwise impact the project and project owner's obligation to comply with all Dam Safety Program Requirements.

- Construction, enlargement, alteration, repair, modification, and removal of dams and reservoirs are subject to the requirements in Division 3, Part 1, Chapter 5 of the California Water Code and California Code of Regulations, Title 23, Division 2, Chapter 1.
- Construction inspection requirements, final approval, and post-construction documentation requirements are set forth in Division 3, Part 1, Chapter 7 of the California Water Code.

- The project owner shall not, through action or inaction, impound water in the Project's dam or reservoir until DWR-DSOD has issued a certificate of approval, as provided in Water Code section 6355.
- The project owner shall pay application and annual fees, in accordance with the Dam Safety Program Requirements.
- This project and project owner shall be subject to the requirements in Water Code section 6102.5, which addresses periodic inspections, and dam owner obligations to perform maintenance, provide information, and fully operate any critical outlet and spillway control features as determined by DWR-DSOD.
- The project and project owner shall comply with the inundation map and emergency action plan requirements as provided in Division 3, Part 1, Chapter 4, Article 6 of the California Water Code and California Code of Regulations, Title 23, Division 2, Chapter 1.
- The project and project owner shall be subject to the enforcement provisions set forth in Division 3, Part 1, Chapter 8 of the California Water Code and California Code of Regulations, Title 23, Division 2, Chapter 1. The CEC also retains its enforcement authority over this component of the project.

The project owner shall obtain DSOD approval of dam plans and specifications prior to commencing construction of the HC-reservoir in accordance with CWC Section 6200. The project owner shall provide the DSOD with information to achieve the following milestones of the design approval process:

1. Application for construction of a dam and filing fee (per CWC section 6300), and geology/geotechnical reports and data.
2. Additional geology/geotechnical reports and data if data gaps or concerns are identified by DSOD staff.
3. Design report, criteria and guidelines for dam, spillway, and emergency outlet.
4. 30% Design plans/concept.
5. 60% Design plans/specifications.
6. 90% Design plans/specifications.
7. 100% Design plans/specifications and draft inundation map.

Following the conclusion of milestone 7, DSOD would approve the design application and conditions of the HC-reservoir, with CPM concurrence, after all CWC provisions and applicable engineering standards have been demonstrated.

Construction of the HC-reservoir embankment will commence within one year of DSOD approval (CWC Section 6265).

The inundation map approved by the DSOD and the CPM, would be included with a draft emergency action plan (EAP) submitted to the California Office of Emergency Services (CalOES) prior to the reservoir being certified.

Any change to the design, construction, or operation of the HC-reservoir embankment shall be requested by the project owner in writing to the CPM for approval, in consultation with the DSOD, prior to the initiation of any construction and/or operation changes. Such changes may be approved by the CPM after consultation with the DSOD if the changes do not result in a new significant impact.

Consistent with DSOD's existing statutory and regulatory enforcement authority regarding the design, construction, and operations of the HC-reservoir embankment, the DSOD and CEC will confer with each other and coordinate, as needed, in the enforcement of the requirements.

Verification: Any documents submitted to the DSOD including but not limited to application materials, geotechnical reports, design drawings, pictures, soil studies, or hazards analysis, shall be provided contemporaneously to the CPM for review.

Documents, including notices of violation or other documents issued by the DSOD to comply with the Dam Safety Program Requirements, shall be provided to CPM.

The project owner shall provide evidence to the CPM of payment to DWR-DSOD of all fees required under the Dam Safety Program Requirements within 10 days of payment.

WATER-6 The CEC delegates the dam safety related construction inspection of the HC-reservoir embankment and related dam safety components approved by the DSOD, to the DSOD, with onsite consultation with the DCBO and ongoing guidance from the CPM.

The DCBO shall have regulatory oversight responsibility of the entire project but shall defer regulatory oversight of the hydrostatic compensation reservoir system to the DSOD inspection team.

Before submitting the initial engineering designs for HC-reservoir for DCBO review, the project owner shall furnish the CPM, DCBO and the DSOD with a schedule of design submittals, master drawings and master specifications list. The master drawings and master specifications list shall contain a list of proposed submittal packages of designs, calculations, and specifications for major structures, systems, and equipment. The schedule shall contain the date of each submittal to the DSOD and the DCBO.

To facilitate audits by CEC staff, the project owner shall provide specific packages as described in the paragraph above to the CPM upon request.

During project operations, the project owner shall allow and facilitate DSOD regular inspections of the HC-reservoir embankment.

Verification: Once DSOD has approved the project owner's new dam construction application, the project owner shall provide the schedule to the DSOD, DCBO and CPM at least 60 days (or a project owner, DCBO and DSOD mutually agreed upon alternative time frame) prior to the start of construction of the HC-reservoir.

These documents shall be the pertinent design documents for the major structures, systems, and equipment defined above in Condition of Certification **WATER-6**.

Major structures and equipment shall not be added to or deleted from the list without CPM and DSOD approval. The project owner shall provide schedule updates in the monthly compliance report (MCR).

Upon completion of the HC-reservoir embankment construction, the project owner shall request the DSOD to issue a certificate of approval for the HC-reservoir embankment to impound water with CPM concurrence.

Filling of the HC-reservoir shall not commence until the DSOD has issued a certificate of approval that the HC-reservoir is suitable to impound water (CWC Section 6355).

The project owner shall submit all correspondence and results of DSOD regular inspections during project operations.

WATER USE AND REPORTING

WATER-7 Supply of fresh water for the project construction shall be provided by the Antelope Valley-East Kern Water Agency (AVEK). The project owner shall enter into a water agreement with AVEK. Annual water use during project construction shall be limited to 350 AFY and total water use during the 5-year construction period shall not exceed 1,400 acre-feet (AF). Project operation water use shall not exceed 4 acre-feet per year (AFY). The project owner shall record daily water use for the project's construction and operation. The project owner shall comply with the water use limits and reporting requirements described below.

Verification: Within ten (10) days of its mailing or receipt, the project owner shall submit to the CPM any correspondence with the AVEK concerning construction and operations water supply. This shall include the water agreement with AVEK. During project construction, the MCR shall include a summary of monthly water

use. The project's annual compliance report shall include a monthly and annual summary of water use identifying construction or operations and water source.

5.16.7 References

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AVEK 2021b – Antelope Valley- East Kern Water Agency (AVEK). Final 2021 Water Shortage Contingency Plan Urban Water Management Plan. Prepared by Water Systems Consulting, Inc. August 2021. Available online at: https://www.avek.org/files/4ba9800ac/AVEK+2021+WSCP_FINAL.pdf

AVW 2024 – Antelope Valley Watermaster (AVW). Final 2023 Annual Report. Prepared by Todd Groundwater. July 26, 2024. Available online at: https://avwatermaster.net/wp-content/uploads/2024/07/FINAL-2023-AVWM-Annual-Report-All-1.pdf

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DWR 2004 – California Department of Water Resources (DWR). California's Groundwater Bulletin 118, Antelope Valley Groundwater Basin (6-44) Description. Updated February 27, 2004. Available online at: https://data.cnra.ca.gov/dataset/ca-gw-basin-boundary-descriptions/resource/1e8223cf-2b08-42d4-9e28-486f4f856add

DWR 2020 – Department of Water Resources (DWR). SGMA Basin Prioritization Dashboard. Last updated March 13, 2020. Accessed online at: https://gis.water.ca.gov/app/bp-dashboard/final/

DWR 2025 – California Department of Water Resources (DWR). Dam Breach Inundation Map Web Publisher. Updated on February 11, 2025. Available online at: https://fmds.water.ca.gov/webgis/?appid=dam_prototype_v2

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SOIL AND WATER RESOURCES

ATTACHMENT A

DRAFT WASTE DISCHARGE REQUIREMENTS AND MONITORING AND REPORTING FOR WILLOW ROCK ENERGY STORAGE CENTER

DRAFT WASTE DISCHARGE REQUIREMENTS AND MONITORING AND REPORTING FOR WILLOW ROCK ENERGY STORAGE CENTER

Kern County

The discharges of waste from the Willow Rock Energy Storage Center project (Project) must be in accordance with the requirements contained in these Waste Discharge Requirements (WDRs). These WDRs are applicable to the following types of wastes: boring wastes generated during shaft construction, fill and excavation wastes discharged to surface waters during gen-tie construction, and stormwater generated during construction. GEM A-CAES LLC, a subsidiary of Hydrostor, Inc., is referred to as the Applicant.

A. DEFINITIONS

1. "Waste" includes sewage and any and all other waste substances, liquid, solid, gaseous, or radioactive, associated with human habitation, or of human or animal origin, or from any producing, manufacturing, or processing operation, including waste placed within containers of whatever nature prior to, and for purposes of, disposal.
2. "Boring waste" is drilling mud, cuttings from well-drilling operations, or any other borings in uncontaminated soils.
3. "Waters of the state" means any surface water or groundwater, including saline waters, within the boundaries of the state.
4. "Stormwater" is runoff resulting from recent precipitation events. Runoff flowing over construction sites can pick up pollutants like sediment, debris, and chemicals, which can then be carried offsite or directly into water bodies.

B. PROHIBITIONS

1. Discharge of any waste to surface waters is prohibited, except as authorized by these WDRs.
2. Discharge of waste must not cause pollution, contamination, or nuisance as defined in California Water Code Section 13050.
3. Discharge of waste that is classified as "hazardous," as defined in California Code of Regulations (CCR), title 23, section 2521, or classified as "designated," as defined in Water Code section 13173, is prohibited.
4. Discharge of waste that causes or contributes to the exceedance of an applicable water quality objective in the Water Quality Control Plan for the Lahontan Region (Basin Plan) is prohibited.

5. Where any applicable water quality objective contained in the Basin Plan is already being violated, the discharge of waste that causes further degradation or pollution is prohibited.
6. Discharge of waste causing the spread of groundwater contamination is prohibited.
7. Discharge of oil, gasoline, diesel fuel, any petroleum derivative, any toxic chemical, or hazardous waste is prohibited.
8. Discharge of water main, water storage tank, water hydrant, pipeline flushing, or hydrostatic testing water from tanks or pipelines that have been used to store or convey any medium other than potable water is prohibited, unless the Applicant has demonstrated to the CEC that all residual pollutant concentrations have been reduced to levels below applicable groundwater quality objectives in the Basin Plan.

C. REQUIREMENTS FOR BORING WASTE DISCHARGES

Boring waste discharges will stem from the boring of up to four vertical shafts to 2,100 feet below ground surface. The borings will be created using a combination of conventional shaft sinking and raise boring or blind boring. For conventional and raised boring makeup water is not required, and solid rock is produced. For blind boring municipal makeup water and cuttings will be used as drill mud. Blind boring will generate free liquid drill cuttings that must be discharged to the ground into temporary lined ponds.

1. Discharges of boring waste must be discharged to onsite temporary lined ponds and must not contain halogenated solvents.
2. The temporary lined ponds must be sufficiently sized and constructed of impervious materials to contain the boring waste without overtopping or through leakage from the liner.
3. The temporary lined pond(s) must be protected against erosion, overland runoff, and other impacts resulting from storm events.
4. During drilling operations, the Applicant must monitor the boring waste discharges as follows. For every 5,000 cubic yards of drill cuttings, collect at least one representative grab sample of the following waste types 1) pond solids, 2) pond semi-solids (drilling mud-water mixture), and 3) pond water (liquid floating on top of the solids and semi-solids), and analyze each sample by the following test methods: CCR, Title 22 metals EPA method 6020 and pH standard EPA method 150.1. The pond water must also be analyzed for total petroleum hydrocarbons (diesel range) EPA method 8015M, oil and grease EPA method 1664, chloride EPA method 300.0, Methylene Blue Active Substances (MBAS) SM 5540C, and total dissolved solids SM2540C.
5. For the data collected in C.4, the Applicant must evaluate the analytical results for the pond solids to determine if they are hazardous or non-hazardous waste. A concentration of a CCR, Title 22 metal that exceeds ten times the corresponding value of the total threshold limit concentration (TTLC) is called a “trigger

concentration" for that metal. These "trigger concentrations" are listed in Table 1. The following criteria must be used to evaluate the data.

a. If the concentration of a metal is equal to or greater than the TTLC limit for that metal, then the material is a California (non-RCRA) hazardous waste.

b. If the concentration of a metal is less than the TTLC limit, and less than 10 times the soluble threshold limit concentration procedure (STLC) limits, then the material is non-hazardous waste.

c. If the concentration of a metal is less than the TTLC limit but is equal to or greater than 10 times the STLC limit, then the sample must also be analyzed by the STLC method.

d. If the STLC results exceed an STLC trigger, the material is hazardous waste.

e. If analytical results indicate drill cuttings, pond water, or pond solids concentrations are hazardous waste, boring waste discharges must cease, the Applicant must notify the CEC in accordance with Provision No. F.8I ad. The Applicant must submit a plan to the CEC proposing management and offsite disposal of the hazardous waste.

TABLE 1 – TTLC AND STLC LIMITS AND TRIGGER VALUES

Metal	TTLC Limit (mg/kg1 - wet weight)	STLC Limit (mg/L2)	STLC Limit x 10 Trigger Value (mg/L)
Antimony	500	15	150
Arsenic	50	5	50
Barium	10,000	100	1,000
Beryllium	75	0.75	7.5
Cadmium	100	1	10
Chromium III	2,500	5	50
Chromium IV	500	5	50
Cobalt	8,000	80	800
Copper	2,500	25	250
Lead	1,000	5	50
Mercury	20	0.2	2
Molybdenum	3,500	350	3,500
Nickel	2,000	20	200
Selenium	100	1	10
Silver	500	5	50
Thalium	700	7	70
Vanadium	2,400	24	240
Zinc	5,000	250	2,500

1 – mg/kg, milligram per kilogram
2 – mg/L, milligram per liter

6. The Applicant must comply with the General Monitoring Provisions in Section G.

7. At the end of drilling operations, the Applicant must:

a. Remove all free liquid from the temporary lined pond; and

b. Collect and analyze a representative sample of the pond solids in accordance with C.4 and then evaluate the analytical data in accordance with C.5.

   i. Should analytical testing indicate that the boring waste is hazardous, the residual wastes including the liner must be disposed of at a waste disposal facility capable of accepting hazardous waste.

   ii. Should the analytical testing indicate that the boring waste is non-hazardous, the residual wastes and liner materials can be disposed of onsite if all the following criteria are met: (1) the disposal site is greater than 5 feet above local groundwater level, (2) the liner materials are folded and punctured, (3) the waste and liner materials are covered by a minimum of 1 foot of clean soil, (4) the disposal site is located at least 100 feet from the nearest surface water, and (5) the area is graded to promote sheet flow and prevent ponding.

D. REQUIREMENTS FOR FILL AND EXCAVATION DISCHARGES TO SURFACE WATERS

Impacts to ephemeral streams will result from fill and excavation activities associated with construction access and staging areas for the installation of the power poles along the gen-tie electrical transmission line.

1. The authorized impacts to ephemeral streams total 0.11 acres and 1,705 linear feet.
2. The Applicant must restore the impacted areas by regrading to pre-project contours and revegetating with an appropriate native seed mix.
   a. Adaptive measures such as reseeding, supplemental irrigation, and removal of non-native plant species must be taken to promote success of the revegetation.
   b. Annual monitoring of the restored areas must continue until all the revegetation success criteria have been met.
   c. Revegetation success criteria are:
      i. At least 70% vegetation cover of native species;
      ii. Less than 5% vegetation cover of non-native species; and
      iii. Absence of rills and other signs of erosion.
3. There are no permanent impacts, therefore compensatory mitigation is not required.

E. REQUIREMENTS FOR STORMWATER DISCHARGES

Stormwater must be managed throughout construction to minimize erosion and the discharge of sediment laden water offsite. Temporary sediment and erosion control best management practices (BMPs) must be implemented until permanent soil stabilization is in place and good housekeeping practices must be implemented to minimize the potential for non-stormwater discharges to degrade water quality.

1. The Applicant must install appropriate BMPs including construction storm water controls designed to minimize degradation of water quality. BMPs will include, but not be limited to, fiber rolls staked or weighted down with sand or gravel bags, silt fencing, a temporary detention basin, and/or weed-free hay bales staked to the ground with rebar or other suitable device.
2. Prior to the initiation of any construction related activities, the Applicant must develop a BMP implementation plan (BMP Plan) and install temporary erosion control facilities to prevent transport of earthen materials and other wastes off the property. Guidance for developing the BMP Plan is provided in Appendix 1, Best Management Practices Plan.
3. The Applicant must implement the BMP Plan upon commencement of construction.
4. The Applicant must at all times fully comply with the BMP Plan.
5. All land disturbing activities must be conducted in accordance with the following:
    a. Temporary Construction BMPs
        i. Surplus or waste materials must not be placed in drainage ways or within the 100-year flood plain of surface waters.
        ii. All loose piles of soil, silt, clay, sand, debris, or earthen materials must be protected in a reasonable manner to prevent discharge of pollutants to waters of the State. Material stockpiles should be placed on the upgradient side of excavation whenever possible. Stockpiles may also be protected by covering to prevent contact with precipitation and by placing sediment barriers around the stockpiles.
        iii. After completion of a construction project, all surplus or waste earthen material must be removed from the site and deposited at a legal point of disposal.
        v. All non-construction areas (areas outside of the construction zone that will remain undisturbed) must be protected by fencing or other means to prevent unnecessary encroachment outside the active construction zone.
        vi. During construction, temporary erosion control facilities (e.g., impermeable dikes, filter fences, weed-free straw bales, etc.) must be used as necessary to prevent discharge of earthen materials from the site during periods of precipitation or runoff.
        vii. Control of run-on water from offsite areas must be managed (protected, diverted, treated, etc.) to prevent such water from degrading before it discharges from the site.
        vii. Where construction activities involve the crossing and/or alteration of a stream channel, such activities require a prior written agreement with the California Department of Fish and Wildlife and shall be timed whenever possible to occur during the period in which streamflow is expected to be lowest for the year. Other control measures may be used as necessary to prevent adverse effects from work in surface waters.

b. Permanent Construction BMPs

   i. Impervious surfaces must be constructed with infiltration trenches or comparable infiltration structures along downgradient sides to infiltrate the increase in runoff resulting from the new impervious surfaces. Infiltration structures should also be constructed to accept runoff from structural (roof top) drip lines. Other control measures may be considered if design and/or site constraints are such that construction of infiltration devices is infeasible.

   ii. Where possible, existing drainage patterns must not be significantly modified.

   iii. Drainage swales disturbed by construction activities must be stabilized by the addition of crushed rock or riprap, as necessary, or other appropriate stabilization methods.

   iv. Revegetated areas must be regularly and continually maintained in order to assure adequate growth and root development. Physical erosion control measures (controls other than live vegetation) must be placed on a routine maintenance and inspection program to provide continued erosion control integrity.

6. Should it be determined by the Applicant, CEC, or Lahontan Water Board staff that stormwater discharges and/or authorized non-stormwater discharges are causing or contributing to a violation of an applicable water quality standard, the Applicant must:

   a. Implement corrective measures immediately following discovery that water quality standards were violated.

   b. Revise the BMP Plan and monitoring procedures to incorporate: 1) additional BMPs that have been and will be implemented; 2) the implementation schedule; and 3) any additional monitoring needed.

7. An inspection of the construction site must be made daily during active construction and monthly during long periods of inactivity (e.g. winter), by the Applicant, resident engineer, superintendent, general contractor, or equivalent. The purpose of the inspection is to discover potential water quality problems at the construction site so that the Applicant can implement corrective measures. The following items must be inspected at the site, as applicable:

   a. Damaged containment dikes or erosion fencing;

   b. Unauthorized access by vehicles and/or sediment tracking off the site;

   c. Boundary fence damage or removal;

   d. Disturbed areas with no erosion control protection;

   e. Evidence of any sediment leakage through erosion control fencing or containment dikes;

   f. Soil piles unprotected or located in drainage ways;

   g. Spilled chemicals, paints, fuels, oils, sealants, etc.;

h. Upstream runoff diversion structures in place and operational;

i. Any signs of downstream erosion from runoff discharges; and

j. Sediment accumulation within onsite stormwater drainage facilities.

F. STANDARD PROVISIONS

1. The Applicant must at all times fully comply with the engineering plans, specifications, and technical reports developed for the Project and submitted to CEC as part of the Preliminary Staff Assessment.
2. A copy of these WDRs must be kept at the discharge facility for reference by operating personnel. Key operating and site management personnel must be familiar with its content.
3. The Applicant must properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) at all times to assure compliance with these waste discharge requirements. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures.
4. The Applicant must allow staff of the CEC or the Lahontan Water Board, upon presentation of credentials and other documents as may be required by law, to do the following:
   a. Enter upon the Applicant's premises where a regulated facility or activity is located or conducted or where records must be kept under the conditions of these WDRs.
   b. Access and copy, at reasonable times, any records that must be kept under the conditions of these WDRs.
   c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under these WDRs.
   d. Sample or monitor, at reasonable times, for the purposes of assuring compliance with these WDRs or as otherwise authorized by the CWC any substances or parameters at any location.
5. The Applicant must take all necessary steps to minimize or correct any adverse impact on the environment resulting from noncompliance with these WDRs, including such accelerated or additional monitoring as may be necessary to determine the nature and impact of the noncompliance.
6. All reports, and other documents required by these WDRs, and other information requested by the CEC must be signed by a member or manager given signing authority by the operating agreement of the Limited Liability Company or by a duly authorized representative of that person.
7. Any person signing a document under Provision No. F.6 makes the following certification, whether written or implied:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

8. The Applicant must immediately report any noncompliance potentially endangering public health or the environment. Any information must be provided orally to the CEC within 24 hours of the time the Applicant becomes aware of the occurrence. A written report shall also be submitted to the CEC within five (5) calendar days of the time the Applicant becomes aware of the occurrence. The written report must contain (a) a description of the noncompliance and its cause; (b) the period of the noncompliance event, including dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and (c) steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.
9. The Applicant must report all instances of noncompliance not reported under Provision No. F.8 at the time monitoring reports are submitted. The reports must contain any applicable information listed in Provision No. F.8.
10. The Applicant must give notice to the CEC as soon as possible of any planned alterations to the engineering plans, specifications, and technical reports developed for the Project and submitted as part of the Preliminary Staff Assessment that may change the nature or concentration of pollutants in the discharges.

G. GENERAL MONITORING PROVISIONS

1. All samples must be representative of the volume and nature of the discharge or matrix of material sampled. The Applicant must use clean sample containers and sample handling, storage, and preservation methods in accordance with approved U.S. EPA analytical methods or as recommended by the selected analytical laboratory. All analytical samples must be labeled and records maintained to show the name of the sampler, date, time, sample location, sample type, collection method, bottle type, and any preservative used for each sample.
2. All samples collected for laboratory analyses must be preserved as required and submitted to the laboratory within the required holding time appropriate for the analytical method used and the constituents analyzed. All samples submitted to a laboratory for analysis must be identified in a properly completed and signed chain of custody form containing the sampler, date, time, sample location, sample type, collection method, bottle type, and any preservative used for each sample. The chain of custody form must also contain custody information, including the date, time, transport method, and to whom samples were relinquished.

3. Consistent with Water Code section 13176, data produced and reports submitted for compliance with WDRs or this monitoring and report program must be generated by a laboratory with accreditation from the State Water Board, Division of Drinking Water, Environmental Laboratory Accreditation Program (ELAP), where accreditation is specific to the analyses required, or the laboratory must hold a valid certificate of accreditation for equivalent analytical test methods validated for the intended uses and approved by the State Water Board or Lahontan Regional Water Board. The laboratory must include quality assurance/quality control data in all data reports and submit electronic data as required by the State Water Board and regional water boards. Data generated using field tests are exempt pursuant to California Water Code Section 13176.
4. Field instruments may be used to test field parameters (such as for pH, electrical conductivity, and dissolved oxygen) provided that the operator is trained in the proper use of the instrument and each instrument is serviced and/or calibrated at the recommended frequency by the manufacturer and in accordance with manufacturer instructions.
5. All sample and analysis field logs, laboratory reports, and quality assurance/ quality control data must be reported with the sample results to which it applies. The reports must include applicable information such as the method, equipment, analytical detection, quantitation limits, recovery rates, an explanation for any recovery rate that is outside method specifications, results of method blanks, results of matrix spikes and surrogate samples, and the frequency of quality control analysis. Sample results must be reported unadjusted for blank results or spike recovery. In cases where contaminants are detected in the quality assurance/quality control samples (e.g., laboratory blanks), the accompanying sample results must be appropriately flagged.
6. If the Applicant monitors any constituent more frequently than required by the WDRs, the monitoring results must be submitted.
7. The Applicant must retain records of all monitoring information including all calibration and maintenance records, copies of all reports required by these WDRs, and records of all data used to complete the application for these WDRs. Records must be maintained for a minimum of three years from the date of the sample, measurement, or report.

H. REPORTING REQUIREMENTS

1. The Applicant must comply with the following reporting requirements for boring waste discharges described in Section C.
    a. Semi-annual monitoring reports, including all water, drill cuttings, and pond solids monitoring and laboratory analytical data collected during the corresponding reporting period, must be submitted by the report due date to the CEC.

Monitoring Reporting Period	Report Due Date
January 1 – June 30	August 15
July 1 – December 31	February 15

b. Each semi-annual report must include, but not limited to, the following information.

i. Summary of drilling, operations, and maintenance activities

ii. All data collected during the reporting period

iii. Tabulated results of sampling and laboratory analyses for water, drill cuttings, and pond solids

iv. A map and/or aerial photograph showing the Project's perimeter, boring locations (mine shafts), temporary lined ponds, staging area, and sampling points

v. Copies of all field monitoring and sampling data sheets, and analytical laboratory reports (e.g. chain of custody, field logs, equipment calibration logs)

2. Following completion of Project construction, the Applicant must submit a Project Completion Report to the CEC. The report must include the following information:

a. Details on any modification from the construction plans to the proposed temporary lined ponds, fill and excavation activities in surface waters, construction stormwater management, and/or disposal facilities.

b. Details on any changes to the amount of impervious coverage for this Project.

c. Any significant problems which occurred during construction and remedial measures taken.

d. The area and length of channel of permanent and temporary impacts to waters of the state cumulative for the entire Project.

e. Documentation that that revegetation success criteria have been completed.

f. A summary of the activities related to construction storm water controls and the BMPs used.

g. Certification that the Project is in compliance with WDRs.

APPENDIX 1

BEST MANAGEMENT PRACTICES PLAN GUIDANCE

The purpose of the Best Management Practices (BMP) Plan is to evaluate potential sources of sediment and other pollutants at the construction site and put controls in place that will effectively prevent pollutant discharges to surface water and groundwater. The following general pollution control elements should be addressed in the BMP Plan:

1. Retain soil and sediment on the construction site;
2. Prevent non-stormwater discharges that would discharge pollutants off site;
3. Prevent the discharge of other pollutants associated with construction activities to land or surface waters;
4. Permanently stabilize disturbed soils; and
5. Minimize the effects of increased storm water runoff from impervious surfaces.

For detailed information on construction related BMPs, the EPA has developed the following document: Developing Your Stormwater Pollution Prevention Plan (https://www.epa.gov/sites/default/files/2015-10/documents/sw_swppp_guide.pdf).

Additional information may also be obtained by contacting the Lahontan Regional Water Quality Control Board at Lahontan@waterboards.ca.gov or at 760-241-6583.

Specific guidance for completing the BMP Plan is provided below.

TEMPORARY EROSION CONTROL

This element of the BMP Plan addresses temporary erosion control or soil stabilization measures to be implemented during the time while active construction and land disturbing work is active. The most efficient way to address erosion control is to preserve existing vegetation where feasible, limit disturbance, and stabilize and revegetate disturbed areas as soon as possible after grading or construction. Use of temporary erosion control measures is especially important on large, graded sites where soil exposure to rainfall and wind can cause significant soil loss if left unprotected during the time active construction activities are conducted. Some of these measures may overlap with the permanent soil stabilization measures discussed later in the section. Until permanent vegetation is established, temporarily covering the soil is the most cost-effective and expeditious method to prevent and minimize erosion.

Indicate on the BMP Plan what methods will be used to prevent erosion from cut and fill slopes and other disturbed areas after grading activities are completed, but before permanent soil stabilization measures can be implemented. Options may include, but are not limited to:

- Covering with mulch

- Temporary seeding or planting
- Apply soil stabilizers or binders (tackifier)
- Placing fiber rolls/logs on bare slope
- Covering surfaces with erosion control blankets
- Diverting run off around disturbed areas using stabilized conveyances

SEDIMENT CONTROL

Sediment control BMPs are required at appropriate locations along the site perimeter and at all internal inlets to the storm drain system. Sediment controls used in combination with the erosion controls described above can effectively prevent the discharge of pollutants off site. Effective filtration devices, barriers, and settling devices shall be selected, installed and maintained properly. The sediment control plan must also include provisions to temporarily stabilize construction access points such that soil, sediment, and other construction related materials are not tracked out beyond the site perimeter.

Indicate on the BMP Plan what sediment controls will be used at the site. Options may include, but are not limited to:

Filter Barriers

- Fiber rolls/logs
- Silt fence
- Straw bale barriers
- Gravel inlet filters

Retention Structures

- Sediment traps
- Settling basins

Stabilized Access Points/Good Housekeeping

- Crushed rock
- Mulch
- Landing mats
- Frequent sweeping

STABILIZATION

All disturbed areas of the construction site must be stabilized once construction is complete. Disturbed areas include drainage ditches or channels. Stabilization means implementing permanent rather than temporary erosion controls. It is recommended to

stabilize disturbed areas in inactive (no further land disturbance planned) portions of the site as soon as feasible. Final stabilization for the purposes of Project Completion is satisfied when all soil disturbing activities are completed and either of the two following criteria are met:

1. A uniform vegetative cover with 70 percent coverage has been established; or
2. Equivalent stabilization measures have been employed. These measures include the use of such BMPs as mulch, erosion blankets, rip rap, fiber treatments, or other erosion resistant soil coverings or treatments.

Where background native vegetation covers less than 100 percent of the surface, such as in arid areas, the 70 percent coverage criteria is adjusted as follows: if the native vegetation on adjacent undisturbed areas covers 50 percent of the ground surface, 70 percent of 50 percent (.70 X .50= 35) would require 35 percent total uniform surface coverage.

Indicate on the BMP Plan what stabilization measures will be used at the site. Options may include, but are not limited to:

- Seeding and/or planting (including hydro mulching/seeding)
- Mulching (wood chips, gravel, other) in combination with seeding/planting
- Installing erosion blankets (typically used on steeper disturbed slopes or unlined drainage ditches in combination with permanent seeding/planting)
- Placing rip rap

NON-STORM WATER MANAGEMENT

Non-storm water discharges should be eliminated or reduced to the extent feasible. Certain non-storm water discharges (e.g. irrigation of vegetative erosion control measures, pipe flushing and testing) may be necessary for the completion of some construction projects and are authorized these WDRs. Other non-storm water discharges such as concrete washout, and driveway and street washing that would flush sediment or other pollutants to storm drains or surface waters are not allowed and would be a violation of these WDRs. Dewatering waste should be discharged to land and infiltrated. A separate permit may be necessary if dewatering waste must be discharged to surface waters due to site constraints.

Indicate on the BMP Plan how unauthorized non-storm water discharges will be controlled. Options include, but are not limited to:

- Approved off-site wash-out and wash-down areas
- Lined wash-out containment basins/traps
- Dewatering waste infiltration or containment

SPILL PREVENTION AND CONTROL

The BMP Plan must describe measures to prevent and control potential leaks/spills of petroleum products such as fuels and lubricating materials, and other potentially hazardous materials. Secured storage areas for fuels and chemicals should be established and sufficient spill cleanup materials should be at the site to respond to accidental spills.

Indicate on the BMP Plan what spill prevention and control measures will be used. Options include, but are not limited to:

- Covered material storage
- Material storage containment (berms, lined surfaces, secondary containment devices, etc.)
- Regular equipment leak inspections
- Drip pans
- Absorbents

POST-CONSTRUCTION STORM WATER MANAGEMENT

Post-construction storm water controls are needed to reduce the impacts of adding impervious surfaces to the landscape and adding potential pollutant sources within storm water drainage areas. Additional impervious surfaces reduce storm water infiltration and storage and increase the volume and velocity of run off downstream from developed sites. Whenever possible, use of infiltration and treatment devices is encouraged. Design approaches that limit overall land disturbance and reduce the amount of impervious surfaces are encouraged. Additional post-construction BMPs should also be incorporated into projects as appropriate and be properly maintained.

Indicate on the BMP Plan what post-construction BMPs will be implemented. Options include, but are not limited to:

- Infiltration structures
- Detention/retention basins
- Storm water treatment vaults
- Biofilter BMPs (typically vegetated swales, strips, and buffers)
- Energy dissipation devices (structures designed to prevent erosion and slow water velocity associated with conveyance systems)
- Efficient irrigation systems
- Proper drain plumbing (e.g. ensuring that interior drains are not connected to a storm sewer system)

MAINTENANCE, INSPECTION, AND REPAIR

BMPs implemented at the site must be properly maintained to be effective. The BMP Plan shall include provisions to inspect and maintain all BMPs identified in the plan throughout the duration of the project. Sites that are inactive and winterized through the wet season should be checked periodically to ensure the site remains stable. For sites where construction activity is conducted through the wet season, the Applicant must ensure that BMPs remain effective.

Indicate on the BMP Plan how BMPs will be inspected and repaired in accordance with the following minimum program:

For inactive construction sites during wet season

- Cease construction through wet season and winterize

For active construction sites during wet season

- Inspect BMPs before and after storm events
- Inspect BMPs once each 24-hour period during extended storm events
- Implement repairs or design changes as soon as feasible depending upon worker safety and field conditions
- Have provisions to respond to failures and emergencies

Section 6

Environmental Justice

6 Environmental Justice

Testimony of Ellen LeFevre

6.1 Environmental Setting and Regulatory Background

The "Environmental Justice in the Energy Commission Site Certification Process" subsection immediately below describes why environmental justice (EJ) is part of the California Energy Commission' (CEC) site certification process, the methodology used to identify an EJ population, and the consideration of California Environmental Protection Agency's (CalEPA) California Communities Environmental Health Screening Tool (CalEnviroScreen 4.0). The "Project Outreach" subsection discusses the CEC's outreach program specifically as it relates to the proposed project. Lastly, the "Environmental Justice Project Screening" subsection presents the demographic data for those people living in a six-mile radius of the project site and a determination on presence or absence of an EJ population. When an EJ population is identified, the analyses in 9 technical areas[1] consider the project's impacts on this population and whether any impacts would disproportionately affect the EJ population.

Environmental Justice in the Energy Commission Siting Process

California Government Code defines EJ as "the fair treatment of people of all races, cultures and income with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies" (Gov. Code, § 65040.12). The California Natural Resources Agency and the CEC have adopted this definition in respective Environmental Justice Policies.[2] The Agency policy directs all departments, boards, commissions, conservancies and special programs of the Resources Agency must consider EJ in their decision-making process if their actions have an impact on the environment, environmental laws, or policies. Such actions that require EJ consideration may include:

- Adopting regulations;
- Enforcing environmental laws or regulations;
- Making discretionary decisions or taking actions that affect the environment;
- Providing funding for activities affecting the environment; and
- Interacting with the public on environmental issues

1 The 9 technical areas are, Air Quality; Cultural and Tribal Cultural Resources; Hazards, Hazardous Materials, and Wildfire; Water Resources; Noise and Vibration; Public Health; Solid Waste Management; Transportation; and Visual Resources. Cultural and Tribal Cultural Resources considers impacts to Native American populations.

2 https://www.conservation.ca.gov/Documents/Environmental%20Justice%20Policy%20-%20CNRA.pdf and https://www.energy.ca.gov/sites/default/files/2023-11/CEC-JAEDI-Framework_ada.pdf

The California Natural Resources Agency recognizes that EJ communities are commonly identified as those where residents are predominantly minorities or live below the poverty level; where residents have been excluded from the environmental policy setting or decision-making process; where they are subject to a disproportionate impact from one or more environmental hazards; and where residents experience disparate implementation of environmental regulations, requirements, practices, and activities in their communities. Environmental justice efforts attempt to address the inequities of environmental protection in these communities.

CEC staff typically conduct EJ analysis by taking the following steps:

- Identification of a population of minority persons and/or persons with low income (i.e., disadvantaged community) living in an area potentially affected by the proposed project;
- Providing notice in appropriate languages (when possible) of the proposed project and opportunities for participation in public workshops for disadvantaged communities;
- Identification of areas potentially affected by various project-related emissions (e.g., air quality, greenhouse gases (GHG), hazardous materials, etc.) or other project-related nuisance effects (e.g., noise, traffic, etc.); and
- A determination of the potential for a significant adverse disproportionate impact on an identified EJ population resulting from the proposed project alone, or in combination with other existing and/or planned projects in the area (i.e., from cumulative impacts).

CalEnviroScreen

In 2012, CalEPA developed CES as a science-based mapping tool that provides an objective method for evaluating multiple pollutants and stressors in local communities, and ultimately for identifying disadvantaged communities pursuant to Health and Safety Code section 39711 as enacted by Senate Bill (SB) 535 (De León, Stats. 2012 Ch. 830). CalEPA released an updated designation for disadvantaged communities[3] in May 2022 for the purposes of SB 535. As required by State law, disadvantaged communities are identified based on geographic, socioeconomic, public health, and environmental hazard criteria. CES identifies impacted communities by considering pollution exposure and its

3 The California Environmental Protection Agency (CalEPA), for purposes of its Cap-and-Trade Program, defines communities in terms of census tracts and identifies four types of geographic areas as disadvantaged: (1) census tracts receiving the highest 25 percent of overall scores in CalEnviroScreen (CES) 4.0; (2) census tracts lacking overall scores in CES 4.0 due to data gaps, but receiving the highest 5 percent of CES 4.0 cumulative pollution burden scores; (3) Census tracts identified in the 2017 DAC (disadvantaged community) designation as disadvantaged, regardless of their scores in CES 4.0; (4) and areas under the control of federally recognized Tribes (CalEPA 2022a).

effects, as well as health and socioeconomic status, at the Census-tract level (OEHHA 2021, pg. 8).

The CES model incorporates 21 indicators that measure a community's exposure, environmental effects, sensitive population, and socioeconomic factors. Indicators for exposure and environmental effects comprise a Pollution Burden group, and indicators for sensitive populations and socioeconomic factors comprise a Population Characteristics group.

Table 6-1 lists the indicators that go into the Pollution Burden score and the Population Characteristics score to form the final CES score. These indicators are used to measure factors that affect the potential for pollution impacts in communities.

TABLE 6-1 COMPONENTS THAT FORM THE CALENVIROSCREEN (CES) 4.0 SCORE

Pollution Burden	
Exposure Indicators	**Environmental Effects Indicators**
Children's lead risk from housing	Cleanup sites
Diesel particulate matter (PM) emissions	Groundwater threats
Drinking water contaminants	Hazardous waste
Ozone concentrations	Impaired water bodies
PM 2.5 concentrations	Solid waste sites and facilities
Pesticide use	
Toxic releases from facilities	
Traffic density	
Population Characteristics	
Sensitive Populations Indicators	**Socioeconomic Factors Indicators**
Asthma emergency department visits	Educational attainment
Cardiovascular disease (emergency department visits for heart attacks)	Housing-burdened low-income households
Low birth-weight infants	Linguistic isolation
	Poverty
	Unemployment

Notes: PM = particulate matter. PM 2.5 = fine particulate matter 2.5 microns or less.
Source: OEHHA 2021

The CES model uses U.S. Census tract data as a geographic scale for identifying disadvantaged communities within California. For each Census tract, CES calculates an overall score by combining the individual indicator scores within each of the two groups (i.e., Pollution Burden and Population Characteristics), then multiplying the Pollution Burden and Population Characteristics scores to produce a final score:

[Pollution Burden] x [Population Characteristics] = CES Score

- Pollution Burden Score. Pollution Burden scores for each U.S. Census tract are derived from the average percentiles of the eight exposures indicators (ozone and PM2.5 concentrations, diesel PM emissions, drinking water contaminants, children's lead risk from housing, pesticide use, toxic releases from facilities, and traffic impacts) and the five environmental effects indicators (cleanup sites, impaired water

bodies, groundwater threats, hazardous waste facilities and generators, and solid waste sites and facilities). Indicators from the environmental effects component are given half the weight of the indicators from the exposures component. The calculated average Pollution Burden score (average of the indicators) is divided by 10 and rounded to one decimal place for a Pollution Burden score ranging from 0.1 to 10.

- Population Characteristics Score. Population Characteristics scores for each U.S. Census tract are derived from the average percentiles for the three sensitive populations indicators (cardiovascular disease, low birth weight infants, and asthma) and the five socioeconomic factors indicators (educational attainment, linguistic isolation, housing burden, unemployment, and poverty). The calculated average percentile is divided by 10 for a Population Characteristic score ranging from 0.1 to 10.

Since both the Pollution Burden and Populations Characteristics provide a maximum score of 10, the maximum CES Score is 100. Based on these scores, Census tracts across California are ranked relative to one another. The indicator values for the Census tracts for the entire state are ordered from highest to lowest. A percentile is calculated from the ordered values for all areas that have a score. A higher percentile indicates a higher potential relative burden. A percentile does not describe the magnitude of the difference between two tracts, but rather it simply tells the percentage of tracts with lower values for that indicator (OEHHA 2021, pg. 20). Census tracts receiving the highest 25 percent of overall scores in CES 4.0 are considered disadvantaged (CalEPA 2022a).

CEC staff assess project effects on low-income and/or high-minority populations by reviewing CES indicators (see **Table 6-1**) as they relate to specific technical issues being analyzed. The project-specific Census tracts identified by CES as disadvantaged incorporates analyses by CEC technical analysts (Air Quality; Cultural and Tribal Cultural Resources; Hazards, Hazardous Materials and Wildfire; Water Resources; Noise and Vibration; Public Health; Solid Waste Management; Transportation; and Visual Resources) to determine if any disproportionate burdens would be borne by EJ populations.

Project Outreach

In 2016, SB 1000 (Leyva, Chapter 587, Statutes of 2016) was enacted to require local governments with disadvantaged communities, as defined in statute, to incorporate environmental justice into their general plans when two or more general plan elements (sections) are updated. The Governor's Office of Land Use and Climate Innovation (the state's comprehensive planning agency) worked with State agencies, local governments, and many partners to update the General Plan Guidelines in 2020 to include guidance for communities on environmental justice (LCI 2020). This law has several purposes, including to facilitate transparency and public engagement in local governments' planning and decision-making processes, reduce harmful pollutants and

the associated health risks in environmental justice communities, and promote equitable access to health-inducing benefits, such as healthy food options, housing, public facilities, and recreation.

Meaningful involvement is an important part of the siting process and occurs when:

- Those whose environment or health would be potentially affected by the decision on the proposed activity have an appropriate opportunity to participate in the decision;
- The population's contribution can influence the decision; and
- The concerns of all participants involved are considered in the decision-making process.

Furthermore, it is the policy of California Natural Resources Agency that the public, including minority and low-income populations, are informed of opportunities to participate in the development and implementation of all Resources programs, policies and activities, and that they are not discriminated against, treated unfairly, or caused to experience disproportionately high and adverse human health or environmental effects from the environmental decisions (CNRA 2025)

CEC staff and the Office of the Public Advisor, Energy Equity, and Tribal Affairs (PAO+) participated in and facilitated public outreach, engagement, and participation at the regional public events and proceedings.

CEC staff filed and mailed to the project mail list a Notice of Receipt of the Willow Rock Energy Storage Center Application on February 28, 2022. Based on current U.S. Census English fluency data for the population residing in the cities and communities within a six-mile radius of the project site, translation of the public notices was deemed appropriate. U.S. Census data also showed that of those who report they "speak English less than very well," the predominant language spoken was Spanish. Public notices for the project in both English and Spanish were published in local newspapers on March 28 and April 8, 2022, respectively.

In accordance with the Governor's Executive Order B-10-11, the CEC's Tribal Consultation Policy, the CEC's Siting Regulations, and CEQA , staff conducted outreach and consultation with regional tribal governments. Additional information regarding the outreach efforts and specific groups contacted can be found in **Section 5.4, Cultural and Tribal Cultural Resources**.

As described in **Section 2, Introduction**, staff mailed the Notification of Preliminary Staff Assessment to all owners and occupants of properties within 1,000 feet of project site and 500 feet of project linear facilities using the list of assessor parcel numbers and owners submitted as required by CCR, Title 20, Appendix B (a) (1) (E).

Environmental Justice Project Screening

To consider EJ concerns, the CEC staff has historically used a six-mile radius surrounding the project site based on the potential distance of air pollution emissions from natural gas thermal powerplants. Conservatively, staff retained the six-mile distance due to the rural nature of the area with few residences close by.

Figure 6-1 shows 2020 census blocks in a six-mile radius of the project with a minority population greater than or equal to 50 percent (U.S. Census 2020). The population in these census blocks represents an EJ population based on race and ethnicity.

Based on California Department of Education data in **Table 6-2** and presented in **Figure 6-2**, staff concludes that the percentage of those living in the Southern Kern Unified and Mojave Unified school districts (in a six-mile radius of the project site) and enrolled in the free or reduced-price meal program is larger than the percentage of those living in the reference geography (Kern County) and enrolled in these programs. Thus, the population in this school district is considered an EJ population based on low income.

TABLE 6-2 LOW INCOME DATA WITHIN THE PROJECT AREA

School Districts in a Six-Mile Radius of the Project Site	Enrollment Used for Meals	Free or Reduced-Price Meals	
Southern Kern Unified	**3,683**	**3,041**	**82.6%**
Mojave Unified	**2,842**	**2,529**	**89.0%**
Reference Geography			
Kern County	198,315	152,211	61.7%

Note: **Bold** indicates school districts considered having an EJ population based on low income
Source: CDE 2024

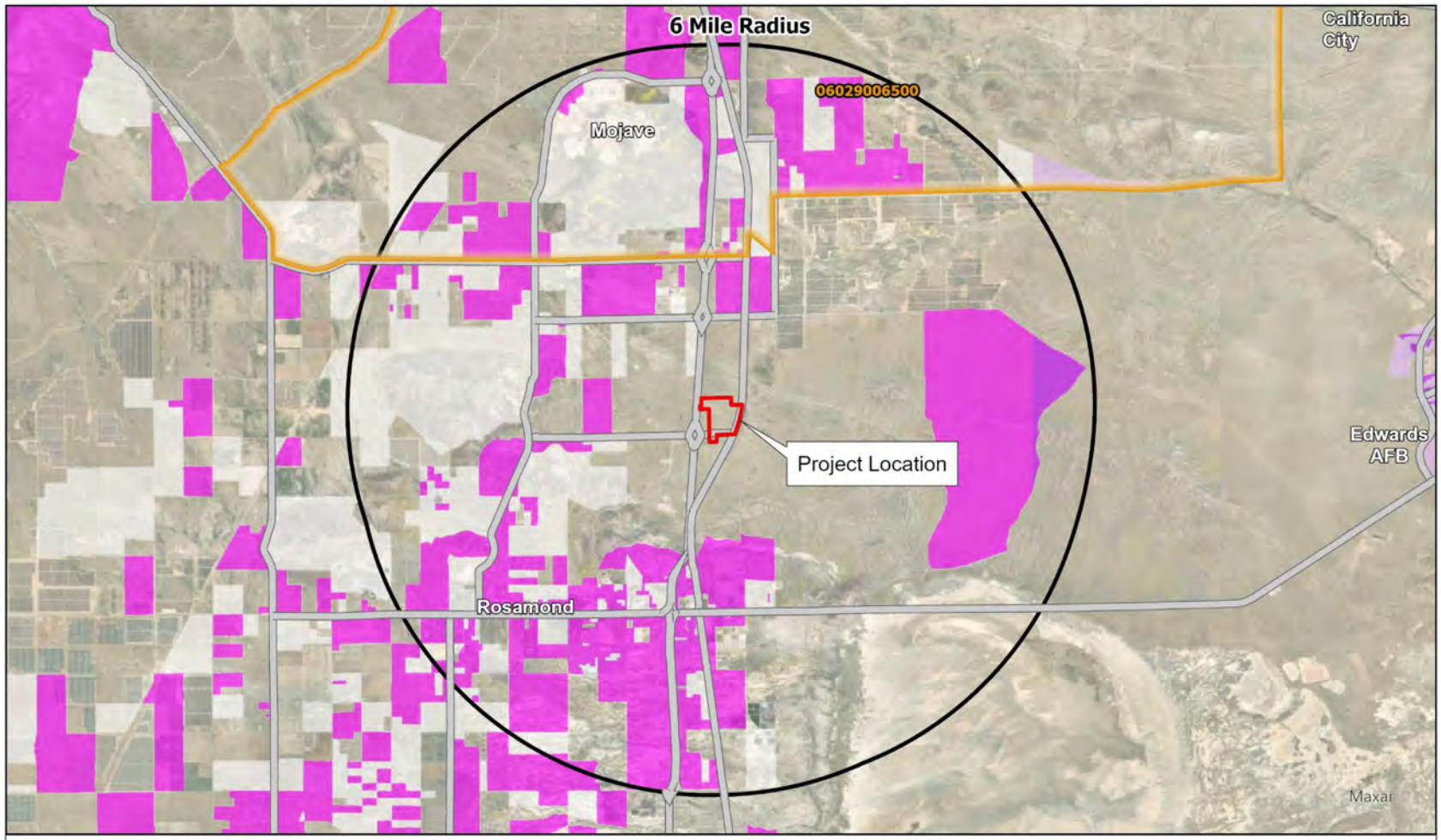

Figure 6-1
Minority Population and Disadvantaged Communities

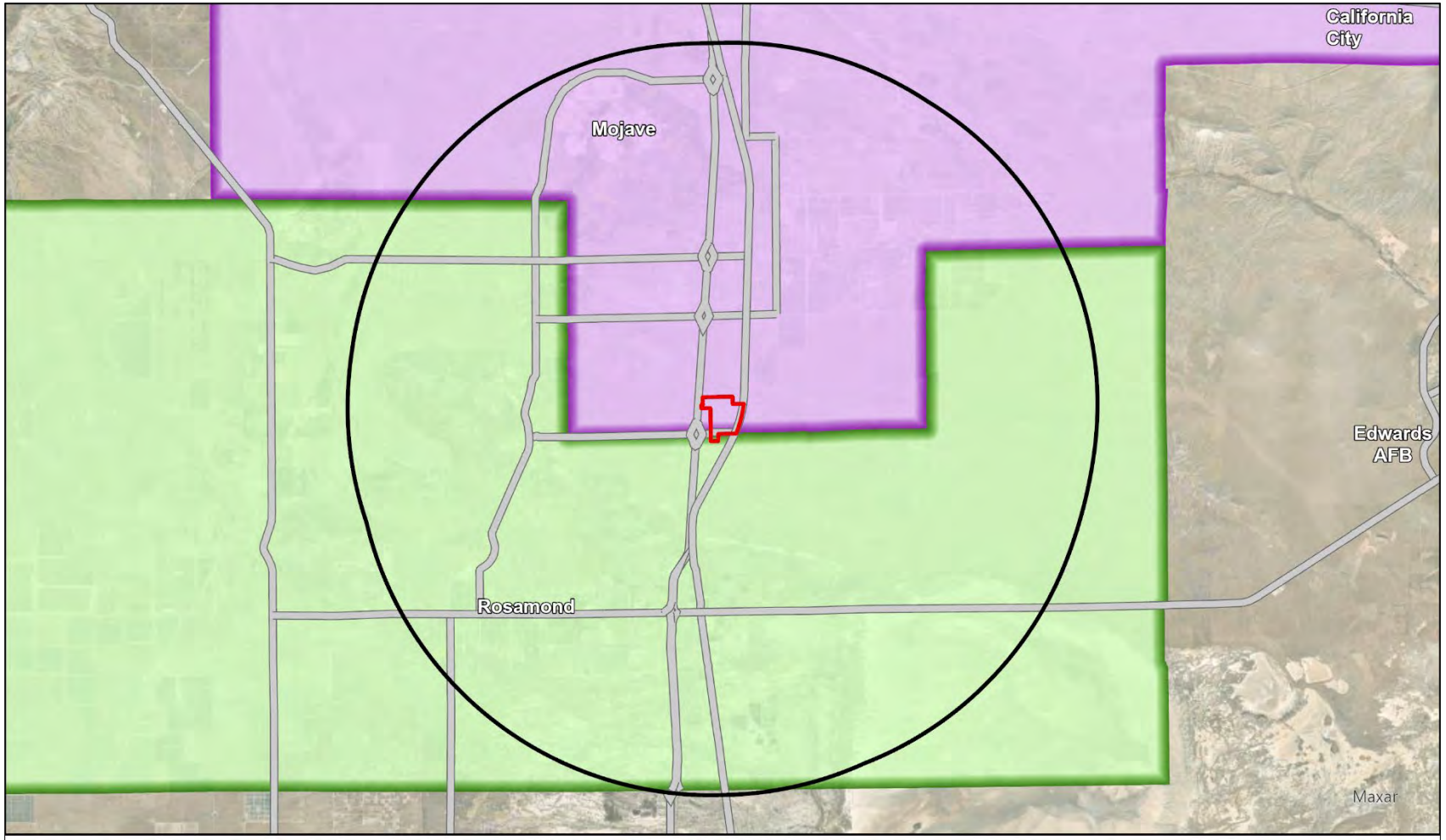

Figure 6-2
Low Income Population

Note: Shaded areas have an EJ population based on low income
Sources: TIGER Data, CDE 2024

Table 6-3 presents the CalEnviroScreen overall scores and disadvantaged communities[4] (DAC) within a six-mile radius of the project site. The location of each of these census tracts is shown on **Figure 6-1**. Staff used CalEnviroScreen to identify disadvantaged communities in the vicinity of the proposed project and better understand the characteristics of the areas where impacts could occur.

TABLE 6-3 CALENVIROSCREEN SCORES FOR DISADVANTAGED COMMUNITIES

Census Tract No.	Total Population	CES 4.0 Percentile	Pollution Burden Percentile	Population Characteristics Percentile	DAC Category
06029006500	4,501	76.98	57.67	82.48	CES 4.0 Top 25%

Note: Disadvantaged communities by census tract in the project's six-mile radius. Source: CalEPA 2022b

The CalEnviroScreen indicators are used to measure factors that affect the potential[5] for pollution impacts in communities**. Table 6-4** presents the CalEnviroScreen percentiles for the indicators that make up the pollution burden percentile. **Table 6-5** presents the percentiles for the indicators that make up the population characteristics.

4 The CalEPA, for purposes of its Cap-and-Trade Program, has defines communities in terms of census tracts and identifies four types of geographic areas as disadvantaged: (1) census tracts receiving the highest 25 percent of overall scores in CalEnviroScreen 4.0; (2) census tracts lacking overall scores in CalEnviroScreen 4.0 due to data gaps, but receiving the highest 5 percent of CalEnviroScreen 4.0 cumulative pollution burden scores; (3) census tracts identified in the 2017 DAC designation as disadvantaged, regardless of their scores in CalEnviroScreen 4.0; (4) and areas under the control of federally recognized Tribes. (CalEPA 2022a).

5 It is important to note that CalEnviroScreen is not an expression of health risk and does not provide quantitative information on increases of impacts for specific sites or project. CalEnviroScreen uses the criteria of "proximity" to a hazardous waste site, a leaking underground tank, contaminated soil, an emission stack (industry, power plant, etc.) to determine that a population is "impacted". It does not address general principles of toxicology: dose/response and exposure pathways. For certain toxic chemicals to pose a risk to the public, offsite mitigation pathways must exist (through ingestion, inhalation, dermal contact, etc.) and contact to a certain amount- not just any amount – mush exist.

TABLE 6-4 CALENVIROSCREEN INDICATOR PERCENTILES FOR POLLUTION BURDEN FOR DISADVANTAGED COMMUNITIES

Census Tract No.	Percentiles													
	Pollution Burden	Ozone	PM2.5	Diesel PM	Drinking Water	Lead	Pesticides	Toxic Release	Traffic	Cleanup Sites	Groundwater Threats	Hazardous Waste	Impaired Water Bodies	Solid Waste
06029006500	57.67	80.09	5.54	3.26	74.43	53.89	0.00	55.34	4.73	96.47	45.23	91.22	0.00	97.21

Note: Disadvantaged communities by census tract in the project's 6-mile radius. Source: CalEPA 2022b

TABLE 6-5 CALENVIROSCREEN INDICATOR PERCENTILES FOR POPULATION CHARACTERISTICS FOR DISADVANTAGED COMMUNITIES

Census Tract No.	Percentiles								
	Population Characteristics	Asthma	Low Birth Weight	Cardiovascular Disease	Education	Linguistic Isolation	Poverty	Unemployment	Housing Burden
06029006500	82.48	86.98	95.32	76.52	82.31	0.00	87.95	97.85	17.93

Note: Disadvantaged communities by census tract in the project's 6-mile radius. Source: CalEPA 2022b

6.2 Environmental Impacts

The following technical areas discuss impacts to EJ populations: Air Quality; Cultural and Tribal Cultural Resources; Hazards, Hazardous Materials/Waste, and Wildfire; Noise and Vibration; Public Health; Solid Waste Management; Transportation; Visual Resources; and Water Resources. As noted on page 6-4, five technical areas that could have project impacts that could overlap with the indicators in CalEnviroScreen: Air Quality; Public Health, Hazards, Hazardous Materials/Waste, and Wildfire; Solid Waste Management; and Water Resources.

Air Quality

Table 6-4 and **Table 6-5** include indicators that relate to air quality. The indicators that are associated with criteria pollutants such as ozone, fine particulate matter having a diameter of less than or equal to 2.5 microns (PM2.5), and nitrogen dioxide (NO2) are indicators related to air quality. Each of these air quality indicators are summarized under this Air Quality subsection.

Ambient air quality standards (AAQS) are established to protect the health of even the most sensitive individuals in our communities, which includes the EJ population, by defining the maximum amount of a pollutant that can be present in outdoor air without harm to the public's health. Both the California Air Resources Board and the United States Environmental Protection Agency (U.S. EPA) are authorized to set ambient air quality standards.

Staff identified the potential air quality (i.e. ozone and PM2.5) impacts that could affect the EJ population represented in **Figures 6-1** and **6-2**. These potential air quality impacts were evaluated quantitatively based on the most sensitive population, which includes the EJ population, by conducting an air quality impact analysis (AQIA). Please refer to **Section 5.1**, **Air Quality** for details. Staff also examined individual contributions of indicators in CalEnviroScreen that are relevant to air quality (see **Table 6-1**).

In **Section 5.1**, **Air Quality**, staff concluded that with the implementation of Air Quality conditions of certification (COCs), criteria pollutants would not cause or contribute to exceedances of health-based ambient standards. Likewise, the project would not cause disproportionate air quality impacts on sensitive populations, such as the EJ population represented in **Figures 6-1** and **6-2**.

Ozone Impacts. Ozone is known to cause numerous health effects, which can potentially affect EJ communities as follows:

- Lung irritation, inflammation and exacerbation of existing chronic conditions, even at low exposures (Alexis et al. 2010, Fann et al. 2012, Zanobetti and Schwartz 2011);
- Increased risk of asthma among children under 2 years of age, young males, and African American children (Lin et al., 2008, Burnett et al., 2001); and,

- Higher mortality, particularly in the elderly, women and African Americans (Medina-Ramon, 2008).

Even though ozone would not be directly emitted from emission sources of the project, precursor pollutants that create ozone, such as nitrogen oxides (NOx) and volatile organic compounds (VOCs), would be emitted. The NOx and VOC emissions of the project during operation would not require offsets because the emission units are for emergency use only and would be limited to no more than 200 hours of operation per year. Please see more detailed discussion in **Section 5.1, Air Quality**.

For CalEnviroScreen, the air monitoring data used in this indicator have been updated to reflect ozone measurements for the years 2017 to 2019. CalEnviroScreen 4.0 uses the average daily maximum 8-hour ozone concentration (ppm). According to CalEnviroScreen data, ozone concentrations in each census tract are ordered by ozone concentration values, and then are assigned a percentile based on the statewide distribution of values.

Results for ozone are shown in **Table 6-4.** This means ozone levels in the census tracts are relatively high, with percentiles around 80. Another way to look at the data is that approximately 20 percent of all California census tracts have higher ozone levels than the census tract near the project. For ozone, the census tract within a six-mile radius of the proposed project's site are exposed to high ozone concentrations compared to the rest of the state.

The project would not be expected to contribute significantly to the regional air quality as it relates to ozone. As discussed above, the project would not be required to provide any offsets because the emission units are for emergency use only and would be limited to no more than 200 hours of operation per year. In addition, as required by **AQ-SC5**, the project would control diesel construction-related emissions, which would reduce NOx and VOCs during construction. Therefore, the project would not contribute significantly to regional ozone concentrations, relative to baseline conditions. The project's air quality impacts, as it related to ozone and ozone precursors would be less than significant for the census tracts of concern and the general population.

Staff concludes that the project would not expose sensitive receptors to substantial ozone precursor concentrations. The project's ozone and ozone precursor air quality impacts would be less than significant for the local EJ community and the general population. Additionally, the project would not result in a cumulatively considerable net increase of secondary pollutants such as ozone in the air basin. No disproportionate impacts to an EJ population would occur.

PM2.5 Impacts. Particulate matter (PM) is a complex mixture of aerosolized solid and liquid particles including such substances as organic chemicals, dust, allergens and metals. These particles can come from many sources, including cars and trucks, industrial processes, wood burning, or other activities involving combustion. The

composition of PM depends on the local and regional sources, time of year, location and weather.

PM2.5 refers to particles that have a diameter less than or equal to 2.5 micrometers. PM2.5 is known to cause numerous health effects, which can potentially affect EJ communities. Particles in this size range can have adverse effects on the heart and lungs, including lung irritation, exacerbation of existing respiratory disease, and cardiovascular effects.

For CalEnviroScreen, the indicator PM2.5 is determined by the annual mean concentration of PM2.5 (weighted average of measured monitor concentrations and satellite observations, $\mu g/m^3$), averaged over three years (2015-2017). According to CalEnviroScreen data, PM2.5 concentrations in each census tract are ordered by PM2.5 concentration values, and then are assigned a percentile based on the statewide distribution of values and are shown in **Table 6-4**.

Census tract 06029006500 was at the 5.54 percentile in the PM2.5 category (see **Table 6-4**). This indicates that particulate matter concentrations in this census tract are higher than 5.54 percent of tracts statewide. This indicates that these communities are exposed to below average PM2.5 concentrations compared to the rest of the state.

The project would be expected to comply with ambient air quality standards for PM2.5 during construction and operations. The project would be required to comply with **AQ-SC1** through **AQ-SC5** during construction, which would reduce particulate matter during construction. The project would therefore be expected to not contribute significantly to regional PM2.5 concentrations, relative to baseline conditions. The project's air quality impacts, as it related to PM2.5 would be less than significant for the census tract of concern and the general population.

Staff concludes that the project would not expose sensitive receptors to substantial PM2.5 concentrations. No disproportionate impacts to an EJ Population would occur.

Cultural and Tribal Cultural Resources

Staff did not identify any Native American environmental justice populations that either reside within six miles of the project or that rely on any subsistence resources that could be impacted by the proposed project. Therefore, no disproportionate impacts to resources associated with a specific tribe that is an EJ population would occur.

Hazards, Hazardous Materials, and Wildfire

EJ populations may experience disproportionate hazards, hazardous materials, and wildfire impacts if the storage and use of hazardous materials within or near EJ communities occur to a greater extent than within the community at large or if the project would contribute to or exacerbate the effects of cleanup sites, hazardous waste generators and facilities, and solid waste facilities. A disproportionate impact upon the

EJ population can also result from the planned storage and use of hazardous materials on the site. A disproportionate waste management impact on an EJ population could occur if project wastes impacted the disadvantaged community. The project would involve limited transport, storage, use, and disposal of hazardous materials during construction, operation and maintenance, and decommissioning activities. The amounts of hazardous materials used and hazardous waste produced during construction, operations, and decommissioning are far less than those found at other types of energy production projects, thus reducing the risks posed by hazardous materials and wastes on workers and the public. As an example, no chemicals that would require either adherence to the California Accidental Release Prevention Program (CalARP Program) or the CAL OSHA Process Safety Management Program would be used on this site (ESHD 2024h).

Diesel fuel in above-ground storage tanks is the hazardous material that the project site would have in greatest quantity. The total quantity of diesel fuel would be stored in double-walled fuel tanks with proper spill controls with most of the fuel being used during construction. The project would not use large quantities of piped-in natural gas. Explosives would be used on the site for cavern excavation only during the construction phase and would be stored in a special magazine. Explosives are highly regulated and numerous safety precautions must be in place for their use and temporary storage. Safety inspections of explosives storage and use during construction would be routinely conducted by the project owner and an independent safety monitor. All explosives would be removed from the site after construction. All other hazardous materials would be stored and used with appropriate spill prevention and handling procedures. Therefore, the likelihood of a spill or release of sufficient quantity to impact the surrounding community and EJ population would be very unlikely and is considered less than significant. The same hold true for hazardous wastes generated by the project. Hazardous wastes in the form of dusts and airborne particulates could also be generated during cavern construction depending upon the levels of metals and inorganic substances (e.g., hexavalent chromium or silica) that occurs naturally in the subsurface soils and rock. The spoils from the cavern construction would be routinely sampled and analyzed as per proposed Condition of Certification **WORKER SAFETY-1** to determine if these wastes meet the statutory definition of hazardous. Hazardous wastes would be accumulated according to Title 22 California Code of Regulations requirements. They would be stored in appropriately segregated storage areas surrounded by berms to contain leaks and spills and could be stored on-site for no more than 90 days before being transported by a licensed hazardous waste transporter to an authorized treatment, storage, and disposal facility.

Wildfire impacts would be less than significant with mitigation for the project site and for the 19-mile generation intertie (gen-tie) line. While fire risk may be slightly elevated during construction and operation of the project like the construction of any project, the project would address these risks by complying with all applicable laws, ordinances, and regulations and implementing best management practices and engineering controls described by the applicant. Proper planning and mitigation measures would avoid and

minimize potential for accidental wildfire ignition, particularly during construction of the gen-tie line. Additionally, the project would conduct an emergency response planning session to address public health concerns regarding wildfire risk. Furthermore, the site and gen-tie line would not be located within or very near a very high Fire Hazard Safety Zone (FHSZ) and therefore are not subject to any FHSZ and therefore would not impact or impair an emergency response or evacuation plan.

Since the overall CalEnviroScreen score reflects the collective impacts of multiple pollutants and factors, staff examined the individual contributions to indicators as they relate to wastes addressed under utilities and system services. The wastes of concern in this analysis are those from construction and operational activities. The handling and disposal of each type of waste depends on the hazardous ranking of its constituent materials. Existing laws, ordinances, regulations, and standards ensure the desired handling and disposal of waste materials without potential public or environmental health impacts. The CalEnviroScreen scores for the disadvantaged community census tracts in a six-mile radius of the project (see **Figure 6-1**) are presented in **Table 6-4** for each of the following environmental stressors that relate to waste management: cleanup sites, hazardous waste generators and facilities, and solid waste facilities. The percentile for each disadvantaged census tract reflects its relative ranking among all of California's census tracts.

Applicant's review of these sources determined that there are no sites currently on the Cortese List within 1,000 feet of the project site. The closest listed site is Osage Industries, approximately 3.04 miles (>16,000 ft.) west from the center of the proposed site which was remediated and found to have no groundwater contamination plume. Thus, it is highly unlikely that any impacts would result from Cortese-listed properties or that the project site would present a significant hazard to the public or the environment.

CalEnviroScreen assigns a score to each category of stressors. To assess the impact of a stressor on population within a census tract, the score is assigned a weighting factor that's inversely proportional with distance from the census tract. For stationery stressors, the weighting factor diminishes to zero for distances equal to or larger than 1,000 meters (0.6 mile). As **Figure 6-1** shows, there are no populated census tracts within 1,000 meters of the proposed project site. Therefore, no further analysis is needed. No disproportionate impacts to an EJ population would occur.

Noise and Vibration

EJ populations may experience disproportionate noise impacts if the siting of unmitigated industrial facilities occurs within or near EJ communities to a greater extent than within the community at large.

The Kern County General Plan does not establish noise level thresholds for construction activities. However, the County's Municipal Code limits construction noise near residential areas to certain hours. Specifically, construction noise that can be heard

within 150 feet of the site is prohibited between 9:00 P.M. and 6:00 A.M. on weekdays, and between 9:00 P.M. and 8:00 A.M. on weekends, if the site is located within 1,000 feet of an occupied residential dwelling (Kern County 2024). The project has proposed that construction activities would occur from 7:00 A.M. to 9:00 P.M. on weekdays and 8:00 A.M. to 9:00 P.M. on weekends when within 1,000 feet of an occupied residential dwelling (ESHD 2024h, Section 5.7.5.3).

Construction activities would include the use of equipment that would generate noise that exceeds ambient levels, such as rollers, cranes, telehandlers, front-end loaders, hoppers, and pile driver hammers. Moreover, the project would utilize controlled detonations to excavate the underground storage cavern. Construction-related noise from controlled detonation activities would expose some nearby sensitive receptors to noise levels significantly higher than the existing ambient noise level. Staff has identified COCs to reduce potential effects associated with construction-related noise impacts to less than significant.

Potential noise associated with project operation would be less than significant. The potential vibration impact associated with construction would be less than significant, and there would be no impact associated with vibration during project operation. No disproportionate impacts to an EJ population would occur.

Public Health

Since toxic air contaminants (TACs) have no AAQS that specify health-based levels considered safe for everyone, a health risk assessment (HRA) is used to determine if people might be exposed to those types of air pollutants at unhealthy levels. Staff identified the potential public health impacts (i.e. cancer and non-cancer health effects) that could affect the EJ population represented in **Figures 6-1** and **6-2**. These potential air public health risks were evaluated quantitatively based on the most sensitive population, which includes the EJ population, by conducting an HRA. Please refer to **Section 5.10, Public Health** for details. CEC staff also examined individual contributions of indicators in CalEnviroScreen that are relevant to public health (see **Table 6-1**).

Table 6-4 and **Table 6-5** include indicators that relate to public health. Indicators that are associated with protecting public health are: Diesel PM, Pesticide Use, Toxic Release from Facilities, Traffic Density, Asthma ER Visits, Low Birth Weight Infants, and Cardiovascular Disease. Each of these public health indicators are summarized below.

Diesel PM. This indicator represents how much diesel PM is emitted into the air within and near the census tract. The data are from 2016 California Air Resources Board's emission data from on-road vehicles (trucks and buses) and off-road sources (ships and trains, for example). This is the most recent data available with which to make the necessary comparisons.

Table 6-4 shows that census tracts 06029006500 is at the 3.26 percentile in the Diesel PM category. This indicates that the background concentration of Diesel PM in this census tract is below the statewide average and this community is not exposed to high level diesel PM as compared to the rest of the state. Also, according to the results of the health risk assessment (HRA) conducted for this project in **Section 5.10, Public Health**, impacts associated with diesel PM from the proposed project construction and operation activities (diesel-fueled equipment) would be less than significant with mitigation incorporated; and therefore, would not have a significant cumulative contribution to the diesel PM levels in this disadvantaged community. No disproportionate impacts to an EJ population would occur.

Pesticide Use. Specific pesticides included in the Pesticide Use category were narrowed from the list of all registered pesticides in use in California to focus on a subset of 132 active pesticide ingredients that are filtered for hazard and volatility for the years 2017-2019 collected by the California Department of Pesticide Regulation. Only pesticides used on agricultural commodities are included in the indicator.

Table 6-4 shows that census tracts 06029006500 is at the 0 percentile in the Pesticide category. This indicates that pesticide use in this census tract is below the statewide average in terms of pesticide use, and this community is not exposed to high pesticide concentrations as compared to the rest of the state. No disproportionate impacts to an EJ population would occur.

Toxic Releases from Facilities. This indicator represents modeled toxicity-weighted concentrations of chemical releases to air from facility emissions and off-site incineration in and near the census tract. The U.S. EPA provides public information on the amount of chemicals released into the environment from many facilities. This indicator uses the modeled air concentration and toxicity of the chemical to determine the toxic release score. The data are from 2017-2019.

Table 6-4 shows that census tracts 06029006500 is at the 55.34 percentile in the Toxic Release category. This indicates that toxic release from facilities threats in this census tract is below the statewide average and this community is lower than the state average for exposure to toxic releases. Also, according to the results of the HRA conducted for this project in **Section 5.10, Public Health**, impacts associated with TACs from the proposed project construction and operation activities would be less than significant with mitigation incorporated; and therefore, would not have a significant cumulative contribution to toxic releases in this disadvantaged community. No disproportionate impacts to an EJ population would occur.

Traffic Impacts. This indicator represents the average traffic volumes per amount of roadways. It is calculated by dividing the traffic volumes by the total road length within and 150 meters around the census tract. The data is from 2017. Traffic impacts are related to the diesel PM emitted from diesel-fueled vehicles.

Table 6-4 shows that census tract 06029006500 is at the 4.73 percentile in the Traffic Impacts category. This indicates that average traffic volumes per amount of roadways in this census tract is below the statewide average and this community is lower than the state average for traffic impacts. Also, according to the results of the HRA conducted for this project in **Section 5.10, Public Health**, impacts associated with diesel PM from the proposed project construction and operation activities (diesel-fueled equipment) would be less than significant with mitigation incorporated; and therefore, would not have a significant cumulative contribution to the diesel PM-related traffic density in this disadvantaged community. No disproportionate impacts to an EJ population would occur.

Asthma. This indicator is a representation of an asthma rate. It measures the number of emergency department (ED) visits for asthma per 10,000 people over the years 2015 to 2017. The information was collected by the California Office of Statewide Health Planning and Development (OSHPD).

Table 6-5 shows that census tract 06029006500 is at the 86.98 percentile in the Asthma category. This indicates the number of ED visits for asthma per 10,000 people over the years 2015 to 2017 are higher than 86.98 percent of tracts statewide. This also indicated that this community has above average numbers of ED visits due to asthma compared to the rest of the state.

According to the results of the health risk assessment conducted for the project in **Section 5.10, Public Health**, impacts associated with TACs from the proposed project construction and operation activities would be less than significant with mitigation incorporated; and therefore, would not have a significant cumulative contribution to asthma ED visits. The project's emissions would not have a significant cumulative contribution to asthma ED visits for the local EJ community and the general population. No disproportionate impacts to an EJ population would occur.

Low Birth Weight Infants. This indicator measures the percentage of babies born weighing less than 2500 grams (about 5.5 pounds) out of the total number of live births over the years 2009 to 2015. The information was collected by the California Department of Public Health (CDPH).

Table 6-5 shows that census tract 06029006500 is at the 95.32 percentile in the Low Birth Weight category, meaning the percent low birth weight is higher than 95.32 percent of the census tracts in California. This indicates that this community has lower birth weight compared to the rest of the state.

Staff's HRA in **Section 5.10, Public Health** for the proposed project was based on a highly conservative health-protective methodology that accounts for impacts on the most sensitive individuals in a given population. According to the results of the assessment, the risks at the nearest sensitive receptors (i.e., Maximally Exposed Individual Residential [MEIR] and Maximally Exposed Individual Sensitive [MEIS]) are

below health-based thresholds. Therefore, the toxic emissions from the project would not cause significant health effects for the low birth-weight infants in this disadvantaged community or have a significant cumulative contribution to this disadvantaged community. No disproportionate impacts to an EJ population would occur.

Cardiovascular Disease. This indicator represents the rate of heart attacks. It measures the number of emergency department (ED) visits for acute myocardial infarction (AMI) (or heart attack) per 10,000 people over the years 2015 to 2017.

Table 6-5 shows census tract 06029006500 is at the 76.52 percentile in the Cardiovascular Disease category. This indicates the number of emergency department visits for AMI per 10,000 people over the years 2015 to 2017 is higher than 76.52 percent of tracts statewide. This indicates that this community is above the average number of emergency department visits for AMI compared to the rest of the state.

According to the results of the HRA conducted for the project in **Section 5.10, Public Health**, impacts associated with TACs from the proposed project construction and operation activities would be less than significant with mitigation incorporated; and therefore, would not have a significant cumulative contribution to cardiovascular disease. The project's emissions would not have a significant cumulative contribution to cardiovascular disease for the local EJ community and the general population. No disproportionate impacts to an EJ population would occur.

Solid Waste

A disproportionate solid waste impact on an EJ population could occur if the project would contribute to or exacerbate the effects of local solid waste disposal facilities. Since the overall CalEnviroScreen score reflects the collective impacts of multiple pollutants and factors, staff examined the individual contributions to indicators as they relate to wastes addressed under utilities and system services. The wastes of concern in this analysis are those from construction and operational activities. The handling and disposal of each type of waste is dependent on the hazardous ranking of its constituent materials.

Existing laws, ordinances, regulations, and standards ensure the desired handling and disposal of waste materials without potential public or environmental health impacts. The CalEnviroScreen scores for the disadvantaged community census tracts within a six-mile radius of the project (see **Figure 6-1**) are presented in **Table 6-3** for each of the following environmental stressors that relate to solid waste facilities. The percentile for each disadvantaged census tract reflects its relative ranking among all of California's census tracts. A disproportionate solid waste management impact on an EJ population could occur if project wastes impact the disadvantaged community. CalEnviroScreen assigns a score to each category of stressors. To assess the impact of a stressor on the population within a census tract, the score is assigned a weighting factor that is inversely proportional to the distance from the census tract. As **Figure 6-1** shows, only

one census tract designated as a disadvantaged community is located within the six-mile radius, 06029006500.

Solid Waste Facilities. This indicator is calculated by considering the number of solid waste facilities including illegal sites, the weighting factor of each, and the distance to a census tract. Newer solid waste landfills are designed to prevent the contamination of air, water, and soil with hazardous materials. However, older sites that are out of compliance with current standards or illegal solid waste sites may degrade environmental conditions in the surrounding area and pose a risk of exposure. Other types of facilities, such as composting, treatment, and recycling facilities may raise concerns about odors, vermin, and increased traffic. Census tract 06029006500 scored in the 97.2 percentile for the Solid Waste Facilities category (see **Table 6-4**). This indicates that the number and type of facilities within or nearby this census tract and the environmental deterioration due to their presence are among the highest of tracts statewide.

Solid waste generated during construction and operation of the project would be segregated, where practical, for recycling, and would be disposed of where there is adequate capacity for non-hazardous waste. The project would be required to develop and implement plans that would ensure proper disposal of nonhazardous waste at appropriately licensed facilities. The project owner would use solid waste sites or facilities that are verified to comply with current laws, ordinances, regulations, and standards. In addition, there would be no increase in solid waste generators and facilities in the area due to project construction or operation because there is adequate capacity to dispose of waste from the project. Therefore, there would be a less than significant impact related to solid waste facilities within the disadvantaged community census tract. No disproportionate impacts to an EJ population would occur.

Transportation

Significant reductions in transportation options may significantly impact EJ populations. An impact to bus transit, pedestrian facilities, or bicycle facilities could cause disproportionate impacts to low-income communities, as low-income residents more often use these modes of transportation. Construction of the project may require temporary closure of pedestrian facilities. In the event of any type of closure, clear signage (closure and detour signs) would be provided to ensure vehicles, pedestrians and bicyclists could reach their intended destinations safely. As concluded in **Section 5.14, Transportation**, all transportation impacts, including impacts to alternative modes of transportation, would be less than significant. No disproportionate impacts to an EJ population would occur.

Visual Resources

A disproportionate impact pertaining to aesthetics/visual resources to an EJ population may occur if a project is in proximity to an EJ population and the following:

- The project would have a substantial adverse effect on a “scenic vista” as defined.

- The project would eliminate or obstruct a public view of a "scenic resource" as defined.
- The project, if in an "urbanized area" per Public Resources Code section 21071 conflicts with applicable zoning and other regulations governing scenic quality.
- The project, if in a non-urbanized area, substantially degrades the existing visual character or quality of the public view of the site and its surroundings.
- The project creates a new source of substantial light and glare that would adversely affect day or nighttime views in the area.

Staff reviewed the General Plan and zoning, aerial and street imagery, area maps, site and vicinity photographs; building elevations, drawings, renderings, and similar, and concluded project buildings, equipment, and structures would not be within a scenic vista and not eliminate or obstruct a "public view" of a scenic resource.

Public Resources Code section 21071 defines "urbanized area." Following Public Resources Code section 21071, the proposed project was determined to be in a non-urbanized area. Staff viewed current aerial and street imagery (Google Earth, Google Maps), other maps, and site photographs in addition to the EJ figures above and concluded the nearest EJ population would have a low visibility of the project due to the existence of aboveground landscape components (buildings, structures, earthworks, trees, etc.) obstructing or obscuring the public view of the project, topography, and the distance from an identified EJ population.

The project design includes outdoor lighting that would be angled downward and would include light visors and light hoods. Project components would have a low reflectance offsite.

No disproportionate impacts to an EJ population would occur.

Water Resources

A disproportionate water resources impact on an EJ population could occur if the project would contribute to drinking water degradation, exacerbate groundwater contamination, or discharge additional pollutants to impaired surface water bodies. Since the overall CalEnviroScreen score reflects the collective impacts of multiple pollutants and factors, staff examined the individual contributions to indicators as they relate to water resources. The pollutants of concern in this analysis are those from construction and operation activities. The CalEnviroScreen scores for the disadvantaged community census tracts in a six-mile radius of the project (see **Figure 6-1**) are presented in **Table 6-4** for each of the following environmental stressors that relate to water resources: Drinking Water Contaminants, Groundwater Threat, and Impaired Water Bodies. The percentile for each disadvantaged census tract reflects its relative ranking among all of California's census tracts.

CalEnviroScreen 4.0 assigns a score to each type of stressor. To assess the impact of a stressor on population within a census tract, the score is assigned a weighting factor

that decreases with distance from the census tract. For stationary stressors related to water resources, the weighting factor diminishes to zero for distances larger than 1,000 meters (0.6 mile). As shown in **Figure 6-1**, only one disadvantaged community census tract (06029006500) is located within the six-mile radius of the project. However, census tract 06029006500 is greater than 1,000 meters away from the project and therefore there would be no impact related to water resources on a disadvantaged community. No disproportionate impacts to an EJ population would occur.

List of Preparers and Contributors

The following are a list of preparers and contributors to **Section 6, Environmental Justice**:

Ellen LeFevre	General Environmental Justice information, CalEnviroScreen information, and Environmental Justice screening
Tao Jiang	Air Quality impact analysis
Patrick Riordan	Cultural and Tribal Cultural Resources impact analysis
Alvin Greenberg	Hazards, Hazardous Materials, and Wildfire impact analysis
Ardalan Sofi	Noise and Vibration
Hui-An (Ann) Chu	Public Health impact analysis
James Ackerman	Solid Waste analysis
Francisco Martin	Transportation impact analysis
Mark Hamblin	Visual Resources impact analysis
James Ackerman	Water Resources impact analysis

6.3 Comments and Responses on the Preliminary Staff Assessment

Response to Comments from the Applicant (TN 264316)

Comment on page 1, Global Comments

"To comport with the terminology to be used by WRESC construction teams involved in these twice daily, subterranean activities, please replace the terms "blast" and "blasting" with "controlled detonations"; and please replace "Blasting Plan" with "Controlled Detonations Plan" throughout the PSA text and the Conditions of Certification."

Staff Response: Staff agrees with the edit.

6.4 References

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Section 7

Public Benefits

7 Public Benefits

Testimony of Ellen LeFevre

7.1 Public Benefits

Public Resources Code section 25523(h) requires the CEC's decision to contain a discussion of any public benefits from the project including, but not limited to, economic benefits, environmental benefits, and electricity reliability benefits. To facilitate the development of the CEC's final decision and to support any statement of overriding consideration if necessary, staff includes this chapter.

To assess public benefits, staff considers the changes in local economic activity and local tax revenue that would result from project construction and operation. A regional economic impact analysis (EIA) was conducted by the applicant to estimate the total impact of the project on regional output, earnings, and employment. The EIA involved inputting planning level project expenditures into the Regional Input-Output Modeling System (RIMS II). The U.S. Bureau of Economic Analysis (BEA) developed the RIMS II model to estimate the effect of direct expenditures on indirect expenditures and induced expenditures in the region of a development project. The RIMS II multipliers used by the applicant are specific to Kern County and are in 2021 dollars. Willow Rock Energy Storage Center (WRESC or project) expenditures included both local and onsite direct expenditures.

Direct economic effects represent:

- employment,
- labor income, and
- spending associated with construction and operation of the project.

Indirect economic effects represent expenditures on intermediate goods made by suppliers who provide goods and services to the project. Induced economic effects represent changes in household spending that occur due to the wages, salaries, and proprietor's income generated through direct and indirect economic activity.

Table 7-1 reports the applicant's estimates of the economic impacts/benefits that would accrue to Kern County due to project construction and operation.

TABLE 7-1 WILLOW ROCK ENERGY STORAGE CENTER ECONOMIC BENEFITS (2023 Dollars)[1]	
TOTAL FISCAL BENEFITS	
Estimated Annual Property Taxes	$18.45 million
State and Local Taxes	
Construction	$7 million
Operation	$203,000
School Impact Fees	Total Estimated Fees: $10,296 (Mojave Unified School District)

TABLE 7-1 WILLOW ROCK ENERGY STORAGE CENTER ECONOMIC BENEFITS (2023 Dollars)[1]	
TOTAL NON-FISCAL BENEFITS	
Total Capital Costs	$1.5 billion
Construction Payroll (including benefits)	$434 million
Construction materials and supplies	$1 billion
Operations Budget (annual)	$4.7 million
TOTAL DIRECT, INDIRECT, AND INDUCED BENEFITS	
Estimated Direct Benefits	
Construction Jobs	271 (average), 751 (peak)
Operation Jobs	40
Estimated Indirect Benefits	
Construction Jobs	2,129
Construction Income	$168.2 million
Operation Jobs	5
Operation Income	$420,220
Estimated Induced Benefits	
Construction Jobs	2,788
Construction Income	$176.4 million
Operation Jobs	3
Operation Income	$185,892

Notes: 1 Based on applicant's estimates. To utilize the RIMSII multipliers (2021$) for this analysis, project costs were adjusted (using the U.S. Bureau of Labor Statistics' Consumer Price Index) to deflate the costs/expenditures to 2021 dollars), then the RIMSII impact results were inflated to 2023 dollars. All inputs and outputs are displayed in year 2023 dollars. Source: ESHD 2024i

Property Tax

The Board of Equalization (BOE) has jurisdiction over the valuation of a power generating facility for tax purposes if the power plant produces 50 megawatts (MW) or greater. For a power-generating facility producing less than 50 MW, the county has jurisdiction of the valuation. The WRESC would be a 500 MW (net) and 4,000 MWh (net) facility using Hydrostor's proprietary advanced compressed air energy storage technology, and therefore, BOE is responsible for assessing property value. The property tax rate is set by the Kern County Auditor-Controller's office. Property taxes are collected and distributed at the county level.

Construction of the power plant would add approximately $1.5 billion (capital cost) and with a property tax rate consistent with the current rate (fiscal year 2023) for the existing project site (1.23 percent), the project would generate approximately $18.45 million in property taxes annually (ESHD 2024h).

Other Public Benefits

The WRESC would provide the following environmental and reliability benefits:

- WRESC would contribute to the integration of variable renewable resources in the Tehachapi Renewable Resource Area. Through energy storage, WRESC would help avoid the curtailment of renewable resources and help to meet California and regional electric reliability needs.

- WRESC would provide rapid-response delivery of energy and synchronous condenser voltage support services that provide reliability support and stability to the grid and integrating intermittent renewable energy sources to the electrical grid.
- WRESC technology would provide peaking energy for local contingencies.
- WRESC would be located on compatibly zoned parcels in a sparsely populated area which would minimize land use impacts.

7.2 Comments and Responses on the Preliminary Staff Assessment

No comments were received on the Public Benefits section.

7.3 Proposed Conditions of Certification

A sales tax provision was recommended in comments by Kern County's Planning and Natural Resources Department as a condition for the project. Staff recommends adopting the Condition of Certification as detailed below.

PB-1 The project owner shall work with the County to determine how the use of sales and use taxes from the construction of the project can be maximized. This process shall include, but is not necessarily limited to, the project owner obtaining a street address within the unincorporated portion of Kern County for acquisition, purchasing and billing purposes, and registering this address with the State Board of Equalization. As an alternative to the aforementioned process, the project owner may make arrangements with Kern County for a guaranteed single payment that is equivalent to the amount of sales and use taxes that would have otherwise been received (less any sales and use taxes actually paid); with the amount of the single payment to be determined via a formula approved by Kern County. The project owner shall allow the County to use this sales tax information publicly for reporting purposes.

Verification: At least 30 days prior to the start of construction, the project owner shall submit a letter to the CEC's Compliance Project Manager detailing the agreement with Kern County on the use of sales and taxes from project construction or proof of payment of the equivalent amount of sales and use taxes was paid to Kern County.

7.4 References

ESHD 2024h – Ellison Schneider Harris & Donlan LLP (TN 254805). Willow Rock Energy Storage Center SAFC, Volume 1, Part B, dated March 1, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-AFC-02

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Section 8

Alternatives

8 Alternatives

Testimony of Jeanine Hinde and Collin Crawford[1]

8.1 Introduction

This section evaluates alternatives to the Willow Rock Energy Storage Center (WRESC or proposed project). Staff reviewed the alternatives analysis in the application for certification (AFC), using that as a starting point for the alternatives analysis in this staff assessment.

These alternative technologies were initially considered and not evaluated further by staff, mostly due to potential feasibility issues or an inability to attain the basic project objectives: fuel cells, long-duration battery energy storage technologies, 100 percent hydrogen-fueled power plant, traditional compressed air energy storage, and pumped thermal energy storage. Regarding alternative sites, several properties in the project region were evaluated by the applicant as possible sites for the WRESC before being rejected, primarily due to unfavorable geologic conditions and site control and site access issues.

In addition to the No Project/No Build Alternative (Alternative 1), staff selected the Reduced Capacity Alternative (Alternative 2) for analysis and comparison to the project.

8.2 CEQA Requirements

As the California Environmental Quality Act (CEQA) lead agency for the WRESC, the California Energy Commission (CEC) is required to consider and discuss alternatives to the project. The CEQA Guidelines provide the regulatory requirements for an alternatives analysis in an environmental impact report (EIR) (Cal. Code Regs., tit. 14, § 15000 et seq.). Section 15126.6 of the CEQA Guidelines provides that the alternatives analysis must:

- describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project;
- evaluate the comparative merits of the alternatives;
- focus on alternatives that would avoid or substantially lessen any significant effects of the project, even if these alternatives would impede to some degree attainment of the project objectives, or would be more costly; and
- describe the rationale for selecting alternatives to be discussed and identify alternatives that were initially considered but then rejected from further evaluation.

1 Environmental and engineering staff members who contributed to the Alternatives analysis are listed at the end of this Alternatives section.

These regulations also apply to the document used in place of an EIR in a certified regulatory program, including the site certification program of the State Energy Resources Conservation and Development Commission [CEC] (Pub. Resources Code, § 21080.5, subd. (a); Cal. Code Regs., tit. 14, § 15251, subd. (j), and 15252).

CEQA requires that an EIR "consider a reasonable range of potentially feasible alternatives that will foster informed decision making and public participation" (Cal. Code Regs., tit. 14, § 15126.6, subd. (a)). Among the factors that may be used to eliminate alternatives from detailed consideration in an EIR are failure to meet most of the basic project objectives, infeasibility, or inability to avoid significant environmental impacts (Cal. Code Regs., tit. 14, § 15126.6, subd. (c)). The range of potentially feasible alternatives selected for analysis is governed by a "rule of reason," requiring evaluation of only those alternatives "necessary to permit a reasoned choice. The alternatives shall be limited to ones that would avoid or substantially lessen any of the significant effects of the project" (Cal. Code Regs., tit. 14, § 15126.6, subd. (f)).

An EIR is not required to consider alternatives that are infeasible (Cal. Code Regs., tit. 14, § 15126.6, subd. (a)). In addressing feasibility of alternatives, factors that may be taken into account are site suitability; economic viability; availability of infrastructure; general plan consistency; other plans or regulatory limitations; jurisdictional boundaries; and whether the proponent can reasonably acquire, control, or otherwise have access to the alternative site (Cal. Code Regs., tit. 14, § 15126.6, subd. (f)(1)). An EIR "need not consider an alternative whose effect cannot be reasonably ascertained and whose implementation is remote and speculative" (Cal. Code Regs., tit. 14, § 15126.6, subd. (f)(3)). CEQA defines feasible to mean "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors" (Pub. Resources Code, § 21061.1, and Cal. Code Regs., tit. 14, § 15364).

The lead agency is also required to evaluate the "no project" alternative along with its impact. Analyzing a no project alternative allows decision makers to compare the impacts of approving the project with the impacts of not approving the project (Cal. Code Regs., tit. 14, § 15126.6, subd. (e)(1)). "The 'no project' analysis shall discuss the existing conditions at the time the notice of preparation is published…as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services. If the environmentally superior alternative is the 'no project' alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives" (Cal. Code Regs., tit. 14, § 15126.6, subd. (e)(2)).

8.3 Project Objectives and Alternatives Screening

Section 15124 of the CEQA Guidelines includes the requirement for an EIR to contain a statement of objectives, as follows:

A clearly written statement of objectives will help the lead agency develop a reasonable range of alternatives to evaluate in the EIR and will aid the decision makers in

preparing findings or a statement of overriding considerations, if necessary. The statement of objectives should include the underlying purpose of the project and may discuss the project benefits.

The applicant's purpose is to combine dispatchable, operationally flexible, and efficient energy generation with state-of-the-art, advanced compressed air energy storage (A-CAES) technology to facilitate the integration of variable renewable energy resources on the transmission grid and to meet the needs of California and the region for reliability services (Gem 2024).

The applicant's project objectives are as follows:

- Provide 500 megawatts (MW) of quick-starting, flexible, controllable generation with the ability to ramp up and down through a wide range of electrical output to facilitate the integration of renewable energy into the electrical grid in satisfaction of California's Renewables Portfolio Standard (RPS) program and climate objectives, by displacing older and less efficient generation.
- Interconnect the project to the transmission grid controlled by the California Independent System Operator (California ISO) at the Southern California Edison (SCE) Whirlwind Substation, a major substation in or near the Tehachapi Renewable Wind Resource Area, to facilitate the integration of onshore and offshore renewable energy development.
- Implement a proven sustainable energy storage technology that provides improved technological diversity, non-combustible energy storage, minimal residual hazardous waste at asset retirement, a long-term commercial lifespan of 30 years or greater, and non-degrading energy storage.
- Use A-CAES technology to provide dispatchable long-duration storage and energy delivery for a minimum of 8 hours; fossil fuel and greenhouse gas emissions-free operation; flexible capacity with minimal response time; provide long-duration storage to avoid curtailment through energy storage and to facilitate the further integration of renewable resources; peaking energy for local contingencies; voltage support and primary frequency response, including synchronous power output to support grid resiliency without the need for fossil fuel; superior transient response attributes, including synchronous power output; and superior round-trip thermodynamic efficiency.
- Locate the facility on a site with adequate geologic characteristics for the underground facilities for compressed air storage, including suitable overburden characteristics (limited thickness, constructable soil type); deep subsurface geological formation (2,000 to 2,500 feet below ground surface [bgs]) of sufficient quality and definition at the required depth for construction of the excavated storage cavern; low hydraulic conductivity and permeability in deep subsurface geological formation to retain water and air under pressure within the excavated storage cavern; and competent geological structural integrity to sustain an excavated storage cavern at depth intact indefinitely, allowing for repeated compressed air

injection and discharge cycles over the life of the project without eroding or collapsing.

- Site the project on land with acceptable constructability and with adequate access and size for construction of aboveground facilities, at least approximately 80 acres.
- Site the project near adequate water supply for construction.
- Locate the project on a site that is available to provide adequate site control, through long-term lease or purchase.
- Minimize additional supporting infrastructure needs and reduce potential environmental impacts by locating the facility near existing and planned infrastructure, including access to an existing substation with available transmission capacity.
- Create jobs in Kern County and the State of California through both construction and operation of the facility.
- Be a good corporate citizen and respected member of the community through the lifecycle of the project.

8.4 Environmental Impacts of the Project

As described above, CEQA requires a discussion of alternatives that would avoid or substantially lessen any of the project's significant effects. Throughout this staff assessment, staff evaluates the impacts of implementing the WRESC and recommends conditions of certification (COCs) to reduce potentially significant impacts to less-than-significant levels. For impacts on visual resources, CEC staff evaluated the potential for the project to substantially degrade the existing visual character or quality of public views of the site and its surroundings. Staff concluded that this impact remains significant even after implementation of COCs (see **Section 5.15, Visual Resources** in this staff assessment).

For project issues in sections covering **Facility Design**, **Facility Reliability**, **Transmission System Engineering**, **Worker Safety and Fire Protection**, and **Transmission Line Safety and Nuisance**, conformance with applicable laws, ordinances, regulations, and standards (LORS) would provide reasonable assurances that project construction and operation would be done in a manner that protects public health and safety; the recommended COCs primarily require fulfillment of permitting requirements, preparation and implementation of plans and programs, and oversight of regulatory processes to help ensure compliance with LORS.

Staff has identified no significant impacts on resources evaluated in sections covering **Climate Change and Greenhouse Gas Emissions**, **Efficiency and Energy Resources**, **Socioeconomics**, and **Solid Waste Management**; therefore, these topics are not included in the impact summaries below. For the other topics covered in **Section 5, Environmental Impact Assessment**, COCs are recommended for a mix of project-specific resource impacts and to ensure the project would comply with

applicable LORS. This analysis of alternatives includes discussions of whether any of the project impacts could be substantially lessened or avoided by an alternative to the project. Impacts associated with the WRESC are summarized as follows:

- **Air Quality** – Project construction air emissions would result from 1) onsite earth and rock movement activities, land preparation, shaft and cavern drilling, blasting, excavation, equipment exhaust, vehicle travel (e.g., truck hauling), construction of the power blocks and other structures, operation of rock crushing and concrete batch plants, and 2) offsite worker vehicle and truck hauling travel, roadway work, and generation tie line (gen-tie line) and pole construction. Construction emissions were evaluated under two scenarios, with and without an architectural berm. Project construction would not expose sensitive receptors to substantial criteria pollutant concentrations. COCs are recommended to ensure that impacts from criteria pollutant emissions, including fugitive dust, would be less than significant during project construction.

  Project operations would cause emissions of criteria and toxic air pollutants from three diesel-fired emergency generators, which would be equipped with Tier 4 certified engines, and one fire pump engine. Operations impacts were modeled with and without the architectural berm. Project operation would not expose sensitive receptors to substantial criteria pollutant concentrations. Air quality impacts during project operations would be less than significant.

  The Eastern Kern Air Pollution Control District issued its Final Determination of Compliance (FDOC) for the project, which contains draft Authority to Construct and Permit to Operate conditions. The conditions are incorporated as COCs in **Section 5.1, Air Quality** in this staff assessment.

  Implementation of all COCs for air quality would reduce potentially significant impacts to less than significant.

- **Biological Resources** – With the exception of the state-listed as threatened western Joshua tree, which occurs throughout the project site, there are no other federal- or state-listed plant species that are expected to be present in or near the project site. Project construction has the potential to cause direct and indirect impacts on four special-status plants, including alkali mariposa lily (CRPR 1B.2), sagebrush loeflingia (CRPR 2B.2), and Mojave monardella (CRPR 4.2). These species were detected on the project site or the gen-tie alignment and could be subject to direct and indirect impacts from construction. An additional 12 special-status plant species were determined to have some potential to occur in or near the project site, but they were not detected during floristic surveys. The project has the potential to result in direct and indirect impacts on Crotch's bumble bee. Most of the project site supports suitable habitat, and foraging resources for Crotch's bumble bee were mapped in numerous locations. In addition, numerous bees, including a queen bee, were observed at the the project site and along portions of the gen-tie alignment. In addition, the project supports potential nesting and overwintering habitat should the bees be present on land adjacent to the project site. Construction of the project would remove currently utilized foraging habitat and has the potential to result in

the direct loss of individual bees or colonies. Direct and indirect impacts that degrade habitat or result in the loss of Crotch's bumble bee would be considered a significant impact under CEQA. Because of this species status as a State candidate for listing, any project-related impacts would also require compliance with California Endangered Species Act (CESA) standards. These requirements include measures to fully offset impacts on the species. Staff recommends COCs to mitigate impacts on this species and provide take coverage in compliance with CESA requirements.

The Northern legless lizard and coast horned lizard are State species of special concern and have a low to moderate potential to occur in the project area. Although not detected, the project site occurs within a transitional area between the foothills of the Tehachapi Mountains and the western Mojave Desert. The desert tortoise is federal- and state-listed as threatened under the federal Endangered Species Act (ESA) and CESA, respectively. This species was not detected, and no potential burrows were found during protocol surveys of the WRESC site and adjacent laydown areas. However, this species is known to be present in the broader region. Direct impacts on desert tortoise are unlikely as they have a very low potential to occur, but potential impacts would include the loss of historic foraging habitat. If present, impacts could include collision or crushing by heavy equipment and vehicles, vibration from blasting, direct exposure to herbicides, and displacement from preferred habitat. Indirect impacts include increased edge effects due to habitat fragmentation, increased competition for resources, increased risk of predation by ravens after site development, and the introduction of invasive plant species. Project construction could cause direct impacts on special-status and common bird species through destruction of nests or eggs or disruption of breeding behavior. Indirect impacts could include loss of habitat due to colonization of invasive or noxious weeds and long-term alterations of habitat. Project construction could directly impact habitat used by birds for foraging or winter migration.

Project construction could directly impact burrowing owl burrows. Indirect impacts on burrowing owls could include loss or degradation of foraging or breeding habitat. Construction work could destroy occupied burrows or cause owls to abandon burrows. Burrowing owls have been observed in adjacent habitat, and the applicant has assumed presence of the species on the project site. Human presence, noise, vibration, and fugitive dust could cause temporary impacts on breeding behavoir and possibly nest abandonment. Swainson's hawk is a state listed as threatened species under the CESA and is a well known resident in the region. A single nest was observed approximately 1.8 miles north of a potential gen-tie route. Loggerhead shrike and LeConte's thrasher are State species of special concern and are known to occur in the project area. They are likely nesters in scrub communities present at the WRESC site and along portions of the linear facilities.

The project area could provide habitat for denning mammal species. Direct impacts on denning mammals, including desert kit fox and American badger during project construction, could include loss of individual animals, destruction of natal dens, disruption of breeding behavior, and temporary and permanent loss of habitat.

The project would include construction of a 19-mile gen-tie line to the Whirlwind Substation. Avian species can be electrocuted by transmission lines from flying into the electrical lines, if wings simultaneously contact two conductors of different phases, or if body parts simultaneously contact a conductor and grounded hardware. Birds may also collide with the shield wire, which is a narrow ground wire that is typically placed along the top of the conductor.

The project would cause temporary and permanent impacts on vegetation communities, including various desert scrub communities. It is possible that the project could also result in temporary impacts on very small ephemeral drainages that cross some of the access roads or occur near proposed transmission line pole locations.

Implementation of all COCs for biological resources and all other COCs referenced in **Section 5.2, Biological Resources** would reduce potentially significant impacts to less than significant and would be in compliance with CESA requirements.

- **Cultural and Tribal Cultural Resources** – The project area has several identified historical resources under CEQA and the project has the potential to cause significant impacts on these resources as well as to buried or inadvertently discovered cultural or tribal cultural resources. The archaeological project area of analysis has a moderate to high potential of containing buried archaeological resources, which could meet CEQA's criteria for historical resources. If such resources were damaged during construction, it would be considered significant because of the cultural loss to affiliated California Native American tribes or other local communities and the cultural and scientific data loss to all. Ground disturbance associated with project construction could result in the inadvertent discovery of human remains and associated funerary items that meet CEQA's criteria for historical, unique archaeological, or tribal cultural resources. Damage to human remains would be a significant impact under CEQA. With implementation of several recommended COCs for historical, cultural and tribal cultural resources, these potentially significant impacts would be reduced to less than significant.
- **Geology, Paleontology, and Minerals** – A shallow subsurface geotechnical investigation was performed for the WRESC site, but not for the architectural berm, temporary laydown areas, or gen-tie line sites. The applicant's shallow subsurface geotechnical report did not evaluate geologic hazards nor did it make grading and design recommendations. For areas where a site-specific analysis was not available, staff made conservative interpretations using existing geologic information.

  No known active or potentially active faults intersect the project; however, regional earthquakes could subject the project to strong seismic ground shaking. Although the project site is not within a mapped liquefaction zone, the project sites have a seismically induced ground failure risk, including liquefaction and lateral spreading, due to the presence of liquefiable soils, alluvial and windblown deposits, and decomposing bedrock. The proposed preferred gen-tie line route is susceptible to landslides at two locations. The risk of soil settlement at the WRESC site, potential architectural berm, and temporary laydown sites is considered minor; however, staff

conservatively assumes that two soils underlying the site have settlement potential. There may be a risk of soil settlement along the proposed gen-tie line routes, and deposits along these routes may contain expansive soils. Implementation of the recommended COCs would reduce potential impacts from geologic hazards on project construction and operation, incuding the safety of people, property, and grid reliability, to less than significant through use of appropriate design, grading, and construction methods.

Project construction could increase the potential for water and wind to erode the soil. Implementation of COCs would reduce these potential impacts to less than significant.

The project would require excavation of deep vertical shafts and the cavern. If underground openings were to collapse during project construction or operation, settlement or subsidence could occur at the surface. Implementation of COCs would require design, excavation, and construction of underground structures to comply with civil and structural design criteria, including following inspections and maintenance requirements. Following implementation of COCs, potential impacts on the safety of people, property, and grid reliability would be reduced to less than significant.

The geologic units at the project site, construction laydown sites, and along the gen-tie line construction area have a low sensitivity (or no sensitivity) for potential paleontological resources. Even so, COCs are proposed to address the potential for the discovery of paleontological resources and to reduce potential impacts to less than signficant.

No known unique geologic freatures, including mineral resources of commercial, scientific, and recreational value occur at the project site. Impacts from project construction and operation on unique geologic features, including mineral resources, would be less than significant.

- **Hazards, Hazardous Materials/Waste, and Wildfire** – Project construction would include transport of hazardous substances to the project site that would be used and stored at the project site. Hazardous waste would be generated during construction that would be collected by a licensed hazardous waste hauler for transfer to appropriate management facilities. Project operation and maintenance would include transport, use, and onsite storage of hazardous materials. COCs are recommended to ensure secure transport, storage, and offsite disposal, treatment, or recycling of hazardous materials; therefore, these potentially significant impacts would be reduced to less than significant. The risk of wildland fires is not significant at the project site or along the gen-tie line alignment.

  Project site preparation and excavation would disturb the ground, and this work could encounter contaminated groundwater or soil; implementation of COCs for hazards and hazardous materials and waste would ensure worker protection from potential toxicant exposure and reduce potentially significant impacts to less than significant.

(**Section 4.4, Worker Safety and Fire Protection** in this staff assessment evaluates the use of explosives and hazardous materials relating to construction of the cavern.)

- **Land Use, Agriculture, and Forestry** – Project construction would include development of areas for equipment and materials laydown and parking. These temporary uses would not cause inconsistences with the Kern County General Plan or zoning code. Similarly, the WRESC is consistent with General Plan land use policies and allowable uses. Kern County completed a rezone of the main WRESC site to Exclusive Agriculture, a zoning district that is consistent with the General Plan land use designation. This zoning district would require a Conditional Use Permit from Kern County for the project, were the project not under the jurisdiction of the CEC. Staff determined that the project would be consistent with Kern County's required findings for issuance of a Conditional Use Permit, and therefore would be consistent with applicable local land use plans, policies, and regulatory requirements. There is no Farmland in the project area where project buildings and other structures would be built.

  Due to the proximity of the WRESC and offsite facilities (e.g., the gen-tie line and poles) to the Rosamond Skypark, a public use airport, the applicant is required to notify the Federal Aviation Administration (FAA) of construction of the WRESC; staff recommends a COC to ensure that FAA requirements would be met. Comments from the U.S. Department of Defense (DOD) about the project's potential impacts on military operations have not been submitted to the CEC, and absent information to the contrary, staff concludes the project would conform with nearby military facility plans and operations.

  Staff has not identified any conflict with a land use plan, policy, or regulation adopted to avoid or mitigate an environmental impact.

- **Noise and Vibration** – Use of certain equipment during construction would increase ambient noise levels in the surrounding community, although mostly not at levels that would exceed the ambient noise levels or the Kern County standard for noise sensitive areas. Blasting events for the cavern work would occur only during the day and on an infrequent basis for short durations. With implementation of several COCs, potentially significant construction-related noise impacts would be reduced to less than significant. During project operations, ambient noise levels would be below the Kern County General Plan noise threshold; however, staff recommends a COC to ensure the project would not distinctly increase the ambient noise level and to ensure the project meets operational noise performance criteria.

- **Public Health** – Project construction emissions would result from the combustion of fuel in vehicles and equipment, fugitive dust emissions from wind erosion, land clearing and materials movement, rock screening and crushing, concrete batch plant operations, and travel on paved and unpaved roads. These emissions have the potential to expose sensitive receptors to substantial pollutant concentrations or cause other public health impacts. Construction impacts relating to fugitive dust (PM10), diesel exhaust, and from potential exposure to Valley Fever would be

reduced to less than significant with implementation of several COCs in **Section 5.1, Air Quality** and a COC in **Section 5.10, Public Health** requiring development and implementation of a Valley Fever Management Plan. Public health impacts during project operations would result from the diesel particulate matter (DPM) of diesel generators and diesel fire pump, and would be less than significant.

- **Transportation** – During construction, the project could degrade the level of service standard (LOS) at the State Route (SR) 14 southbound ramps and Dawn Road intersection during the afternoon peak hour. During construction and operation, the project could substantially increase hazards to vehicles, bicyclists, and pedestrians traveling on the surrounding roadway network, including SR 14, due to the project's use of oversize or overweight vehicles transporting hazardous substances. COCs are recommended to reduce impacts on LOS and area roadways and highways to less than significant, and to ensure compliance with local and state design standards for site access intersections and roadway improvements. The applicant would obtain all mandatory permits to ensure safe transport of materials to the project site. Therefore, potentially significant impacts would be reduced to less than significant.
- **Visual Resources** – The project has the potential to substantially degrade the exiting visual character or quality of public views of the site, and staff concluded that this impact remains significant even after implementation of COCs. Given the existing physical environment, the color, form, texture, scale, tall structures and equipment that would be constructed on the project site could not be camouflaged, disguised, screened, or exterior surface coated, colored or finished, nor could setbacks be employed that would mitigate the degrading of the existing visual character or quality of the public view of the site and its surroundings from key observation point (KOP) 2, KOP 3, and KOP 4. Project buildings and structures would not be concordant with the observable land use character, buildings and structures in the surrounding area. Also, the project would cause new sources of substantial light, glare, and reflectance that could adversely affect day or nighttime views in the area. Sunlight reflecting from project structures and building surfaces could cause daytime light or glare effects for views from publicly accessible vantage points. With implementation of COCs to reduce light, glare, and reflectance from project structures, these potentially significant impacts on visual resources would be reduced to less than significant.
- **Water Resources** – Ground-disturbing construction activity could cause degradation of water quality or an increase in rate or volume of stormwater runoff; implementation of COCs addressing all project elements of stormwater management during project construction and operations would reduce potentially significant impacts to less than significant. Lined ponds would be required to contain drill cuttings produced during installation; access shafts for A-CAES underground cavern would be subject to the general waste discharge requirements (WDRs) under State Water Resources Control Board (SWRCB) Water Quality Order No. 2003-0003-DWQ, in consultation with the Lahontan Regional Water Quality Control Board. A COC requires onsite septic systems to comply with state and local regulatory and

permitting requirements for onsite wastewater treatment systems, if applicable. A COC requires the documentation of off-site disposal of industrial wastewater, and sanitary wastewater if applicable. Since the outer berm of the hydrostatic compensating reservoir meets the definition of a jurisdictional dam per California Water Code sections 6002 and 6003, two COCs require applicable plans and specifications to be approved by the Department of Water Resources, Division of Safety of Dams (DSOD). The project's estimated operational water use would be two acre-feet per year (AFY). A COC requires implementation of an agreement with the water purveyor Antelope Valley-East Kern Water Agency to specify limits for water use during project construction and operation; recording of water use is required. With implementation of all COCs, potentially significant impacts on water resources would be reduced to less than significant.

8.5 Alternatives Considered and Not Evaluated Further

CEQA provides that the range of alternatives to the project, or to the location of the project, is to include those that would feasibly attain most of the basic project objectives but would avoid or substantially lessen any of the project's significant effects.

Some of the alternatives initially considered by staff for this analysis were eliminated from detailed consideration due to potential feasibility issues, failure to reduce any significant environmental impacts, or failure to meet key project objectives. Staff evaluated the characteristics of other energy generating technologies compared to the A-CAES technology proposed by the applicant.

The applicant conducted a comparative geologic risk assessment of potential sites for the project, all located in the western Mojave Desert. The risk analysis included the original site on Sweetser Road and the proposed WRESC site presented in the supplemental application (Gem 2022, 2024). Staff reviewed the alternative sites that were evaluated by the applicant before concluding that those sites would be unlikely to feasibly accommodate construction and operation of the project.

The following discussions provide staff's reasons for eliminating these alternatives from further analysis and comparison to the project.

8.5.1 Fuel Cell Technology Alternative

Fuel cells convert chemical energy into electrical energy. There are several types of fuel cells, which vary according to the types of electrochemical reactions that take place in the cells, the types of catalysts required, the operating temperature ranges, the fuel requirements, and other factors affecting the applications suitable for the fuel cells.

Solid Oxide Fuel Cells (SOFCs)

SOFCs are electrochemical devices that convert the chemical energy of a fuel and oxidant directly into electrical energy. They operate at high temperatures, as high as 2,100 degrees Fahrenheit (°F). Operating at high temperatures enables these fuel cells

to use a variety of fuels to produce hydrogen. SOFCs most commonly use natural gas as fuel but can also use biogas and gases made from coal as fuel (U.S. DOE 2024a). Carbon monoxide (CO) is a product of the chemical reaction created by the fuel (natural gas) and steam molecules.

SOFCs are resilient and not susceptible to CO poisoning, which affects the voltage output of other types of fuel cells, such as polymer electrolyte membrane (PEM) fuel cells (also called proton exchange membrane fuel cells). SOFCs can reform fuel internally due to their resiliency against CO poisoning and because they operate at extremely high temperatures. This reduces the cost associated with adding an external reformer to the balance of plant. However, SOFCs require long start-up time to reach operating temperature, generate electricity, and they are typically configured and more suitable to serve as a prime base load power.

Potential Feasibility Issues

SOFC applications include serving base load power for data centers, retail, healthcare, and critical manufacturing facilities. A commercial application includes eBay's data center in Utah, which uses thirty 200-kilowatt (kW) SOFCs to provide continuous base load power to the information technology, or IT load (6 MW), 8,760 hours per year, with the electric grid as its backup power supply. Additionally, some data centers (e.g., Apple and Equinix) have supplemented their base load power demand (IT and cooling systems) with SOFCs, but they rely on the electric grid to support other loads while retaining traditional uninterruptible power supply (UPS) and generators for emergency power (Data Center Knowledge 2013).

As mentioned, SOFCs have slow startup times, because it takes time to reach critical operating temperatures—start-up times can take up to 60 minutes (GenCell 2018). Start-up times should be quick to meet the proposed project's objective because the project could be dispatched with little notice. (Subsection 8.3, above, lists the project objectives.)

SOFCs could use the underground natural gas pipeline system for fuel. At least one pipeline connection would be needed to supply the project with natural gas, and the project site has a nearby gas distribution line available for connection. However, for SOFCs to meet the proposed project's objective of "fossil fuel and greenhouse gas emissions-free operation," it would need to be fueled by hydrogen (H2). The H2 pipeline infrastructure is currently limited (approximately 1,600 miles of H2 pipelines in the U.S.), and no pipeline exists near the project site, therefore, H2 would need to be stored onsite, or generated and stored onsite. See the subsections, "Onsite Fuel Storage" and "Onsite Generation," below, for further discussion.

PEM Fuel Cells

PEM fuel cells are typically used for low-power applications that require intermittent power, such as mobile services or small stationary applications, like backup generators for communication towers. Their power capacity ranges between 10 and 125 kW. PEM

fuel cell capacity has increased to up to 1 MW delivered in the size of a 40-foot International Organization for Standardization (ISO) container (Plug Power 2024).[2] For a 500-MW backup generation system, which is approximately the capacity needed for the proposed project, the footprint required would be approximately 32,000 square feet (sq. ft.) (approximately 1 acre). Should onsite fuel storage be needed, which would be likely, the footprint would increase.

PEM fuel cells operate at low temperatures and require fuels that are carbon-free and rich in H2 content, preferably pure H2, for maximum voltage output and quick start-up times. Quick start-up times is stated project objective. H2 can be stored onsite via pressure vessels, piped to the site, or made onsite from a methane source, such as natural gas or from water through electrolysis. These options are discussed in more detail below. Unlike SOFCs, CO poisoning is an important issue for PEM fuel cells because they cannot tolerate large amounts of CO (Fuel Cell Store 2019).

Potential Feasibility Issues

There are potential feasibility issues associated with using PEM fuel cells for utility-scale generation, including the supply of H2 fuel. The H2 pipeline infrastructure is currently limited, therefore, H2 would need to be stored onsite, or generated and stored onsite, as described below.

Onsite Fuel Storage. Both a 1-MW PEM fuel cell and a 1-MW SOFC consume 66–69 kilograms (kg) of hydrogen fuel per megawatt-hour (MWh) (Plug Power 2023). The proposed project would need fuel to power generation for up to 8 hours. The amount of H2 needed per 1-MW fuel cell for 8 hours of operation would be approximately 500 kg.[3] Thus, the project would need approximately 260,000 kg of H2 for 500 MW of fuel cells to operate for 8 hours (not including redundant fuel cells).

The simplest way to store large volumes of H2 would be to compress it. H2 can be compressed to less than 0.42 percent of its gas volume at atmospheric pressure. The gauge pressure of H2 stored as a high-pressure gas is approximately 3,600 pounds per square inch (psi) (U.S. DOE 2001). Compressed H2 could be transported and stored onsite on a Type IV trailer, which is approximately 53 feet long, 8½ feet wide, and 13 feet tall, and would support eight, 25-foot-long cylinders of H2 with a total capacity of approximately 1,100 kg (Gardner Cryogenics 2022). The project would need approximately 237 trailers and 110,000 sq. ft. (approximately 3 acres) of space onsite to store fuel for 500 MW of fuel cells for up to 8 hours of operation.

Alternatively, the project could construct a storage system that includes one large or several small pressure vessels to store such a large amount of compressed H2. The

2 An ISO container is a container which has been built in accordance with the International Organization for Standardization regulations.

3 Hydrogen fuel calculation: 60 kg per hour x 8 hours = 480 kg of hydrogen per 1-MW fuel cell.

project site would need storage for approximately 425,000 cubic feet,[4] or over 10 acre-feet (AF) of compressed H2 for 500 MW of fuel cells (not including redundant fuel cells).

H2 can also be stored in liquid form, known as liquid hydrogen gas (LHG), to reduce its volume and thus its storage footprint. LHG storage requires a smaller footprint than compressed H2 gas for the same H2 fuel capacity. LHG could be transported and stored on the same trailer type as compressed H2. However, LHG would have a larger volume of H2 capacity, approximately 4,400 kg, stored in a single H2 cylinder (Gardner Cryogenics 2022). To store the fuel needed for 500 MW of fuel cell capacity for 8 hours of operation, the project would need approximately 60 trailers for LHG storage, which would require 27,000 sq. ft. (approximately 1 acre) of space onsite.

Alternatively, as mentioned above, the project could include construction of a storage system with one to several pressure vessels to store large amounts of LHG. The project would need approximately 120,000 cubic feet[5] (approximately 3 AF) of LHG for 100 MW of fuel cells (as compared to 425,000 cubic feet [approximately 10 AF] for compressed H2 gas).

Although LHG has the benefit of requiring a smaller footprint than compressed H2, problems exist with storing the liquid. LHG would need to be stored and distributed in specialized equipment, including insulated storage tanks, to keep the fuel in liquid state at atmospheric pressure, which requires a temperature of minus 423 °F. For LHG to remain at a constant temperature and pressure, it must allow for natural evaporation known as boil-off gas (BOG). BOG is a loss of stored fuel that occurs when the ambient temperature heats the insulated tanks. LHG must release this gas to maintain its liquid state. The release in gas occurs at a rate of approximately 1 percent per day (Army Logistician 2000).

Other constraints exist for both compressed and liquified H2 storage systems. Safely managing these systems would require special expertise and equipment, which would add to the cost and complexity of the proposed project. Fuel storage equipment must comply with the standards specified by the National Fire Protection Association along with the local codes to protect against hazardous material release, fire, and explosions during natural disasters and accidents. Additionally, permits for the storage of hazardous materials would be needed pursuant to the local codes. The presence of such storage systems would also likely raise public safety concerns (for example, due to the flammability of H2) and introduce new compliance and potential safety impacts that would not occur under the proposed project.

4 Compressed Hydrogen fuel conversion calculation: 60 kg per hour x 8 hours x 1/240 compression ratio x 423.3 cubic feet per kg x 500 MW = 423,000 cubic feet for 500-MW fuel cell.

5 Liquid Hydrogen fuel conversion calculation: 60 kg per hour x 8 hours x 1/848 compression ratio x 423.3 cubic feet per kg x 500 MW = 119,800 cubic feet for 500-MW fuel cell.

Onsite Generation. Alternatively, H2 for both PEM fuel cells and SOFCs can be supplied using other methods, such as electrolysis.

Electrolysis is a promising option for carbon-free hydrogen production, using electricity to cause the chemical reaction of splitting water into hydrogen and oxygen. The reaction takes place in a unit called an electrolyzer. Like fuel cells, electrolyzers consist of an anode and a cathode separated by an electrolyte. There are different types of electrolyzers mainly due to the different electrolyte materials, such as PEM, alkaline, and solid oxide, but their function is essentially the same—generating H2 (U.S. DOE 2024b).

A 1-MW PEM electrolyzer, with an approximate size of a 40-foot ISO container, can generate 18 kg of H2 per hour. For a 500-MW system, the footprint required for the system would be 160,000 sq. ft. (approximately 4 acres). For every 1 kg of H2 produced, the electrolyzer would need 10 kg of water and 49.9 kilowatt-hour (kWh) of energy (Plug Power 2022). H2 would need to be produced and stored onsite for future use during power generation. As discussed above under “Onsite Fuel Storage,” onsite storage of H2 has feasibility issues, including storage space, BOG, the need for specialized equipment, and concerns about public safety.

Reliability Issues for Fuel Cell Technology – Summary of Conclusions

Fuel cells for large-scale peak power demand are not fully proven and have various feasibility constraints, including storage space, BOG, the need for specialized equipment, concerns about public safety, and undetermined reliability. Securing fuel for the cells and storing it is a challenge requiring specialized expertise and increased costs for installing and maintaining systems. Because of the limitations described above, fuel cell technology is currently not a feasible alternative to the project’s proposed technology.

8.5.2 Long-duration Battery Energy Storage Technologies

The U.S. Department of Energy (U.S. DOE) defines long-duration energy storage (LDES) systems as storage systems capable of delivering electricity for 10 or more hours in duration. Storage systems that can provide electricity for longer than 8 hours are also considered LDES systems.[6] LDES technologies are categorized based on the type of energy they store, which is ultimately converted to electrical energy, such as electrochemical storage, mechanical storage, or thermal storage. Staff has considered non-lithium-ion electrochemical (battery) LDES technologies as alternatives to the proposed project. Among this type of LDES technology, staff considered aqueous redox flow batteries (RFBs) and metal-air flow batteries. Staff also considered a lithium-ion battery energy storage system (BESS) as an alternative to the WRESC.

6 In its Decision Requiring Procurement to Address Mid-term Reliability for 2023–2026 and subsequent decisions (D. 21-06-035), the California Public Utilities Commission (CPUC) specifies that long-duration storage means a resource that can deliver at maximum capacity for at least 8 hours.

Aqueous Redox Flow Batteries (RFBs)

Aqueous redox flow batteries (RFBs) convert chemical energy into electrical energy by pumping an aqueous electrolyte solution between two storage tanks (positively and negatively charged) with one or more battery cell stacks in between. The battery cells consist of electrodes (anode and cathode) and are divided by an ion-exchange membrane which permit ions to pass during reduction and oxidation chemical reactions (redox reactions). Also, the battery cells are connected to an external electrical circuit which allows for charging and discharging. The design of RFBs allows for the separation of power generation at the battery cell stacks and energy capacity at the electrolyte storage tanks (Adeniran et al. 2022).

Various RFB technologies have been developed with different chemistries, which include vanadium, iron, and zinc. Staff considered the vanadium RFBs and iron RFBs since these technologies are more commercially developed compared to other LDES battery technologies and they have demonstrations of providing electricity for 8 or more hours.

Vanadium Redox Flow Batteries

The vanadium RFB technology takes advantage of the properties of vanadium as vanadium may exist in four different oxidation states in solution. As a result, vanadium electrolyte is used in both tanks of the RFB. Vanadium RFB technology offers several advantages, including no permanent contamination from the diffusion of vanadium ions across the membrane, simple regeneration of ion crossover through normal battery operation, and lower levels of gas evolution during rapid charge cycles compared to other flow batteries. Additionally, there is potential for electrolyte recycling between applications. However, there are some disadvantages, such as the need for thermal regulation systems to maintain temperatures between 10 degrees Celsius (°C) and 40°C to prevent thermal precipitation of vanadium species (Lourenssen et al. 2019).

Potential Feasibility Issues. Vanadium RFB applications include provision of peak power and end-of-line voltage support, deferral of conventional transmission and distribution upgrades, and load leveling at substations. More recently, vanadium RFBs have been used as battery storage coupled with renewable power generation. A microgrid application planned by Indian Energy (a Native American-owned microgrid developer) in San Diego County includes a total of 70 MWh of vanadium flow and zinc hybrid cathode battery technologies capable of discharging over a 10-hour duration (CEC 2025). The full system is expected to be operational in 2025. Although vanadium RFBs have demonstrated the capability of providing LDES of 8 or more hours, there have not yet been proven demonstrations at the scale of the proposed project.

The proposed project's objectives require storage and discharge of 500 MW of power generated onsite for approximately 8 hours, or an approximately 4,000 MWh capacity from an LDES system. RFB technology can discharge almost 100 percent of its stored energy without impacting system performance or damaging the battery. Also, RFBs are generally more flexible in design, leading to scalable and modular constructions such as stackable RFB units. This flexibility is due in part to the lower fire risk from the low

flammability of battery and electrolyte materials in RFBs compared to lithium-ion electrochemical storage options (NREL 2021). Commercially available vanadium RFBs for utility-scale applications provide an approximately 104 MWh capacity per acre footprint (Invinity 2025). This equates to approximately 40 acres of space needed for the LDES system and not accounting for the space needed for power generation, ancillary equipment, and required separation distances.

Iron Redox Flow Batteries

The iron RFB technology that utilizes an all-iron construction contains iron in different valance states for both electrodes and aqueous ferrous chloride solutions for the two tanks of electrolyte.

Iron RFBs are cost-effective due to the affordability of iron salts, which are abundant and cheaper than vanadium used in other flow batteries. Graphite electrodes and less expensive electrolytes contribute further to reduced costs. Overall, the design and materials make all-iron redox flow batteries an economical alternative to vanadium-based systems (Dinesh et al. 2018). ESS, Inc. offers its Energy Center™ flexible and modular system for utility-scale applications using iron flow batteries with up to 8 hours of continuous discharge (ESS 2025). The first commercial deliveries of demonstration Energy Center™ products occurred at the end of 2024.

Potential Feasibility Issues. Similar to vanadium RFBs, the iron RFB technology has not yet been proven at the scale of the proposed project. An iron RFB demonstration project planned by Sacramento Municipal Utility District (SMUD) in Sacramento will provide 3.6 MW over an 8-hour duration. The system is expected to be fully commissioned by 2027. Successful completion of the project will enable SMUD to scale the deployment of iron flow LDES up to 200 MW (CEC 2025). It will take some years beyond 2027 for this large-scale facility to prove its operational reliability. Commercially available iron RFBs are designed for standard containerized constructions and would likely require a larger footprint for the LDES system than the vanadium RFBs.

Metal-air Flow Batteries

Metal-air flow batteries (MABs) transform chemical energy into electrical energy through redox reactions, forming solid metal oxides that can be recycled. MABs use oxygen from the surrounding air as a cathode source and include an electrolyte which can be either aqueous or non-aqueous depending on the anode material. Additionally, their anodes can be made from affordable materials such as iron. The iron-air MAB utilizes an aqueous electrolyte solution.

In MABs, metal at the anode converts into ions, while oxygen at the cathode forms hydroxide ions. Oxygen diffuses through a gas diffusion layer, interacting differently with aqueous and non-aqueous electrolytes. During discharge, electrons are released as metal ions dissolve into the electrolyte; these processes are reversed during charging. However, non-ideal conditions may lead to the precipitation of solid discharge products, consuming active electrolytes and reducing energy density (Olabi et al. 2021).

Potential Feasibility Issues

MAB applications include a Form Energy, Inc. iron-air LDES system coupled with a Pacific Gas & Electric Company substation in Mendocino County to provide 500 MWh over an unprecedented 100-hour duration to support grid reliability and resilience. This system is expected to be commissioned in 2025 (CEC 2025). However, there have not yet been proven demonstrations at the scale of the proposed project. Additionally, MABs have lower round-trip efficiencies between charging and discharging compared to other electrochemical storage options. The MAB technology would require battery replacement which would not support the proposed project's objective of a technology with a long-term commercial lifespan of at least 30 years.

While non-lithium BESS technologies are progressing, scalability, cost, and storage duration remain key barriers. Existing systems do not yet provide the multi-day storage capacity or efficiency of CAES. As a result, while non-lithium LDES solutions are advancing, they are not yet a feasible alternative to the Willow Rock A-CAES facility. Continued innovation, cost reductions, and technological breakthroughs will determine their future viability for large-scale deployment.

Lithium-ion BESS

The lithium-ion (Li-ion) battery includes an electrolyte solution (Li-ion), separator, anode, cathode, and two electrical current collectors that are contained in a single cell. The cell is the smallest form factor of a battery. Cells placed in trays and stacked make a module. Many modules make a battery energy storage system (BESS). Li-ion batteries have an average monthly round-trip efficiency of 82 percent (U.S. EIA 2021). Lithium iron phosphate (LFP) and nickel manganese cobalt (NMC) have been two types of battery chemistries used for utility-scale application, but the industry has trended towards using LFP for utility-scale applications.

LFP batteries have a lower energy density and better thermal stability compared to NMC battery chemistry. However, the type of battery chemistry is not considered a root cause or failed element of a failure incident. According to the Electric Power Research Institute's 2024 White Paper analysis on BESS failure incidents, the incidents are classified by root cause and by failed element. The root cause includes design, manufacturing, integration, assembly and construction, and operations. The failed element includes cell or module, controls, and balance of plant (EPRI 2024).

A containerized 4-MWh capacity BESS requires approximately 261 sq. ft. of space stored (Tesla 2023). This equates to approximately 12 acres of battery storage space needed for 4,000 MWh of capacity, including inverters. Additional clearance (space) would be required for emergency response, in compliance with the California Fire Code. The system might not be stackable due to the explosion prevention features in the containers. These features include exhaust ventilation or deflagration venting, which might be located on the roof of the container. These features allow for gases to escape the container during a fire incident.

Potential Feasibility Issues

BESS facilities have proven utility-scale applications. They have proven charge and discharge capabilities and have provided the electrical grid with many megawatt hours of capacity. To date, a 750-MW/3,000 MWh (supplying 750 MW continuously for 4 hours) BESS is the largest one successfully deployed (Energy Storage News 2023). The CEC is considering approval of an opt-in certification of the Darden Clean Energy Project that would include a 1,150-MW solar photovoltaic (PV) facility together with an up to 4,600-MWh BESS facility (CEC power plant proceeding 23-OPT-02).

However, the employment of a Li-ion BESS as an alternative to the proposed project would be among the first long-duration application to support the electrical grid. A BESS traditionally has a continuous operational discharge duration of 4 hours; operating for 8 hours continuously would double the discharge duration.

One of the project objectives is to provide 520 MW of dispatchable long-duration storage and energy delivery for a minimum of 8 hours. The BESS alternative would require approximately 4,000-MWh of capacity. As mentioned, a BESS typically operates continuously for a maximum of 4 hours. To meet the project objective, the BESS alternative would need to be designed with two, 520-MW battery storage systems—520 MW for the first 4 hours and another 520 MW for the second 4 hours, thus, 520 MW (4,000 MWh) capacity with 8 hours of continuous operation. This assumes 100 percent state of charge to 0 percent discharge; however, it is not recommended that a BESS operate at these limits, so additional capacity would be needed to ensure the alternative reliably provides 8 hours of continuous operation. (Subsection 8.3, above, lists the project objectives.) Changing the project's energy storage technology would require a wholly new set of project design and technical studies and would cause a substantial loss of financial investments in the WRESC.

Summary of Conclusions for Long-duration Battery Energy Storage Technologies

Non-lithium-ion electrochemical (battery) LDES technologies at the scale of the proposed project are not fully proven and fail to meet many of the proposed project's objectives, such as space constraints and technology lifespan. Compared to lithium-ion electrochemical storage options, LDES systems have lower energy densities. LDES systems in general have higher costs due in part to a lack of large-scale manufacturing capacity and the need for pumps, sensors and other power and flow management systems (NREL 2021). Ultimately these limitations eliminate the other LDES technologies from further consideration as feasible alternatives to the project's proposed technology.

A long-duration Li-ion BESS alternative would require a full site assessment to determine the total space requirements, which would include a construction and equipment laydown area, batteries, inverters, parking, and areas for a switchyard and equipment. The total space requirements for a long-duration BESS cannot be accurately estimated; although some BESS proposals are being reviewed by CEC staff, site

arrangements vary considerably, including the spaces between battery storage containers. Therefore, it is unknown how this alternative might be configured relative to the planned project area at the proposed site. Without an approximate project area, staff's comparative environmental impact analysis for a theoretical Li-ion BESS alternative would likely involve guesswork without meaningful conclusions.

The WRESC is proposed by Hydrostor using its A-CAES technology (with GEM A-CAES, LLC as the applicant). Based on information on its website, Hydrostor develops energy storage projects solely through the design and installation of its A-CAES technology (Hydrostor 2025). The applicant has obtained site control of the 112-acre WRESC property with an optional purchase and sale agreement with the landowner. The potential feasibility of a Li-ion BESS alternative on the project site is questionable and depends largely on a hypothetical scenario where a different developer has a set of project objectives and a plan to install a long-duration BESS on a portion of the WRESC property. A BESS developer would have its list of siting criteria and a process to evaluate potential project sites for a BESS project, and it is not possible for CEC staff to independently determine the best location for such a site. As described above, CEQA does not require consideration of "an alternative whose effect cannot be reasonably ascertained and whose implementation is remote and speculative" (Cal. Code Regs., tit. 14, § 15126.6, subd. (f)(3)).

A review of these batteries would be needed to assess the grid's ability to charge batteries for long hours and discharge the power back to the grid at different time intervals. Charging and discharging could create line congestion, which should be considered. Also, it would be necessary to maintain a 90 percent power factor at the point of interconnection to ensure an efficient power transfer and reduce energy losses.

The project objectives specify operational characteristics and services that are needed to support the transmission grid and help achieve the state's renewable energy goals. Included is an objective to provide "voltage support and primary frequency response...." Batteries alone cannot provide volts-ampere reactive (VAR) support to the grid.[7] While modern inverters can contribute VAR support to the system, they may not be able to withstand significant faults, potentially leading to delayed current supply to the grid and a subsequent voltage collapse. Under this alternative, the BESS developer would need to request that Pacific Gas & Electric (PG&E) conduct a comprehensive VAR study to evaluate transient and post-transient power flow issues. It would also be necessary to determine if the system has additional synchronized generators adjacent to the project interconnection point that could provide VAR to the system if a fault occurred. Alternatively, capacitor banks could be installed at the project interconnection substation, which would also require an assessment from PG&E. Either option would likely require a wait in the queue before PG&E could perform the study. These are also considered potential feasibility issues for a Li-ion BESS alternative.

7 VAR stands for Volt-Amps Reactive, and it is a unit of measurement for reactive power, which is essential for maintaining stable voltage levels in the electrical grid.

These potential feasibility issues and not being able to meet the basic requirements of the project objectives are reasons why these LDES systems were initially considered but are not evaluated further as alternatives to the WRESC.

8.5.3 100 Percent Hydrogen-fueled Power Plant

This technology uses gas turbines and heat exchangers to burn 100 percent hydrogen gas (H2) as a fuel source to generate power. H2 is abundant but not a readily available resource and would need to either be produced onsite in a separate facility or provided from an offsite source. In addition, 100 percent H2 capable turbines require specialized equipment that is only recently becoming commercially available and is not yet a proven technology for large-scale applications.

Project components common between the proposed WRESC and a power plant fueled by H2 would be the turbine hall, gas-insulated substation building, main substation, relay protection and control building, and the utility motor control center/substation building. These buildings together would require an estimated 9.9 acres of land. An H2 production facility would replace the cavern and water reservoir associated with the proposed project and would cover an estimated 98 acres to meet the demands of the 500-MW WRESC. In comparison, the project as proposed allots 61 acres for the cavern and water reservoir.

100 percent H2 fueled power plants use gas turbines to burn pure hydrogen to cleanly generate electricity. The natural gas turbines have been designed for the WRESC to consume natural gas, not H2. Burning pure hydrogen only produces electricity, heat, and water vapor as byproducts as this is a carbon-free fuel. In addition, though not renewable, hydrogen is plentiful in the environment and effectively limitless, with its primary source being the atoms in water.

Simple cycle natural gas-fueled turbines demonstrate higher energy conversion efficiencies of around 40–42 percent. For combined cycle natural gas-fueled turbine units, the efficiency is around 54–56 percent. In comparison, combined cycle hydrogen-fueled gas turbines are expected to reach roughly 60 percent efficiency. However, similarly, with higher combustion temperatures, some combined cycle natural gas turbines equipped with advanced turbine blade materials can also reach an efficiency of 59–60 percent. Assuming a favorable 60 percent efficiency rate and using the lower heating value of H2 of 33,330 kWh/metric ton, a 4,000-MWh, 100 percent H2-fueled power plant would require 200 tons of H2 per day to meet the same expected power production as the WRESC.

H2 has a very high flame temperature (2,045 °C in air) as well as a much higher flame speed (approximately 3 meters/second [m/s]) compared to natural gas (1,960 °C and approximately 0.3 m/s, respectively). These factors greatly increase the risk of flashback in a gas turbine due to the risk of the flame propagating backward into other zones inside the turbine. Blowback is also possible as the high flame speed can cause the fluid to move at high velocity during combustion and possibly push the reacting H2

out of the combustor or extinguish the flame outright. Due to these risks, turbines designed to burn 100 percent H2 are required to safely use this fuel as measures must be included to mitigate flashback and blowback. Standard natural gas turbines cannot be used for this project without retrofitting to minimize the risks.

According to combustion turbine manufacturers, certain new models can be constructed that will soon have pre-planned upgrades available to install, reportedly allowing them to align to turbine compatibility with up to 100 percent H2 combustion (U.S. EPA 2023). In addition, the world's three largest turbine manufacturers have made commitments to develop advanced technologies by 2030 or sooner that will enable additional models of new heavy-duty combustion turbines to fire 100 percent H2. For certain existing larger models, manufacturers are developing retrofits that will allow those units to safely increase their levels of hydrogen co-firing up to 100 percent.

Pure H2 burning also provides pathways for nitrous oxide (NOx) emissions to form as a byproduct of the fuel burning process. Although pure H2 creates no chemical byproducts, the high temperature that is required to burn H2 causes reactions with air that can oxidize free nitrogen in the air and form NOx emissions. The primary way to mitigate this issue is to mix in air to bring the reaction temperature down to a value where these reactions are less likely to occur, but that is not currently an option when using 100 percent H2.

Potential Feasibility Issues

Pure hydrogen, while abundant, is also not a renewable or readily available resource. To use 100 percent H2, it must be produced either on or offsite for use in a facility. The WRESC would likely need to build a facility onsite to process H2 for use, likely through steam-methane reforming or electrolysis. The facility would also need to consume power from another source to produce the H2. The WRESC as proposed would use the existing grid without needing additional fuel sources as it would have its power needs met by the excess power produced by other sources connected to the grid. Converting to a 100 percent H2 facility would have greater power needs.

100 percent H2 has a lower energy density compared to natural gas (CH4) (10,050 kilojoule/meters cubed (kJ/m3) for H2 versus 32,569 kJ/m3 for CH4), meaning that more H2 would need to be consumed, higher pressures would need to be used, or both would be needed to produce the same energy output as burning natural gas. As noted previously, and since gas turbines have been designed to consume natural gas, not H2, these chemical and energy differences would require the use of specialized turbines for a power plant fueled by H2.

8.5.4 Traditional Compressed Air Energy Storage (CAES)

The CAES is similar to A-CAES in that a compressor is used to convert electrical energy into high-pressure compressed air that is stored in this increased energy state. This is typically done by injecting the compressed air into existing, deep salt caverns or depleted gas reservoirs that can store compressed air and retain it in this formation for

long periods. When electricity is required, compressed air is expanded through a turbine generator, converting the stored energy back into electricity (TN#254805).

However, heat must be added back into the compressed air before expansion because the expansion process results in significant cooling of the expanding air stream. The turbine would not operate at unacceptably low temperatures.

Potential Feasibility Issues

While both technologies involve storing energy by compressing air, CAES uses the traditional method where heat generated during compression is largely lost, often requiring additional fuel like natural gas to heat the air during expansion, while A-CAES offers a more efficient system that captures and stores this heat, resulting in a reduced reliance on fossil fuels, or additional power demand such as battery energy storage, during electricity generation.

Natural gas-fired heating system would include equipment that could heat the compressed air to an optimal temperature prior to entering the turbine. Heating the air would reduce the significant cooling effects of air expanding as it travels through the turbine. The use of a natural gas-fired system would introduce emissions, including criteria and toxic air contaminants, as well as emissions of greenhouse gases.

An electric heating system would be an alternative to heat the compressed air entering the turbine. It may not have direct emissions and could be the preferred choice for meeting the project objectives. However, electricity would need to be supplied to the CAES by the grid when the CAES is dispatched. Alternatively, the power for the electric heating system could be supplied by a battery system. The footprint and capacity of the battery system would require further engineering assessment.

Overall, A-CAES is considered a more advanced version of CAES with improved efficiency by utilizing the heat of compression. A-CAES is preferred over CAES for its ability to provide a more sustainable solution for large-scale energy storage.

8.5.5 Pumped Thermal Energy Storage

Pumped thermal energy storage (PTES) technology uses a system of hot and cold media to store energy converted from electricity in the form of heat inside a thermal medium. The process uses a reversible heat pump to charge and discharge storage tanks to both store and provide electricity to a host facility or the electricity grid. PTES takes power from another source and stores it for use later when additional energy is needed. As PTES does not produce any energy on its own, it needs to be connected to the grid or some other source that produces power, similar to A-CAES and battery energy storage.

PTES is primarily implemented with two main methods: solid storage media and liquid storage media. Solid storage systems are generally cheaper to produce and maintain and can support a wide range of internal media temperatures. They use solids such as

ceramics or refractory bricks that can withstand high temperatures without significant degradation. These materials are also relatively cheap and easy to procure. The solid materials used are also generally more stable under cyclic thermal loading than liquid materials, removing the need for specialized containment vessels or measures. The solids also retain heat longer than fluids due to their low thermal conductivity, making them more suitable for long-term storage.

Low thermal conductivity also contributes to a low rate of heat exchange, which can bottleneck the rate of discharge when the electricity needs to be drawn from storage. The materials inside the system are also subject to thermal stresses over a long period of usage, which may cause cracking and disintegration of the media over time. Low thermal conductivity for solids also requires a larger volume of material to store comparable amounts of energy compared to liquid media. Stratification, which is when distinct thermal layers form in a medium instead of staying at a consistent temperature throughout the entire material, can also occur depending on how the material is laid out in the storage chambers. Stratification can contribute to uneven distribution of thermal energy within the chambers.

Liquid storage media in PTES systems are typically more difficult to produce and maintain than solid systems but offer more consistency and efficiency as a result. Storage materials include molten salt, thermal oils, or water which have a high thermal conductivity and are much easier to pump and move around due to their nature as liquids. This minimizes mechanical energy loss. Liquid media allow for more compact designs as they are more efficient at storing heat as well as being more scalable in design which makes them significantly more suitable for grid-scale applications. Liquids also do not experience mechanical stress due to thermal cycling and can effectively eliminate the risk of thermal stratification as they are self-mixing.

Liquid media are significantly more volatile than solids and can be difficult to process and maintain and each of the media options has its challenges. Molten salts and thermal oils specifically can be highly corrosive which requires specialized containment units and frequent maintenance. Molten salts also have a high freezing point which requires higher temperatures in both the hot and cold reservoirs. Thermal oils also degrade over time and form toxic byproducts that can impede operational efficiency. Liquids in general are subject to containment issues such as evaporative losses, corrosion, and pressure losses.

Potential Feasibility Issues

While PTES is not considered a mature technology, there are some planned implementations. In 2024, Westinghouse Electric Company announced a 1.2-gigawatt-hour PTES system by Echogen to be implemented in Healy, Alaska that would function in support of planned wind power facilities. Echogen's roadmap includes small-scale testing from 2021 to 2025, followed by large-scale demonstrations and commercial projects between 2026 and 2029. Mass deployment is anticipated from 2030 onward. Other companies are currently developing PTES, but they have not yet fully matured

their systems. These developments suggest that PTES technology is nearing readiness for large-scale deployment, with ongoing projects and strategic partnerships supporting its integration into the energy sector, but the technology is not yet mature enough to be considered as a viable alternative to the WRESC.

8.5.6 Alternative Sites

The potential feasibility of an alternative site might depend on whether an alternative location has the resources and conditions necessary to facilitate construction and operation of a project. CEQA provides that "in some cases there may be no feasible alternative locations for a geothermal plant or mining project which must be in close proximity to natural resources at a given location" (Cal. Code Regs., tit. 14, § 15126.6, subd. (f)(2)(B)). Key siting criteria for the proposed WRESC require that particular geologic characteristics be present to support the underground facilities for compressed air storage (Gem 2024). (See also subsection "8.3 Project Objectives and Alternatives Screening," above, with an objective listing the geologic attributes necessary to support the project.) The geology underlying the proposed WRESC site has been initially evaluated to consist of hard rock at a depth that is compatible with the design of the A-CAES cavern storage system. For the WRESC, an alternative site can be rejected as infeasible if the deep, hard rock geology required for the cavern storage system is deficient.

Other siting criteria that are also consistent with several project objectives include:

- locating the project near existing and planned infrastructure with access to an existing substation with available transmission capacity,
- identifying sites where site control is possible through a long-term lease or property purchase,
- siting the project with adequate access and on a site sufficiently sized for construction of aboveground facilities (approximately 80 acres), and
- siting near an adequate water supply for use during construction.

The applicant initially studied four properties, including the original site on Sweetser Road. The applicant studied these alternative sites before selecting the Sweetser Road site:

- Rosamond Hills site
- Little Buttes site
- U.S. Bureau of Land Management (BLM) site

The 80-acre Rosamond Hills site is located approximately 4 miles northeast of the original WRESC site. The Rosamond Hills site was considered in the geotechnical screening analysis of the project region as potentially having the subsurface hard rock and low permeability characteristics that would be compatible with the A-CAES cavern design requirements. However, a more focused geologic assessment revealed the site

to be the least favorable of the original alternative sites for reasons that include an underlying rock formation that would not be as strong, durable, and impermeable as that of the original WRESC site (Gem 2022).

The 60-acre Little Buttes site is located over 6 miles south of the original WRESC site. In its geotechnical analysis, the applicant initially considered this site as possibly having the necessary geologic characteristics, although the geology was determined less preferred than the original WRESC site (Gem 2022). The site is named for the Little Buttes ridge adjacent to the site. The applicant identifies the site's complex and sloped terrain as being unsuited for project construction without mass site grading. Also, site control is an issue for the Little Buttes site given that it is composed of 20 parcels and 18 separate landowners. By comparison, the proposed WRESC site covers approximately 89 acres on a 112-acre parcel, and a purchase option agreement has been executed with the landowner.

The 90-acre BLM site is located on the north-facing slope of Willow Springs Butte immediately southeast of the original WRESC site. The BLM site was initially identified as also having suitable deep, subsurface geological characteristics necessary for the underground storage cavern. However, most of the site consists of complex and steep terrain with the land slope varying from over 6 percent to up to 43 percent near the peak of Willow Springs Butte on the south side of the property (Gem 2022). Also, the area along the north side of the BLM property consists of 29 privately-owned parcels and 18 separate landowners, and there is no public access point to the BLM property.

Preferred geologic characteristics for finding potential sites was initially focused on locations on or directly adjacent to quartz monzonite outcroppings, which was expected to be a strong indicator for suitable geologic conditions at the cavern construction depth. It was later determined that suitable sites should not be located near volcanic outcroppings, which "are associated with deleterious incongruities in the quartz monzonite formation that are undesirable for subsurface A-CAES cavern construction and operation" (Gem 2024). Further analysis and an exploratory drilling program at the original Sweetser Road site showed that it and the three alternative site properties would not be suitable since all were located in close proximity to volcanic outcroppings. Therefore, the site selection radius was expanded to locate new sites with the necessary geologic characteristics; a desktop analysis identified a large quartz monzonite deposit east of the original group of alternative sites.

The supplemental application reviewed all the sites considered for the project, including the original Sweetser Road site and the proposed WRESC site. (**Figure 6-1** in the supplemental application shows all the sites considered for the project.) The four newer alternative sites (described below) and the proposed WRESC site meet the updated geologic criteria (Gem 2024). The proposed WRESC would cover approximately 89 acres on a privately-owned property east of SR 14 and approximately 3½ miles north of Rosamond in unincorporated Kern County. Dawn Road borders the south side of the site. The site is situated on the west side of Sierra Highway and the Union Pacific railroad corridor.

The applicant considered whether the alternative sites were potentially available for purchase and had sufficient acreage to justify further study. The local transportation system was evaluated to identify possible constraints to site access. Site topography was evaluated for potential constructability issues. (These criteria are consistent with project objectives listed under subsection 8.3, above.) These alternative sites were reviewed in the supplemental application but ultimately rejected because they would not meet several of the project objectives:

- Pacific Steel Group (or "P" site)
- "G" site
- Odel (or "OT") site
- Villa Haines (or "VH") site

The Pacific Steel Group (PSG) site covers approximately 154 acres on the east side of Sierra Highway and south of Sopp Road, approximately 1½ miles northeast of the proposed WRESC. Site access from SR 14 would require crossing Sierra Highway and the Union Pacific railroad tracks possibly by improving the crossing at Sopp Road. However, the applicant ultimately rejected the site because PSG plans to develop a hybrid micro steel mill on the property.

The "G" site covers approximately 160 acres of undeveloped land on the east side Sierra Highway, less than a mile northeast of the proposed WRESC. An initial review of groundwater wells in the area revealed that new groundwater wells would be needed to support project construction; the applicant concluded that the uncertainty of accessing groundwater would be a risk for the site. Also, site access would require a new railroad crossing from Sierra Highway. (Negotiations with Union Pacific to construct a crossing over the railroad corridor would likely cause major challenges for this site, including potential project schedule delays.) The applicant rejected the site in part because contact with the individual who is the landowner did not result in completion of a site purchase agreement. Despite the other issues, the inability to gain site control was determined to make the site infeasible for the project.

The Odel site covers approximately 160 acres of undeveloped land southeast of the intersection where Dawn Road ends at Sierra Highway and the Union Pacific railroad corridor. The site is close to a mile southeast of the proposed WRESC and roughly 2,500 feet east of Sierra Highway and the railroad. There is no existing, improved roadway to provide access to the Odel site. Site access would require constructing an extension of Dawn Road east to cross Sierra Highway and a new, upgraded crossing of the railroad tracks. Also, 10th Street W is an unimproved roadway that bisects the property from north to south. Construction work and negotiations to allow site access is considered a notable risk factor for the Odel site. Similar to the "G" site, new groundwater wells would be needed to support project construction.

The Villa Haines site covers approximately 80 acres of undeveloped land west of SR 14 on the north side of Dawn Road. The site is about a mile west of the proposed WRESC.

There are changes in topography on the north half of the property that would cause grading and constructability issues for the site. The applicant also found that no surrounding properties were available for construction laydown, parking, or other project support uses. The applicant purchased the property and plans to use it for temporary construction laydown and parking or environmental mitigation for the WRESC (APN 431-022-08).

Conclusions for Alternative Sites

The applicant evaluated several sites in the western Mojave Desert. Some of the alternative sites were rejected because the geologic formations were ultimately determined to be undesirable for subsurface A-CAES cavern construction and operation, including the original project site on Sweetser Road. Another group of five sites were evaluated in the supplemental application for the WRESC that were considered to have suitable geologic conditions for the project (Gem 2024). Of that group, four sites were rejected primarily due to an inability to gain site control, site access challenges, and an uncertain water supply during construction. By comparison, the applicant has acquired site control of the proposed WRESC site through an optional purchase and sale agreement with the landowner. The project site is situated directly west of Sierra Highway on the north side of Dawn Road where there is direct site access from SR 14. Based on the applicant's geotechnical data collection and analysis, the geologic conditions needed to support the project are present at the site. CEC staff knows of no other potentially feasible alternative site; therefore, no alternative site was selected for analysis and comparison to the WRESC.

8.6 Alternatives Selected for Analysis and Comparison to the Project

The following alternatives were selected for analysis and comparison to the project in this staff assessment:

- Alternative 1: No Project/No Build Alternative
- Alternative 2: Reduced Capacity Alternative

CEQA provides that the no project alternative can be "the circumstance under which the project does not proceed" (Cal. Code Regs., tit. 14, § 15126.6, subd. (e)(3)(B)). Consistent with this provision, for this project it is the No Project/No Build Alternative (Alternative 1).

The alternatives are described below, including an assessment of their ability to meet the basic project objectives. Assessments of potential feasibility issues are provided followed by impact comparisons for the proposed WRESC and each alternative. These analyses are followed by a discussion of the *environmentally superior alternative* (subsection 8.7, below) and a table summarizing the comparison of impacts (**Table 8-1**). **Table 8-2** lists staff members who contributed to this Alternatives analyses.

For project issues in sections covering **Facility Design**, **Facility Reliability**, **Transmission System Engineering**, **Worker Safety and Fire Protection**, and **Transmission Line Safety and Nuisance**, conformance with applicable LORS would provide reasonable assurances that project construction and operation would be done in a manner that protects public health and safety. The same LORS would apply to Alternative 2; therefore, these topics are not included in this comparative analysis of impacts.

Staff has identified no significant impacts on resources evaluated in sections covering **Climate Change and Greenhouse Gas Emissions**, **Efficiency and Energy Resources**, **Socioeconomics**, and **Solid Waste Management**; therefore, these topics are not included in the comparative impact discussions below. For the other topics covered in **Section 5, Environmental Impact Assessment**, impact analyses are provided comparing impacts of Alternative 1 and Alternative 2 to the proposed WRESC.

8.6.1 Alternative 1: No Project/No Build Alternative

The WRESC would cover approximately 89 acres on the western portion of an undeveloped, 112-acre property that is under private ownership. The applicant has obtained site control of the whole property through an optional purchase and sale agreement with the landowner. The site has no permanent structures or buildings.

Under Alternative 1, the CEC would not issue a license to the applicant to construct and operate the WRESC. Should the WRESC not move forward, a new project could eventually be approved at the site. However, the design, potential impacts, and time frame concerning a future project would be subjects of speculation. The No Project/No Build Alternative is characterized by the continuation of existing conditions at the site. No other use is reasonably foreseeable; therefore, it is assumed that existing conditions would generally persist at the site for an unknown period. If the WRESC were not implemented the basic project objectives would not be attained.

As discussed above under, "5.4 Environmental Impacts of the Project," staff recommends conditions of certification to reduce the potentially significant impacts identified in this staff assessment to less-than-significant levels. (Staff concluded that the impact regarding the potential for the project to substantially degrade the existing visual character or quality of public views of the site and its surroundings remains significant even after implementation of visual resource COCs.) The No Project/No Build Alternative would avoid the significant impacts relating to construction and operation of the project (*no impact* compared to the project), summarized as follows:

- **Air Quality** – This alternative would avoid construction-related air emissions relating to movement of earth and rock, land preparation, shaft and cavern drilling, blasting, excavation, equipment and vehicle exhaust, construction of power plant facilities, operation of rock crushing and concreate batch plants, and construction of the gen-tie line and poles. It would also avoid air emissions from offsite worker

vehicle and truck hauling travel and roadway work. In addition, it would avoid emissions from the emergency backup generators and the fire pump during project operation.

- **Biological Resources** – This alternative would avoid the project's significant impacts on biological resources including potential impacts on native vegetation communities and sensitive plants, including over a thousand western Joshua trees. This alternative would avoid impacts on burrowing owls and other sensitive wildlife that are known to occur in the project area, including Crotch's bumble bee, desert kit fox, and a variety of nesting birds. In addition, this alternative would remove the potential for avian species to collide with the proposed 19-mile transmission line.
- **Cultural and Tribal Cultural Resources** – No ground disturbing activities would occur under the No Project/No Build Alternative. Therefore, this alternative would avoid any impacts on cultural and tribal cultural resources.
- **Geology, Paleontology, and Minerals** – Without project construction, this alternative would avoid potential geologic hazards on people and structures. Without excavation of deep vertical shafts and the cavern, potential risks from collapse of the underground openings during project construction and operation would be avoided.
- **Hazards, Hazardous Materials/Waste, and Wildfire** – This alternative would avoid encountering any contaminated soil as the ground disturbing activities associated with site grading, cavern excavation, and project construction would not occur. It would also avoid the hazard of using explosives for cavern construction. The small risk of wildfire that could occur from the construction and operation of the 19-mile gen-tie line would be avoided.
- **Land Use, Agriculture, and Forestry** – The No Project/No Build Alternative would not result in a change in land use. A Conditional Use Permit for conformance with Kern County LORS and notifications to the U.S. Department of Defense (DOD) and Federal Aviation Administration (FAA) would not be required for the existing land use to continue. Therefore, this alternative would have no impacts related to consistency with land use plans, policies, or regulations adopted for the purpose of avoiding or mitigating an environmental effect and ensuring consistency with existing zoning for agricultural uses.
- **Noise and Vibration** – Without project construction, this alternative would avoid increasing ambient noise levels in the surrounding community. Daytime noise from blasting events for cavern work would not occur.
- **Public Health** – As described under Air Quality, above, this alternative would avoid construction-related air emissions. Without project construction, it would avoid potential exposure of onsite and offsite workers and others in the area to Valley Fever and diesel particulate matter (DPM). It would also avoid DPM emissions from the emergency backup generators and the fire pump during project operation.

- **Transportation** – Without project construction traffic, this alternative would avoid degrading the LOS at the SR 14 southbound ramps and Dawn Road intersection during the afternoon peak hour. Without the use of oversize or overweight vehicles to transport hazardous substances, it would avoid creating hazards to vehicles, bicyclists, and pedestrians traveling on the surrounding roadway network.
- **Visual Resources** – Without project implementation, this alternative would avoid substantially degrading the existing visual character or quality of public views of the site and its surroundings from KOP 2, KOP 3, and KOP 4. It would also avoid the potential effects of substantial light, glare, and reflectance that could adversely affect day or nighttime views in the area because no project structures or buildings would be built.
- **Water Resources** – This alternative would avoid possible water quality degradation due to soil disturbance related to construction activities, impounding of drill cuttings, or an onsite septic system. In addition, 280 AFY of water during project construction and 2 AFY of water during project operations would be saved annually.

8.6.2 Alternative 2: Reduced Capacity Alternative

Staff considered a reduced capacity alternative to the project with half the proposed MW capacity of 520 MW. This alternative would consist of two 130-MW air expansion turbine generators instead of the four originally proposed in the AFC. As a result, the footprint of the power block would be reduced, potentially from 11 acres to approximately 5½ acres.

The Reduced Capacity Alternative is focused on lowering the system's power output while maintaining effective energy storage. This approach involves reconfiguring the project with a lesser number of turbines and smaller compressed air storage cavern and water reservoir, while ensuring the system would continue to operate efficiently at a reduced capacity.

The reduction in the number of the turbines from four to two would decrease the overall air expansion capacity, which means a smaller cavern would be needed to store compressed air, and less water displacement would be required. As a result, the compressed air cavern volume could also be reduced, potentially halving it from the original 900,000 cubic yards. This would allow for a proportional reduction in reservoir capacity, and a decrease in reservoir acreage from approximately 21 acres to approximately 10½ acres. Alternatively, the reservoir depth could be reduced by lowering the reservoir's berm height. The reservoir would still be under the Division of Safety of Dams (DOSD) jurisdiction.

With the reduced cavern size, the quantity of excavated rock removed from the cavern would also be reduced. If the architectural berm were constructed with the waste rock, the length of the berm would be shortened, and its placement on the site could vary somewhat from its proposed location.

This alternative could reduce the overall 60-month construction timeline, although potential reductions in the monthly project milestone schedule cannot be accurately estimated; however, it is not assumed that the full construction timeline would be reduced by half. The smaller cavern would require less excavation, which would cut down excavation and hauling durations. The applicant estimates a need for 1,400 AF of water (with an approximate 20 percent contingency) throughout WRESC construction. Most of the water would be used to fill the hydrostatic compensating reservoir. Reducing the project size would reduce the water use requirement for construction and operation (discussed under the subsection “Environmental Analysis,” “Water Resources,” below).

The numbers of cooling equipment and storage tanks could be reduced by approximately half, further reducing the facility’s footprint. The project’s three diesel-fired emergency generators would be reduced to one or two generators, up to approximately 2.5 MW each. With these modifications, the overall facility footprint could be reduced from 88.6 acres to approximately 65 acres. The reduced site footprint under this alternative would be within the boundaries of the proposed WRESC site, and it is assumed that the eastern boundary would still align along Sierra Highway.

In an A-CAES system, the size of the cavern primarily determines the energy storage capacity (MWh) of the project. A smaller cavern would shorten the project’s energy discharge duration, whereas maintaining a larger cavern could provide more flexibility in operation, such as longer power discharge duration and higher power output. Since the relationship between cavern size and stored energy is typically linear, any adjustments must carefully balance efficiency with the project's needs.

The water reservoir, which would play a key role in stabilizing system pressure, could also need to be adjusted for the Reduced Capacity Alternative by reducing its surface area and depth (described above). Reducing the surface area while modifying the depth would influence how effectively the reservoir could balance pressure within the system. These adjustments would ensure the reservoir could continue to support stable operation while aligning with the lower power output. If reducing the reservoir’s depth were to lead to lower water pressure, pumps could be incorporated to maintain consistent pressure at the receiving end, the cavern.

The proposed WRESC would require up to approximately 136 acres for construction laydown, materials and cavern rock storage, and parking. Under this alternative, the total acreage requirement for these uses could be less but cannot be accurately estimated.

Potential to Attain the Project Objectives

While this alternative would still provide quick-starting, flexible, and controllable energy generation, it would only partially meet the project’s primary objective by delivering only half of the intended capacity. However, it would still align with several other project goals, such as integrating renewable energy into the grid, utilizing a sustainable

energy storage technology, and reducing some environmental impacts due to the smaller project footprint and cavern.

Potential Feasibility Issues

The following analysis addresses the timing and design constraints of the Reduced Capacity Alternative, its anticipated economic viability, potential system additions and their capacity limitations, and potential operational and technical feasibility issues.

Project Timeline and Design Considerations

The Reduced Capacity Alternative would require extending the project's design phase to accommodate key modifications. The revised design would require adjusting the number and placement of turbines, incorporating pumps to maintain cavern pressure, and reconfiguring the reservoir's size and location. These modifications would require new architectural and engineering plans, which would likely jeopardize the project schedule.

Changes to the facility's design would require additional environmental review and a delay in the permitting process. While some regulatory requirements might be simplified, new studies could be necessary, particularly regarding the long-term performance of the reduced-capacity system.

Pumping Considerations and System Stability

Reducing the reservoir depth could introduce technical challenges in maintaining stable system pressure, potentially requiring additional design considerations and the use of pumps to maintain operational efficiency. Under the proposed WRESC, the natural hydrostatic pressure created by the larger reservoir would assist in maintaining stable pressure during air and water exchanges. However, under the Reduced Capacity Alternative, with a potentially shallower reservoir, the natural hydrostatic pressure might not be sufficient to sustain optimal system performance, which could require the use of pumps.

The mechanical complexity of integrating pumps into the system would increase maintenance requirements. Pumps require regular monitoring, servicing, and potential replacement over time, which would add to operational costs. The reliability of these pumps is crucial, as any failure could lead to pressure instability, potentially affecting the performance and responsiveness of the energy storage system. Ensuring redundancy in pump operation would be necessary to mitigate risks associated with mechanical failures. To address this, the system design for the Reduced Capacity Alternative might need to incorporate emergency backup pumps, which would further increase project costs and system complexity.

Another operational challenge with the inclusion of pumps is the potential delay in system response times. A-CAES systems have value in their ability to provide rapid energy dispatch when needed. If the pumps require time to adjust pressure levels before energy discharge can occur, this could introduce latency in power delivery. This

delay could reduce the facility's effectiveness in providing immediate grid support, particularly during peak demand periods.

The durability of the pumps in handling frequent and high-pressure water exchanges must be considered. The water movements in an A-CAES system are highly dynamic, with constant cycling between the reservoir and the cavern. Pumps must be designed to withstand these conditions without frequent wear or degradation. Selecting the appropriate pump technology to ensure long-term durability while maintaining efficiency could introduce a key engineering challenge and potentially further delay the project.

Economic Feasibility Issues

The economic viability of this alternative presents a potential challenge. Reducing the overall size of the cavern and reservoir would save on excavation and material costs, offering a more cost-effective build by reducing the amount of steel, concrete, piping, haul truck fuel, and labor among other expenses. However, much of the upfront costs would remain significant, and much of the fixed costs (i.e., regulatory compliance, permitting, architectural and engineering) would remain, potentially reducing the project's economies of scale. Without having the full financial details of the project, shrinking the system's capacity to 260 MW could cut potential revenue in half by reducing the amount of energy that would be sold to Southern California Edison (SCE). This diminished revenue stream could extend the return on investment timeline and could make this alternative financially infeasible for the applicant. Additionally, while this alternative would lower excavation and construction costs, new costs would be introduced for reconfiguring the facility, integrating pumps, and potentially modifying the reservoir. These additional expenses could offset expected savings, further affecting the financial practicality of this approach.

The project's ability to contribute to California's Renewables Portfolio Standard (RPS) goals and climate objectives could be impacted. While the facility under this alternative could support renewable energy integration, it would do so at half the originally proposed capacity, potentially limiting its overall contribution to grid reliability and clean energy availability. This alternative would reduce the facility's ability to provide long-duration energy storage at full capacity, potentially affecting the project's competitiveness and leaving a 260-MW gap in the evolving and still limited energy storage market.

Operational and Technical Considerations

As mentioned previously, A-CAES systems rely on cavern size to determine their overall energy storage capacity. A smaller cavern could shorten the project's energy discharge duration, potentially reducing operational flexibility and failing to meet the project's objective of reaching 8 hours of discharge time. While maintaining a proportionally smaller cavern aligns with the reduced output, it could limit the facility's ability to optimize power discharge for peak demand periods and when solar and wind generation are unavailable.

Similarly, modifications to the water reservoir could impact system pressure stabilization. Reducing the reservoir's depth and acreage could necessitate the use of pumps to maintain pressure consistency. The addition of pumps would increase maintenance requirements and operational costs over the facility's lifespan. Ensuring the reliable operation of the pumps would be critical to maintaining system pressure and preventing performance inconsistencies.

Conclusion for Potential Feasibility Issues

The Reduced Capacity Alternative would have a smaller project footprint and a potentially shortened construction timeline due to reduced excavation and reservoir construction activities. However, the need for additional design work would extend the pre-construction phase. The financial feasibility of this alternative is uncertain, as reduced revenue potential and added reconfiguration costs could impact economic viability.

Operationally, the alternative introduces new technical complexities, particularly in maintaining stable system pressure and thermal management with a reduced cavern and reservoir size. The reliance on pumps to stabilize pressure could lead to higher operational costs and additional maintenance needs.

The overall feasibility of this alternative is uncertain due primarily to economic and operational challenges and the project schedule delay that would result from a facility redesign. While the alternative would still meet several project objectives, the reduction in capacity could limit its overall contribution to grid reliability and renewable energy integration.

Environmental Analysis

This subsection describes the comparisons of impacts of the Reduced Capacity Alternative to the WRESC.

Air Quality

The setting and existing conditions for this alternative are the same as for the WRESC. The existing ambient air quality would not change, and the facility would still be within the same air basin and subject to the same LORS.

The Reduced Capacity Alternative would essentially reduce the total construction and operations emissions of the proposed project by approximately 50 percent by reducing the power block footprint from 11 acres to approximately 5½ acres and reducing the number of emergency generators from three to one or two. However, the maximum daily and annual construction emissions are assumed to be similar to the proposed project, assuming the same level of maximum activity but reducing the overall 60-month construction schedule, although the exact project milestone schedule cannot be accurately estimated. Therefore, maximum construction emissions would be approximately the same as those shown in **Table 5.1-6** in **Section 5.1, Air Quality** in

this staff assessment. The maximum daily and annual operating emissions would be less than those shown in **Table 5.1-7**.

The maximum short-term and maximum annual construction pollutant concentration impacts for the Reduced Capacity Alternative could be as high, but no higher than that estimated for the proposed WRESC, assuming the same maximum daily and annual construction activities. Therefore, the worst-case short-term and annual construction pollutant concentration impacts for this alternative would likely be similar to impacts shown for the proposed WRESC in **Tables 5.1-8** and **5.1-9**.

The maximum short-term and annual operational air quality impacts for the Reduced Capacity Alternative would likely be less than the proposed project as shown in **Table 5.1-10** because emissions would be lower with a reduced number of emergency generators.

The Reduced Capacity Alternative would result in the following:

- The worst-case short-term construction emissions and ground level pollutant concentration impacts would be **similar** to the WRESC and would require the same level of mitigation. The total construction period and total construction emissions would be reduced from those required to construct the WRESC.
- Project operations emissions and ground level pollutant concentration impacts would be **less** than the WRESC, but the same level of mitigation would be required.

The level of significance under CEQA for the Reduced Capacity Alternative would be the same as for the proposed project, with the same significance rationale. Construction and operation of this alternative could still contribute to existing exceedance of PM10 ambient air quality standards. The COCs recommended by staff for the proposed WRESC would also apply to the Reduced Capacity Alternative, and impacts would be reduced to less than significant.

Biological Resources

The Reduced Capacity Alternative would result in the same types of impacts on sensitive plants and wildlife as the proposed project. However, the reduction in blasting would reduce potential noise and ground borne vibration impacts on nesting birds, insects, and burrowing animals in adjacent habitat. The reduction of the project footprint, including the reduced size of the architectural berm, would reduce the number of western Joshua trees and other sensitive biological resources that would likely be subject to direct and indirect impacts. Potential impacts on sensitive plants and wildlife would be **less** than the WRESC. Potential impacts on State or California Department of Fish and Wildlife (CDFW) jurisdictional waters would be **similar** to the WRESC. COCs like those recommended for the WRESC would reduce these impacts to less than significant.

This alternative would not result in a reduction of impacts associated with the gen-tie line, which would still be constructed. These impacts include disturbance to nesting

birds and other wildlife, potential impacts on sensitive plants such as alkali mariposa lily, and an increase in the risk of avian collision above baseline levels. To reduce these impacts to less than significant, staff would recommend the same COCs identified for the proposed WRESC.

Cultural and Tribal Cultural Resources

The Reduced Capacity Alternative would significantly reduce the amount of ground disturbance and thus lower the potential for impacting buried and unidentified cultural and tribal cultural resources. Potential impacts on undiscovered buried cultural and tribal cultural resources would be **less** than the WRESC. Redesign with a smaller footprint could also avoid some and reduce impacts on others of the known historical resources, reducing the extent of mitigation that would be required to protect known cultural resources for the WRESC. The potential impacts on known historical resources and undiscovered, buried archaeological resources could be **less** than the WRESC; however, a site plan for the Reduced Capacity Alternative would be needed to reach a more certain conclusion. With this alternative, ground disturbance associated with project construction could still result in the inadvertent discovery of human remains and associated funerary items that meet CEQA's criteria for historical, unique archaeological, or tribal cultural resources; this potential impact would be **similar** to the WRESC. Damage to human remains would be a significant impact under CEQA. As with the proposed WRESC, implementation of several recommended COCs for historical, cultural and tribal cultural resources, these potentially significant impacts would be reduced to less than significant.

Geology, Paleontology, and Minerals

For the proposed WRESC, staff identifies several geologic hazards, including seismic ground shaking, seismically induced ground failure, unstable geologic units and soils, and soil erosion, that could impact the project. For the proposed WRESC, staff recommends COCs to mitigate these hazards' potential impacts to less than significant. Staff notes that geotechnical evaluations of the temporary laydown and architectural berm areas and gen-tie line alignments were not performed.

Under the Reduced Capacity Alternative, the power block and hydrostatic compensating reservoir, architectural berm, and temporary laydown sites would have a reduced footprint. Staff assumes a portion of these sites would still be on parcels where geotechnical evaluations were not performed. The routing, construction, and operation of the gen-tie line would not change under this alternative.

The Reduced Capacity Alternative would reduce the scope of the project and the exposure of people and above- and below-ground structures at the project site to potential geologic hazards. However, the reduced footprint would not necessarily reduce the potential for geologic hazards to occur and harm human life, property, and grid reliability. The potential impacts from geologic hazards on the Reduced Capacity Alternative would mostly be **similar** to the WRESC.

For example, the potential impacts from strong ground shaking on human life, property, and grid reliability would be **similar** for the Reduced Capacity Alternative compared to the proposed WRESC. A reduced project footprint would reduce the total acreage and volume of liquefiable materials requiring mitigation during grading and construction. However, the potential impacts from liquefaction and lateral ground spreading on human life, property, and grid reliability impacts would be **similar** to the WRESC. While a reduced size cavern could reduce the volume of collapse, the potential impacts from collapse on human life, property, and grid reliability would be **similar** to the WRESC. A smaller cavern would still require inspections and maintenance work. Potential impacts from soil erosion would be **less** than the WRESC because of the reduced footprint under this alternative. Without a complete geotechnical evaluation of the proposed WRESC, staff cannot fully compare potential geologic hazards of the alternative to the proposed WRESC.

For the Reduced Capacity Alternative, staff assumes that implementation of appropriate geotechnical investigations, design, grading, excavation, and construction methods would be needed to mitigate geologic hazards to less-than-significant levels. Since the gen-tie line would not change under this alternative, potential impacts relating to geologic hazards and the gen-tie line would not change compared to the WRESC. The same COCs recommended by staff to mitigate potential impacts relating to geologic hazards would also apply to the Reduced Capacity Alternative, and impacts would be reduced to less than significant.

Under the Reduced Capacity Alternative, potential impacts on paleontological resources from construction of the power block and hydrostatic compensating reservoir, architectural berm, and temporary laydown sites would be **less** because less grading and excavation would occur. However, rock formations underlying the project site and gen-tie line route mostly have a “low sensitivity” and low or no potential for discovery of paleontological resources during excavation. Potential impacts from construction of the gen-tie line on paleontological resources would not change compared to the proposed project. To preserve and protect paleontological resources, should they be discovered, staff would recommend the same paleontological COCs as those for the proposed WRESC.

Hazards, Hazardous Materials/Waste, and Wildfire

Under the Reduced Capacity Alternative, the footprint of the power block would be reduced from 11 acres to approximately 5½ acres, with only two 130-MW air expansion turbine generators instead of the four originally proposed for the WRESC, thus reducing worker safety issues proportionately. This alternative would result in a slightly reduced need for hazardous materials and slightly less hazardous wastes generated compared to the project, although this reduction would not lead to a significant lowering of the risks of potential exposure of workers and the public due to the accidental release of hazardous materials. The Reduced Capacity Alternative would also reduce the size of the subsurface cavern by roughly half. Although the Reduced Capacity Alternative would shorten the construction time spent underground during the excavation of the

cavern, the benefits for worker safety would not be a linear relationship due to fixed safety hazards of fire and use of explosives that would remain mostly independent of duration of use. Impacts relating to transport, storage, use, disposal of hazardous materials under this alternative would be **similar** to the WRESC. Impacts relating to the potential accidental release of hazardous materials and hazardous waste would be slightly **less** than the WRESC. COCs like those recommended for the WRESC for hazardous materials management would reduce these impacts to less than significant.

Land Use, Agriculture, and Forestry

The proposed WRESC requires project review to ensure Conditional Use Permit findings can be made for location of the project in the Exclusive Agriculture zoning district. The Reduced Capacity Alternative would require the same review as the WRESC, due to the project use category being the same. In both cases, the findings for granting a Conditional Use Permit can be made. Therefore, both the WRESC and the Reduced Capacity Alternative would have less-than-significant impacts due to conflicts with existing zoning for agricultural use, and due to conflicts with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. Impacts of the Reduced Capacity Alternative would be **similar** to impacts of the WRESC.

Both the WRESC and the Reduced Capacity Alternative would require DOD review to ensure compatibility with the nearby Edwards Air Force Base, as well as with military flight routes in the area. FAA notification would be required for both the Reduced Capacity Alternative and the project to ensure no hazardous obstruction of airspace. The DOD has not provided comments on the WRESC, and absent information to the contrary, staff concludes the project would conform with nearby military facility plans and operations. The FAA issued Determinations of No Hazard for the WRESC gen-tie line and is expected to issue the same determination for the WRESC buildings, given their greater distance from Rosamond Skypark. Impacts on DOD facilities and FAA-regulated airspace from the WRESC would be less than significant. Impacts from the Reduced Capacity Alternative would be similar to impacts of the project, given that the locations and heights of structures, including the gen-tie line, would be similar under both the Reduced Capacity Alternative and the project. For these reasons, impacts of the Reduced Capacity Alternative due to conflicts with land use plans, policies, or regulations would be **similar** to those of the WRESC.

Noise and Vibration

The Reduced Capacity Alternative would likely result in lower noise and vibration during construction and in shortening the duration of construction compared to the WRESC. With a smaller underground cavern, a reduced-capacity water reservoir, and fewer numbers of above-ground equipment, construction activity would involve less excavation, require less heavy equipment, and fewer materials deliveries. Controlled blasting for cavern construction would still be required, although it would occur for shorter durations due to the reduced cavern size. Collectively, these factors would contribute to a reduction in the intensity and duration of construction-related noise and

vibration affecting adjacent sensitive receptors; therefore, construction-related noise and vibration impacts would be **less** than the WRESC. COCs like those recommended for the WRESC would reduce these impacts to less than significant.

This alternative is also expected to result in lower noise levels during project operation compared to the WRESC. The Reduced Capacity Alternative would consist of only two turbine generators, compared to four generators for the WRESC. Furthermore, the number of cooling equipment would likely be reduced by half. With fewer mechanical systems, noise and vibration levels are **less** compared to the WRESC. Like the proposed WRESC, project operations under this alternative would not result in generation of a substantial increase in ambient noise levels in the vicinity of the project, and noise impacts relating to project operations are considered less than significant.

Public Health

The Reduced Capacity Alternative would result in lower public health impacts. This alternative would essentially reduce the total construction and operations emissions of the proposed project by reducing the number of emergency generators from three to one or two, reducing the power block footprint from 11 acres to approximately 5½ acres, and reducing the overall construction timeline. With a smaller site footprint and construction timeline, Valley Fever and DPM impacts under this alternative would be less than the WRESC during construction. With fewer emergency generators, the DPM emission levels under this alternative would also be less than the WRESC during project operations. As discussed in **Section 5.10, Public Health** in this staff assessment, potential public health impacts from construction of the proposed WRESC would be less than significant with mitigation incorporated. Potential public health impacts from the Reduced Capacity Alternative would also be less than significant with mitigation incorporated since COCs in **Section 5.1, Air Quality** and **Section 5.10, Public Health** would also be required. As discussed in **Section 5.10, Public Health**, potential public health impacts from operation of the proposed WRESC project would be less than significant. Potential public health impacts from operation of the Reduced Capacity Alternative would also be less than significant and no COCs would be required. Overall, potential impacts on public health under this alternative would be **less** than the WRESC.

Transportation

The Reduced Capacity Alternative would have a similar number of workers during both construction and operation as the proposed WRESC. As a result, the transportation-related impacts identified for the proposed WRESC would still apply to this alternative. Specifically, during construction, this alternative could degrade the LOS at the SR 14 southbound ramps and Dawn Road intersection during the afternoon peak hour. During both construction and operation phases, it could also substantially increase hazards to vehicles, bicyclists, and pedestrians on surrounding roadways, including SR 14, due to the use of oversize or overweight vehicles transporting hazardous substances. As with the proposed WRESC, compliance with recommended COCs, as well as obtaining all mandatory permits, would ensure impacts are reduced to less than significant by

addressing LOS concerns, improving roadway safety, and adhering to state and local design standards. Transportation-related impacts under this alternative would be **similar** to the WRESC.

Visual Resources

For the proposed WRESC, staff analyzed the potential physical change by the project to the existing condition of the physical environment (landscape). See **Section 5.15, Visual Resources** in this staff assessment.

Under the Reduced Capacity Alternative, the project would consist of two 130-MW air-expansion turbine generators with 100-foot-tall air vent stacks instead of the originally proposed four on relatively flat, undeveloped land consisting of desert scrub, grasses, and western Joshua trees in the western Mojave high desert.

The Reduced Capacity Alternative would result in a physical change—a reduction—in the numbers of structures and the footprint of the proposed WRESC. Although this alternative would reduce the number of publicly visible structures and could decrease the scale of other structures and equipment due to the reduced generating capacity, the physical change under this alternative, its visual prominence (basic design element contrast, scale dominance, spatial dominance) and the visual absorption capability in the existing physical landscape would not be substantially lessened compared to the WRESC.

The remaining WRESC structures, equipment, and buildings on the project site under this alternative would still degrade the existing visual character or quality of the public view of the site and its surroundings (CEQA Guidelines, Appendix G, I. Aesthetics. c.) as seen from KOPs 2, 3, and 4. Given the existing physical environment, the color, form, texture, and scale of these structures, equipment, and buildings on the project site cannot be effectively camouflaged, disguised, or treated with exterior surface coatings, colors, or finishes to effectively mitigate the degrading of the existing visual character or quality of the public view of the site and its surroundings. Under the alternative, the structures, equipment, and buildings would be “dominant” in public views of the site similar to the WRESC. This alternative would also be a very large alteration to the landscape or features within the landscape such that there would be a fundamental change from the existing physical environment. The Reduced Capacity Alternative would create a significant effect on the environment **similar** to that of the proposed WRESC.

Regarding light, glare, and reflectance effects during day light and at nighttime in the area, with implementation of COCs **VIS-1** and **VIS-3** as recommended for the WRESC, these impacts would be **similar** to the WRESC.

Water Resources

Based on estimates, the Reduced Capacity Alternative would reduce the power block area from 11 acres to approximately 5½ acres, and the hydrostatic compensation

reservoir from 21 acres to approximately 10½ acres. That could reduce soil disturbance of the project facility by approximately 18 percent, from 89 acres to 73 acres; however, there would be no change to the 19-mile gen-tie line interconnecting to the SCE Whirlwind Substation, and thus there would be no reduction in soil disturbance associated with it. Since the soil disturbance area during project construction would still exceed the 1-acre threshold, the project would still require coverage under California's National Pollutant Discharge Elimination System (NPDES) Construction General Permit per COC **WATER-1**. Likewise, a Drainage, Erosion, and Sedimentation Control Plan (DESCP) during project operations would still be warranted per COC **WATER-2**. Under this alternative, impacts concerning the potential to substantially degrade surface or ground water quality or alter the existing drainage pattern of the site during construction and operation would be **similar** to the WRESC.

Although the size of the underground A-CAES cavern would be reduced by roughly half under this alternative, access shafts would still need to be drilled and containment of the associated cuttings would be subject to the general waste discharge requirements (WDRs) under SWRCB Water Quality Order No. 2003-0003-DWQ, which would be required per COC **WATER-3**. Like the proposed WRESC, this alternative would not conflict with the implementation of a water quality control plan such that a violation of water quality standards could occur, and the impact would be **similar** to the WRESC.

Offsite disposal of industrial related wastewater documented per COC **WATER-4** and requirements for onsite septic systems compliance with state and local onsite wastewater treatment systems (OWTS) per COC **WATER-5** would not be affected by this alternative.

Due to the variable topography at the project site, it is doubtful that the outer berm of the hydrostatic compensation reservoir could be reduced to under a height of 6 feet with respect to existing grade. Therefore, the hydrostatic compensation reservoir would remain under the jurisdiction of the DSOD and COCs **WATER-6** and **WATER-7** would apply under the Reduced Capacity Alternative.

Based on the conceptual description of the Reduced Capacity Alternative, the cavern size would be halved, and presumably the hydrostatic compensation reservoir capacity would be halved as well. This would result in an estimated reservoir volume of 350 AF, and thus a total construction water demand of 1,050 AF over the 5-year construction period, which is a 25 percent reduction from the WRESC. The impact on water supply during construction would be **less** than the WRESC. It is unknown how the changes to the power block and associated equipment would affect operational water demand of 2 AFY. However, given the low water demand any reduction would be negligible.

Consequently, the Reduced Capacity Alternative would not substantially alter water resources-related impacts, and the majority of the COCs would also be required under this alternative.

8.7 Environmentally Superior Alternative

CEQA requires that an EIR identify the *environmentally superior alternative* and discuss the facts supporting that selection. Alternative 1, the No Project/No Build Alternative, is the environmentally superior alternative because it would avoid all impacts of the project by not creating any physical changes to the environment. However, Alternative 1 would not attain any of the project objectives. "If the environmentally superior alternative is the 'no project' alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives" (Cal. Code Regs., tit. 14, § 15126.6, subd. (e)(2)).

Under the Reduced Capacity Alternative, many of the impacts on resources evaluated by staff were determined to be **similar** to the proposed WRESC even with the project facility footprint, compressed air cavern volume, and capacity of the hydrostatic compensating reservoir reduced approximately in half. Construction water consumption would be reduced from 280 AFY to 210 AFY, which is a reduction of 0.2 to 0.1 percent. As stated above, total construction water demand would be reduced from 1,400 AF to 1,050 AF. This rate of reduced water use is not considered to be a substantial lessening of impacts on water supply.

The following discussions are focused on resource impacts that could be substantially lessened under this alternative; COCs like those recommended for the WRESC would reduce these impacts to less than significant.

The comparative analysis of air quality impacts showed that the maximum short-term and annual impacts during project operations would be **less** than the WRESC due to a reduction in the number of emergency generators from three to one or two. Public health impacts from potential exposure to Valley Fever and construction emissions would be **less** than the WRESC during project construction. Public health impacts from diesel particulate matter emissions during project operations would also be **less** than the WRESC due to a reduction in the number of emergency generators. The total construction and operational emissions would be substantially lessened due to a smaller footprint and construction timeline. (However, as described under the subsection "Environmental Analysis," above, because worst-case air quality impacts depend on worst-case emissions [daily and annual], staff concluded that worst-case air quality impacts would be **similar** to the WRESC during construction.)

The smaller project footprint, reduced cavern size, and shorter architectural berm would reduce direct and indirect impacts on biological resources, including impacts on native vegetation communities and sensitive plant and wildlife species. Removal of hundreds fewer western Joshua trees would likely occur under this alternative. Construction-related impacts on four special-status plant species could be reduced as would impacts on Crotch's bumble bee, burrowing owls, and burrowing mammals. Controlled blasting for cavern construction would still be required, although it would likely occur for shorter durations due to the reduced cavern size; the reduction in blasting would reduce potential noise and ground borne vibration impacts on nesting birds, insects, and

burrowing animals in adjacent habitat. Overall, direct and indirect impacts on biological resources would be **less** than the WRESC and could substantially lessen impacts on these resources.

The Reduced Capacity Alternative would substantially lessen impacts on cultural and tribal cultural resources. It is always preferable to avoid cultural resources and leave them intact and undisturbed because they are non-renewable. Within the WRESC site, there are known historical resources that would be impacted and possibly destroyed by the project (see **Section 5.4, Cultural and Tribal Cultural Resources** in this staff assessment). The smaller project footprint, depending on how it was configured on the site, could reduce impacts or avoid all together these known historical resources. Additionally, the project area is sensitive for buried cultural resources, and the Reduced Capacity Alternative would involve less excavation during construction and would lessen the potential to encounter buried cultural and tribal cultural resources, including human remains. Although impacts on cultural and tribal cultural resources would occur under this alternative, there would be fewer impacts and increased preservation of these resources compared to the WRESC. Overall, impacts on cultural and tribal cultural resources and undiscovered buried archaeological resources would be **less** than the WRESC.

Construction activity would involve less excavation and use of less heavy equipment. Controlled blasting for cavern construction would be required, although it would occur for shorter durations due to the reduced cavern size. During construction, the intensity and duration of construction-related noise and vibration impacts affecting sensitive receptors, including wildlife, would be **less** than the WRESC, and would substantially lessen noise and vibration impacts.

Compared to the proposed WRESC, the Reduced Capacity Alternative would substantially lessen direct and indirect impacts on biological resources and cultural and tribal cultural resources. With the reduced footprint and cavern, impacts relating to construction noise and vibration would be substantially lessened. The total construction and operational emissions would be substantially lessened due to a smaller footprint and construction timeline. Because of these impact reductions, the Reduced Capacity Alternative is considered environmentally superior to the proposed WRESC. (Potential feasibility issues associated with this alternative are described under subsection 8.6.2, above.)

TABLE 8-1 SUMMARY COMPARISON OF IMPACTS OF THE PROPOSED WRESC TO THE ALTERNATIVES

Environmental Topics and Impacts		Alternatives	
	Proposed WRESC	No Project/No Build	Reduced Capacity
Air Quality			
Potential to cause cumulatively considerable criteria pollutant emissions and expose sensitive receptors to substantial pollutant concentrations during construction.	SM	NI	Similar (SM)
Potential to cause cumulatively considerable criteria pollutant emissions and expose sensitive receptors to substantial pollutant concentrations during operation.	SM	NI	Less (SM)
Biological Resources			
Potential impacts on sensitive plants and wildlife.	SM	NI	Less (SM)
Potential impacts on State or CDFW jurisdictional waters.	SM	NI	Similar (SM)
Potential to conflict any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.	SM	NI	Similar (SM)
Potential to conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.	SM	NI	Similar (SM)
Cultural and Tribal Cultural Resources			
Potential impacts on undiscovered, buried cultural and tribal cultural resources.	SM	NI	PSM (Less)
Potential impacts on known historical resources and undiscovered, buried archaeological resources.	SM	NI	PSM (Less)
Potential to damage human remains, with or without associated resources that meet CEQA's criteria for historical, unique archaeological, or tribal cultural resources.	SM	NI	PSM (Similar)
Geology, Paleontology, and Minerals			
Potential to cause substantial adverse effects (i.e., impacts of geologic hazards)—including the risk of loss, injury, or death—involving strong seismic ground shaking; seismic-related ground failure, including liquefaction; or landslides.	SM	NI	SM (Similar)
Potential to cause substantial soil erosion or the loss of topsoil.	SM	NI	SM (Less)
Site located on geologic units or soil that is unstable, or that would become unstable, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.	SM	NI	SM (Similar)
Site located on expansive soil, as defined in Section 1803.5.3 of the California Building Code (2022), creating substantial direct or indirect risks to life or property.	SM	NI	SM (Less)

TABLE 8-1 SUMMARY COMPARISON OF IMPACTS OF THE PROPOSED WRESC TO THE ALTERNATIVES

Environmental Topics and Impacts		Alternatives	
	Proposed WRESC	No Project/No Build	Reduced Capacity
Potential to directly or indirectly destroy a unique paleontological resource, geologic feature or resource, or mineral resource of commercial, scientific, or recreational value.	SM	NI	SM (Less)
Hazards, Hazardous Materials/Waste, and Wildfire			
Potential to create a significant hazard to workers, the public, and the environment due to the transport, use, storage, or disposal of hazardous substances, including explosives.	SM	NI	SM (Similar)
Potential to create a significant hazard to workers, the public, and the environment due to the accidental release of hazardous materials into the environment.	SM	NI	PSM (Less)
Land Use, Agriculture, and Forestry			
Conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.	LTS	NI	LTS (Similar)
Conflict with existing zoning for agricultural use, or a Williamson Act contract.	LTS	NI	LTS (Similar)
Noise and Vibration			
Potential to generate a substantial increase in ambient noise levels in the project vicinity during construction that would exceed noise control standards.	SM	NI	SM (Less)
Potential to generate of a substantial increase in ambient noise levels in the vicinity of the project during operation.	LTS	NI	LTS (Less)
Public Health			
Potential to expose sensitive receptors in the project area to diesel particulate matter and Valley Fever during construction.	SM	NI	PSM (Less)
Potential to expose sensitive receptors in the project area to diesel particulate matter during operation.	SM	NI	PSM (Less)
Transportation			
During construction, potential to degrade LOS at SR 14 Southbound Ramps / Dawn Road intersection LOS F conditions during the PM peak hour.	SM	NI	SM (Similar)
Potential to substantially increase hazards due to a geometric design feature during construction and operation.	SM	NI	SM (Similar)

TABLE 8-1 SUMMARY COMPARISON OF IMPACTS OF THE PROPOSED WRESC TO THE ALTERNATIVES

Environmental Topics and Impacts		Alternatives	
	Proposed WRESC	No Project/No Build	Reduced Capacity
Potential to substantially increase hazards to vehicles, bicyclists, and pedestrians traveling on the surrounding roadway network, including SR 14, due to the proposed use of oversize/overweight vehicles and transport of hazardous substances.	SM	NI	SM (Similar)
Visual Resources			
Substantially degrade the existing visual character or quality of public views of the site and its surroundings.	SU	NI	PSU (Similar)
Create a new source of substantial light or glare adversely affecting day or nighttime views in the area, including the project site and construction laydown sites.	SM	NI	PSM (Similar)
Create a new source of substantial reflectance adversely affecting views in the area.	SM	NI	PSM (Similar)
Water Resources			
Potential to substantially degrade surface or ground water quality during construction and operation.	SM	NI	PSM (Similar)
Potential to substantially alter the existing drainage pattern of the site, increase erosion, or affect flood flows during construction and operation.	SM	NI	PSM (Similar)
Conflict with the implementation of a water quality control plan or sustainable groundwater management plan.	SM	NI	PSM (Similar)
Have sufficient water supplies available to serve the project during construction and operation.	SM	NI	PSM (Less)
Have sufficient wastewater capacity available to serve the project.	SM	NI	PSM (Similar)

Notes: Impact conclusions for the project and the alternatives are shown using these abbreviations:

NI = no impact, meaning no potential to affect the resource
LTS = less-than-significant impact, no mitigation required
SM or PSM = significant or potentially significant impact that can be mitigated to a less-than-significant level
SU or PSU = significant or potentially significant and unavoidable impact that cannot be mitigated to a less-than-significant level

The comparisons of impacts to the project are conveyed using these abbreviations:

- Less
- Similar
- Greater

TABLE 8-2 STAFF CONTRIBUTORS TO THE ALTERNATIVES ANALYSIS

Technical Area	Staff
Air Quality	Tao Jiang, Ph.D., P.E.
Biological Resources	Chris Huntley Jamison Miner
Cultural and Tribal Cultural Resources	William Larson
Geology, Paleontology, and Minerals	Kevin M. DeLano, P.G., M.S.
Hazards, Hazardous Materials/Waste, and Wildlife	Alvin Greenberg, Ph.D.
Land Use, Agriculture, and Forestry	Andrea Koch
Noise and Vibration	Ardalan Sofi, Ph.D., P.E.
Public Health	Huei-An (Ann) Chu, Ph.D.
Technology Alternatives and Facility Design	Jacob Locsin, P.E. Kenneth Salyphone Michele Shi, P.E. Ardalan Sofi, Ph.D., P.E. Alvin Greenberg, Ph.D.
Transportation	Francisco Martin, P.E.
Visual Resources	Mark Hamblin
Water Resources	James Ackerman, P.G.

8.8 Comments and Responses on the Preliminary Staff Assessment

No comments were received on the Alternatives section.

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Section 9

Compliance Conditions and Compliance Monitoring Plan

9 Compliance Conditions and Compliance Monitoring Plan

Testimony of Ashley Gutierrez

9.1 Introduction

The Willow Rock Energy Storage Center (WRESC or project) Compliance Conditions of Certification (COCs), including a Compliance Monitoring Plan (Compliance Plan), are established as required by Public Resources Code section 25532. The Compliance Plan provides a means for assuring that the facility is constructed, operated, and closed in compliance with public health and safety and environmental law; all other applicable laws, ordinances, regulations, and standards (LORS); and the conditions adopted by the California Energy Commission (CEC) Final Decision (Decision) on the project's Application for Certification (AFC), or otherwise required by law.

The Compliance Plan is composed of elements that:

- set forth the duties and responsibilities of the compliance project manager (CPM), the project owner or operator, delegate agencies, and others;
- set forth the requirements for handling confidential records and maintaining the compliance record;
- state procedures for settling disputes and making post-certification changes;
- state the requirements for periodic compliance reports and other administrative procedures that are necessary to verify the compliance status for all Energy Commission-approved COCs;
- establish contingency planning, facility non-operation protocols, and closure requirements; and
- establish a tracking method for the technical area COCs that contain measures required to mitigate potentially adverse project impacts associated with construction, operation, and closure below a level of significance; each technical COC also includes one or more verification provisions that describe the means of assuring that the condition has been satisfied.

9.2 Key Project Event Definitions

The following terms and definitions help determine when various COCs are implemented.

Project Certification

Project certification occurs on the day the CEC dockets its Decision after adopting it at a publicly noticed Business Meeting or hearing. At that time, all CEC COCs become binding on the project owner and the proposed facility. Also at that time, the project enters the compliance phase, retaining the same docket number it had during its siting

review, but the letter "C" is added at the end (for example, 19-AFC-8C) to differentiate the compliance phase activities from those of the certification proceeding.

Site Assessment and Pre-Construction Activities

The below-listed site assessment and pre-construction activities may be initiated or completed prior to the start of construction, subject to the CPM's approval of the specific site assessment or pre-construction activities.

Site assessment and pre-construction activities include the following, but only to the extent the activities are minimally disruptive to soil and vegetation and will not affect listed or special-status species or other sensitive resources:

1. the installation of environmental monitoring equipment;
2. a minimally invasive soil or geological investigation;
3. a topographical survey;
4. any other study or investigation to determine the environmental acceptability or feasibility of the use of the site for any particular facility;
5. any minimally invasive work to provide safe access to the site for any of the purposes specified in 1 through 4, above; and
6. removal of small surface structures and equipment that is minimally invasive such as sheds, trailers, and similar sized structures.

Site Mobilization and Construction

When a COC requires the project owner to take an action or obtain CPM approval prior to the start of construction, or within a period of time relative to the start of construction, that action must be taken, or approval must be obtained, prior to any site mobilization or construction activities, as defined below.

Site mobilization and construction activities are those necessary to provide site access for construction mobilization and facility installation, including both temporary and permanent equipment and structures, as determined by the CPM.

Site mobilization and construction activities include, but are not limited to:

1. ground disturbance activities like grading, boring, trenching, leveling, mechanical clearing, grubbing, and scraping;
2. site preparation activities, such as access roads, temporary fencing, trailer and utility installation, construction equipment installation and storage, equipment and supply laydown areas, borrow and fill sites, temporary parking facilities, chemical spraying, and controlled burns; and
3. permanent installation activities for all facility and linear structures, including access roads, fencing, utilities, parking facilities, equipment storage, mitigation and landscaping activities, and other installations, as applicable.

Commissioning

Commissioning activities test the functionality of the installed components and systems to ensure the facility operates safely and reliably. Commissioning provides a multistage, integrated, and disciplined approach to testing, calibrating, and proving all of the project's systems, software, and networks. For compliance monitoring purposes, examples of commissioning activities include interface connection and utility pre-testing, "cold" and "hot" electrical testing, system pressurization and optimization tests, grid synchronization, and combustion turbine "first fire" and tuning.

Start of Commercial Operation

For compliance monitoring purposes, "commercial operation" or "operation" begins once commissioning activities are complete, the certificate of occupancy has been issued, and the power plant has reached reliable steady-state electrical production. At the start of commercial operation, plant control is usually transferred from the construction manager to the plant operations manager. Operation activities can include a steady state of electrical production

Non-Operation and Closure

Non-operation is time limited and can encompass part of or an entire facility. Non-operation can be a planned event, usually for equipment maintenance or repair, or unplanned, usually the result of unanticipated events or emergencies.

Closure is a facility shutdown with no intent to restart operation. It may also be the cumulative result of unsuccessful efforts to restart over an increasingly lengthy period of non-operation. Facility closures can occur due to a variety of factors, including, but not limited to, irreparable damage and/or functional or economic obsolescence.

9.3 Roles and Responsibilities

Provided below is a generalized description of the compliance roles and responsibilities for CEC staff (staff) and the project owner for the construction and operation of the project.

Compliance Project Manager Responsibilities

The CPM's compliance monitoring and project oversight responsibilities include:

1. ensuring that the design, construction, operation, and closure of the project facilities comply with the terms and conditions of the Decision;
2. resolving complaints;
3. processing post-certification project amendments for changes to the project design, operation or performance requirements, COCs, ownership or operational control, and requests for extension of the deadline for the start of construction (see COC **COM-10** for instructions on filing a Petition to Amend (PTA) or to extend a construction start date);

4. documenting and tracking compliance filings; and
5. ensuring that the compliance files are maintained and accessible.

The CPM is the central contact person for the CEC during project preconstruction, construction, operation, emergency response, and closure. The CPM will consult with the appropriate responsible parties when handling compliance issues, disputes, complaints, and amendments.

All project compliance submittals are submitted to the CPM for processing. Where a submittal requires CPM approval required by a COC, the approval will involve appropriate CEC staff and management. All submittals must include searchable electronic versions (.pdf, MS Word, or equivalent files).

Pre-Construction and Pre-Operation Compliance Meeting

The CPM usually schedules pre-construction and pre-operation compliance meetings prior to the projected start-dates of construction, plant operation, or both. These meetings are used to assist the CEC and the project owner's technical staff in the status review of all required pre-construction or pre-operation COCs and facilitate proper staff action if outstanding conditions remain. In addition, these meetings shall ensure, to the extent possible, that CEC's conditions of certification do not delay the construction and operation of the plant due to last-minute unforeseen issues, or a compliance oversight. Pre-construction meetings held during the certification process must be publicly noticed unless they are confined to administrative issues and processes.

Energy Commission Record

The CEC maintains the following documents and information as public record, in either the Compliance file or Dockets Unit files, for the life of the project (or other period as specified):

1. all documents demonstrating compliance with any legal requirements relating to the construction, operation, and closure of the facility;
2. all Monthly and Annual Compliance Reports (MCRs, ACRs) and other required periodic compliance reports (PCRs) filed by the project owner;
3. all project-related formal complaints of alleged noncompliance filed with the CEC; and
4. all petitions for project or COC changes and the resulting action by staff or the CEC.

Chief Building Official Delegation and Agency Cooperation

Public Resources Code section 25532 requires the CEC to establish a monitoring system to assure that any facility it certifies is constructed and operated in a manner consistent with law and the CEC's Decision. In carrying out these responsibilities through monitoring construction and operation of the project, the CEC has the responsibilities of the delegate chief building official (DCBO) consistent with Health and Safety Code

section 18949.27 and Title 24, part 2, section 104 (commonly referred to as the California Building Code, or CBC). Staff may delegate some chief building official (CBO) responsibility to either an independent third-party contractor or a local building official, as per section 103.3 of part 2 of the CBC. However, staff retains CBO authority when selecting a DCBO, including the interpretation and enforcement of state and local codes, and the use of discretion, as necessary, in implementing the various codes and standards. (See section 104.1 of part 2 of the CBC).

The DCBO will be responsible for the implementation of all appropriate codes, standards, and CEC requirements. The DCBO will conduct on-site (including linear facilities) reviews and inspections at intervals necessary to fulfill these responsibilities. The project owner will pay all DCBO fees necessary to cover the costs of these reviews and inspections.

Project Owner Responsibilities

Should the project be approved, the project owner is responsible for ensuring that all COCs and applicable LORS in the Decision are satisfied. The project owner will submit all compliance submittals to the CPM for processing unless the conditions specify another recipient. The Compliance COCs regarding post-certification changes specify measures that the project owner must take when modifying the project's design, operation, or performance requirements, or to transfer ownership or operational control. Failure to comply with any of the COCs or applicable LORS may result in a notice of violation, an administrative fine, certification revocation, or any combination thereof, as appropriate.

9.4 Compliance Enforcement

The CEC's legal authority to enforce the terms and conditions of its Decision are specified in Public Resources Code sections 25534 and 25900. The CEC may amend or revoke a project certification and may impose a civil penalty for any significant failure to comply with the terms or conditions of the Decision. The CEC's actions and fine assessments would consider the specific circumstances of the incident(s).

Periodic Compliance Reporting

Many of the COCs require submittals in the MCRs and ACRs. All compliance submittals assist the CPM in tracking project activities and monitoring compliance with the terms and conditions of the Decision. During construction, the project owner or an authorized agent will submit compliance reports monthly. During operation, compliance reports are submitted annually; though reports regarding compliance with various technical area COCs may be required more often (e.g. Biological Resources), and if the project is operating with a temporary permit to occupy. Further detail regarding the MCR/ACR content and the requirements for an accompanying compliance matrix are described below.

Investigation Requests and Complaint Procedures

Any person may file a Request for Investigation alleging non-compliance with the COCs, CEC regulations, or orders. Such a request shall be filed with and reviewed by the Executive Director. The provisions setting forth the Request for Investigation process can be found in Title 20, California Code of Regulations, sections 1230 through 1232.5. The Request for Investigation may result in the Executive Director bringing a complaint against the alleged violator under section 1233 and seeking administrative penalties. The California Office of Administrative Law provides on-line access to the California Code of Regulations at http://www.oal.ca.gov/.

9.5 Post-Certification Changes to the Energy Commission Decision

The project owner must petition the CEC pursuant to Title 20, California Code of Regulations, section 1769, to amend the Decision to modify the design, operation, or performance requirements of the project and/or the linear facilities, or to transfer ownership or operational control of the facility. It is the responsibility of the project owner to contact the CPM to determine if a proposed project change should be considered a project modification pursuant to section 1769, and the CPM will determine whether approval will be at the staff level or via formal review and approval.

A project owner is required to submit a $5,000 fee for each amendment to the project Decision, pursuant to Public Resources Code section 25806(e). If the actual amendment processing costs exceed $5,000, the total petition reimbursement fees owed by a project owner will not exceed the maximum filing fee for an AFC, which is $1,068,853, adjusted annually. Current amounts for PTA fees are available at https://www.energy.ca.gov/programs-and-topics/topics/power-plants/licensing-and-compliance l. Implementation of a project modification without first securing CEC approval may result in an enforcement action including civil penalties in accordance with Public Resources Code, section 25534.

Below is a summary of the criteria for determining the type of approval process required, reflecting the provisions of Title 20, California Code of Regulations, section 1769, at the time this compliance plan was drafted. If the CEC modifies this regulation, the language in effect at the time of the requested change shall apply. Upon request, the CPM can provide sample formats of these submittals.

Amendment

The project owner shall submit a petition to amend the Decision, pursuant to Title 20, California Code of Regulations, section 1769(a), when proposing modifications to the design, operation, or performance requirements of the project and/or the linear facilities. If a proposed modification results in an added, changed, or deleted COC, the changes causing noncompliance with any applicable LORS, or creates a significant

environmental impact, the petition will be processed as a formal amendment to the Decision and must be approved by the Commission.

Change of Ownership and/or Operational Control

Change of ownership or operational control also requires that the project owner file a petition pursuant to section 1769 (b). This process requires public notice and approval by the full Commission but does not require submittal of an amendment processing fee.

Staff-Approved Project Modification

Pursuant to section 1769(a)(3), staff shall approve a project change where staff determines the following:

1. there is no possibility that the change may have a significant effect on the environment, or the change is exempt from the California Environmental Quality Act;
2. the change would not cause the project to fail to comply with any applicable LORS; and
3. the change will not require a change to, or deletion of, a condition of certification adopted by the commission in the Decision or subsequent amendments.

Staff, in consultation with the air pollution control district where the project is located, may approve any change to a COC regarding air quality, provided:

4. that the criteria in subdivisions 1759(a)(3)(A)(i) and (ii) are met; and
5. that no daily, quarterly, annual or other emission limit will be increased as a result of the change.

Once the CPM files a statement summarizing its actions taken pursuant to subdivisions Title 20, CCR section 1769(a)(1), any person may file an objection to a staff action taken pursuant to subdivisions (a)(3)(A) or (B) within 14 days of the filing of staff's statement. Any such objection must make a showing supported by facts that the change does not meet the criteria in this subdivision. Speculation, argument, conjecture, and unsupported conclusions or opinions are not sufficient to support an objection to staff approval.

If there is a valid objection to a staff action, the petition must be processed as a formal amendment to the Decision and must be considered for approval by the full Commission at a publicly noticed Business Meeting.

Staff and Project Owner Jointly Initiated Amendments

Staff and a project owner may jointly initiate an amendment to a Decision adopted pursuant to section 1769.1, provided that the purpose of the proposed amendment is to update the Decision to reconcile the COCs with other legal requirements or changes to compliance protocols or methodologies, or to modify a condition that is moot, impossible, or otherwise unnecessary to avoid potentially significant effects and remain

in compliance with all applicable LORS. An amendment jointly initiated by staff and the project owner shall include the information specified in section 1769(a)(1) and be accompanied by a summary of the amendment consistent with the requirements of section 1769(a)(2). The amendment shall be considered by the commission in a manner consistent with the process set forth in section 1769(a)(4). The amendment shall not be approved by the commission unless the agreement of the project owner with the proposed amendment is reflected in the joint proposal presented to the commission for approval.

Verification Change

Pursuant to section 1770(d), a verification may be modified by the CPM, after giving notice to the project owner, if the change does not conflict with any COC.

9.6 Emergency Response Contingency Planning and Incident Reporting

To protect public health and safety and environmental quality, the COCs include contingency planning and incident reporting requirements to ensure compliance with necessary health and safety practices. A well-drafted contingency plan avoids or limits potential hazards and impacts resulting from serious incidents involving personal injury, hazardous spills, flood, fire, explosions or other catastrophic events and ensures a comprehensive timely response. All such incidents must be reported immediately to the CPM and documented. These requirements are designed to protect the public, build from “lessons learned,” limit the hazards and impacts, anticipate and prevent recurrence, and provide for the safe and secure shutdown and restart of the facility.

9.7 Facility Closure

The CEC cannot reasonably foresee all potential circumstances in existence when a facility permanently closes. Therefore, the closure conditions provided herein strive for the flexibility to address circumstances that may exist at some future time. Most importantly, facility closure must be consistent with all applicable CEC COCs and the LORS in effect at that time.

Prior to submittal of the facility’s Final Closure Plan to the CEC, the project owner and the CPM will hold a meeting to discuss the specific contents of the plan. If significant issues are associated with the plan's approval, the CPM will hold one or more workshops and/or the CEC may hold public hearings as part of its approval procedure.

With the exception of measures to eliminate any immediate threats to public health and safety or to the environment, facility closure activities cannot be initiated until the CEC approves the Final Closure Plan, and the project owner complies with any requirements the CEC may incorporate as conditions of approval of the Final Closure Plan.

9.8 Compliance Conditions of Certification

COM-1 Unrestricted Access. The project owner shall ~~take all steps necessary to~~ ensure that the CPM, responsible CEC staff, and delegate agencies or consultants have unrestricted access to the facility site, related facilities, project-related staff, and the records maintained on site for the purpose of conducting audits, surveys, inspections, or general or closure-related site visits. Although the CPM will normally schedule site visits on dates and times agreeable to the project owner, the CPM reserves the right to make unannounced visits at any time, whether such visits are by the CPM in person or through representatives from CEC staff, delegated agencies, or consultants.

COM-2 Compliance Record. The project owner shall maintain electronic copies of all project files and submittals related to the CEC license on site, or at an alternative site approved by the CPM, for the operational life and closure of the project. The files shall also contain at least one hard copy of:

1. the facility's Supplemental AFC;
2. all amendment petitions and CEC orders;
3. all site-related environmental impact and survey documentation;
4. all appraisals, assessments, and studies for the project;
5. all finalized original and amended structural plans and "as-built" drawings for the entire project;
6. all citations, warnings, violations, or corrective actions applicable to the project, and
7. the most current versions of any plans, manuals, and training documentation required by the COCs or applicable LORS.

The CEC staff and delegate agencies shall, upon request to the project owner, be given unrestricted access to the files maintained pursuant to this condition.

COM-3 Compliance Verification Submittals. Verification lead times associated with the start of construction may require the project owner to file submittals during the certification process, particularly if construction is planned to commence shortly after certification. The verification procedures, unlike the conditions, may be modified as necessary by the CPM after notice to the project owner.

A cover letter or cover email from the project owner or an authorized agent is required for all compliance submittals and correspondence pertaining to compliance matters. The cover letter subject line shall identify the project by AFC number, cite the appropriate COC number(s), and give a brief description of the subject of the submittal. When submitting supplementary or corrected information, the project owner shall reference the date of the previous submittal and the COCs applicable.

All reports and plans required by the project's COCs shall be submitted in a searchable electronic format (.pdf, MS Word or Excel, etc.) and include standard formatting

elements such as a table of contents identifying by title and page number each section, table, graphic, exhibit, or addendum. All report and/or plan graphics and maps shall be adequately scaled and shall include a key with descriptive labels, directional headings, a bar scale, and the most recent revision date.

The project owner is responsible for the content and delivery of all verification submittals to the CPM and that the actions required by the verification were satisfied by the project owner or an agent of the project owner. All submittals shall be submitted electronically by email.

COM-4 Pre-Construction Matrix and Tasks Prior to Start of Construction. Prior to construction, the project owner shall submit to the CPM a compliance matrix including only those conditions that must be fulfilled before the start of construction. The matrix shall be included with the project owner's first compliance submittal or prior to the first pre-construction meeting, whichever comes first, and shall be submitted in a format similar to the description below.

Site mobilization and construction activities shall not start until the following have occurred:

1. the project owner has submitted the pre-construction matrix and all compliance verifications pertaining to pre-construction COCs; and
2. the CPM has issued an authorization-to-construct letter to the project owner.

The deadlines for submitting various compliance verifications to the CPM allow staff sufficient time to review and comment on, and, if necessary, also allow the project owner to revise the submittal in a timely manner. These procedures help ensure that project construction proceeds according to schedule. Failure to submit required compliance documents by the specified deadlines may result in delayed authorizations to commence various stages of the project.

If the project owner anticipates site mobilization immediately following project certification, it may be necessary for the project owner to file compliance submittals prior to project certification. In these instances, compliance verifications can be submitted in advance of the required deadlines and the anticipated authorizations to start construction. The project owner must understand that submitting items required in compliance verifications prior to these authorizations is at the owner's own risk. Any approval by CEC staff prior to project certification is subject to change based upon the Decision, or amendment thereto, and early staff compliance approvals do not imply that the CEC will certify the project for actual construction and operation.

COM-5 Compliance Matrix. The project owner shall submit a compliance matrix to the CPM with each MCR and ACR. The compliance matrix shall identify:

1. the technical area (e.g., biological resources, facility design, etc.);
2. the condition number;

3. a brief description of the verification action or submittal required by the COC;
4. the date the submittal is required (e.g., 60 days prior to construction, after final inspection, etc.);
5. the expected or actual submittal date;
6. the date a submittal or action was approved by the Delegate Chief Building Official (DCBO), CPM, or delegate agency, if applicable;
7. the compliance status of each condition (e.g., "not started," "in progress" or "completed" (include the date)); and
8. if the COC was amended, the updated language and the date the amendment was proposed or approved.

The CPM can provide a template for the compliance matrix upon request.

COM-6 Monthly Compliance Report. The first MCR is due 30 days following the filing to the docket of the Decision unless otherwise agreed to by the CPM. The first MCR shall include the AFC number and an initial list of dates for each of the events identified on the Key Events List. (The Key Events List form is found at the end of this **Compliance Conditions and Compliance Monitoring Plan** section.) During pre-construction, construction, or closure, the project owner or authorized agent shall submit an electronic searchable version of the MCR to the CPM within 10 business days after the end of each reporting month.

MCRs shall be submitted each month until construction is complete, and the final certificate of occupancy is issued by the DCBO. MCRs shall be clearly identified for the month being reported. The MCR shall contain, at a minimum:

1. a summary of the current project construction status, a revised/updated schedule if there are significant delays, and an explanation of any significant changes to the schedule;
2. documents required by specific COCs to be submitted along with the MCR. Each of these items shall be identified in the transmittal letter, as well as the conditions they satisfy, and submitted as attachments to the MCR;
3. an initial, and thereafter updated, compliance matrix showing the status of all COCs;
4. a list of COCs that have been satisfied during the reporting period, and a description or reference to the actions that satisfied the condition;
5. a list of any submittal deadlines that were missed, accompanied by an explanation and an estimate of when the information will be provided;
6. a cumulative listing of any approved changes to COCs;
7. a listing of any filings submitted to, and permits issued by, other governmental agencies during the month;

8. a projection of project compliance activities scheduled during the next two months; the project owner shall notify the CPM as soon as any changes are made to the project construction schedule that would affect compliance with COCs;
9. a listing of the month's additions to the on-site compliance file; and
10. a listing of incidents, complaints, notices of violation, official warnings, and citations received during the month; a list of any incidents that occurred during the month, a description of the actions taken to date to resolve the issues; and the status of any unresolved actions noted in the previous MCRs.

COM-7 Kern County Notification of Key Events. The Kern County Planning and Natural Resources Department shall be provided contact information including cell phone, office numbers and e-mails for the Project Owner's Representatives(s) and the CEC Compliance Project Manager (CPM).

The Kern County Planning and Natural Resources Department, Kern County Fire Department, and Kern County Public Works Department shall all be notified by e-mail for the following milestones:

a. Commencement of any road construction
b. Moving equipment for grading onto the site
c. Beginning of any blasting or excavation
d. Filling of the retention pond
e. Completion of excavation
f. Completion of facilities

COM-8 Periodic and Annual Compliance Reports. After construction is complete, the project must submit searchable electronic ACRs to the CPM, as well as other periodic compliance reports (PCRs) required by the various technical disciplines. ACRs shall be completed for each year of commercial operation and are due each year on a date agreed to by the CPM. Other PCRs (e.g. quarterly reports, etc. to monitor closure compliance), may be specified by the CPM. The searchable electronic copies may be filed on an electronic storage medium or by e-mail, subject to CPM approval. Each ACR must include the AFC number, identify the reporting period, and contain the following:

1. an updated compliance matrix which shows the status of all COCs (fully satisfied conditions do not need to be included in the matrix after they have been reported as completed);
2. a summary of the current project operating status and an explanation of any significant changes to facility operations during the year;
3. documents required by specific COCs to be submitted along with the ACR; each of these items shall be identified in the transmittal letter with the COCs it satisfies, and submitted as an attachment to the ACR;

4. a cumulative list of all post-certification changes approved by the CEC or the CPM;
5. an explanation for any submittal deadlines that were missed, accompanied by an estimate of when the information will be provided;
6. a listing of filings submitted to, or permits issued by, other governmental agencies during the year;
7. a projection of project compliance activities scheduled during the next year;
8. a listing of the year's additions to the on-site compliance file;
9. an evaluation of the Site Contingency Plan, including amendments and plan updates; and
10. a listing of complaints, incidents, notices of violation, official warnings, and citations received during the year, a description of how the issues were resolved, and the status of any unresolved complaints.

COM-9 Confidential Information. Any information that the project owner designates as confidential shall be submitted to the CEC's Executive Director with an application for confidentiality, pursuant to Title 20, California Code of Regulations, section 2505(a). Any information deemed confidential pursuant to the regulations will remain undisclosed, as provided in Title 20, California Code of Regulations, section 2501 *et seq*.

COM-10 Annual Energy Facility Compliance Fee. Pursuant to the provisions of section 25806 (b) of the Public Resources Code, the project owner is required to pay an annually adjusted compliance fee. Current compliance fee information is available on the CEC's website at http://www.energy.ca.gov/siting/filing_fees.html. The project owner may also contact the CPM for the current fee information. The initial payment is due on the date the CEC dockets its Decision. All subsequent payments are due by July 1 of each year in which the facility retains its certification.

COM-11 Amendments, Staff-Approved Project Modifications, Ownership/Operational Control Changes, Staff and Project Owner Jointly Initiated Amendments and Verification Changes. The project owner shall petition the CEC, pursuant to title 20, California Code of Regulations, section 1769, to modify the design, operation, or performance requirements of the project or linear facilities, or to transfer ownership or operational control of the facility. The CPM will determine whether staff approval will be sufficient, or whether Commission approval will be necessary. It is the project owner's responsibility to contact the CPM to determine if a proposed project change triggers the requirements of section 1769. Section 1769 details the required contents for a petition to amend a CEC Decision. In reviewing a petition to modify the project, the CEC may require the project owner provide additional information, including responses to categories in title 20, Appendix B, relevant to the project change.

A project owner is required to submit a $5,000 fee for every petition to amend a previously certified facility, pursuant to Public Resources Code section 25806 (e). If the

actual amendment processing costs exceed $5,000, the total PTA reimbursement fees owed by a project owner will not exceed the AFC cap of $1,068,853, adjusted annually.

Staff and Project Owner Jointly Initiated Amendments, and Verification Changes, are exempt from 25806(e) and, therefore, do not require a filing fee.

COM-12 Reporting of Complaints, Notices, and Citations. Prior to the start of construction or closure, the project owner shall send a letter to property owners within one mile of the project, notifying them of a telephone number to contact project representatives with questions, complaints or concerns. If the telephone is not staffed 24 hours per day, it must include automatic answering with date and time stamp recording.

The project owner shall respond to all recorded complaints within 24 hours or the next business day. The project owner shall post the telephone number onsite and make it easily visible to passersby during construction, operation, and closure. The project owner shall provide the contact information to the CPM and promptly report any disruption to the contact system or telephone number change to the CPM, who will provide it to any persons contacting him or her with a complaint.

Within five business days of receipt, the project owner shall report, and provide copies to the CPM, all complaints, including, but not limited to, noise and lighting complaints, notices of violation, notices of fines, official warnings, and citations. Complaints shall be logged and numbered. Noise complaints shall be recorded on the form provided in the Noise and Vibration conditions of certification. All other complaints shall be recorded on the complaint form at the end of this compliance plan. Additionally, the project owner must include in the next MCR, ACR or PCR, copies of all complaints, notices, warnings, citations and fines, a description of how the issues were resolved, and the status of any unresolved or ongoing matters.

COM-13 Emergency Response Site Contingency Plan. No less than 60 days prior to the start of construction (or other CPM-approved) date, the project owner shall submit, for CPM review and approval, an Emergency Response Site Contingency Plan (Contingency Plan). Subsequently, no less than 60 days prior to the start of commercial operation, the project owner shall update (as necessary) and resubmit the Contingency Plan for CPM review and approval. The Contingency Plan shall evidence a facility's coordinated emergency response and recovery preparedness for a series of reasonably foreseeable emergency events. The CPM may require Contingency Plan updating over the life of the facility. Contingency Plan elements include, but are not limited to:

1. a site-specific list and direct contact information for persons, agencies, and responders to be notified for an unanticipated event;
2. a detailed and labeled facility map, including all fences and gates, the windsock location (if applicable), the on and off-site assembly areas, and the main roads and highways near the site;

3. a detailed and labeled map of population centers, sensitive receptors, and the nearest emergency response facilities;
4. a description of the on-site, first response and backup emergency alert and communication systems, site-specific emergency response protocols, and procedures for maintaining the facility's contingency response capabilities, including a detailed map of interior and exterior evacuation routes, and the planned location(s) of all permanent safety equipment;
5. an organizational chart including the name, contact information, and first aid/emergency response certification(s) and renewal date(s) for all personnel regularly on-site;
6. a brief description of reasonably foreseeable, site-specific incidents and accident sequences (on- and off-site), including response procedures and protocols and site security measures to maintain twenty-four-hour site security;
7. procedures for maintaining contingency response capabilities; and
8. the procedures and implementation sequence for the safe and secure shutdown of all non-critical equipment and removal of hazardous materials and waste (see also specific conditions of certification for the technical areas of **Public Health, Waste Management, Hazards, Hazardous Materials Management, and Wildfire and Worker Safety and Fire Protection**).

COM-14 Incident-Reporting Requirements. The project owner shall notify the CPM within one hour after it is safe and feasible, of any incident at the facility that results in any of the following:

1. An event of any kind that causes a "Forced Outage" as defined in the CAISO tariff;
2. The activation of onsite emergency fire suppression equipment to combat a fire;
3. Any chemical, gas or hazardous materials release that could result in potential health impacts to the surrounding population; or create an offsite odor issue; and
4. Notification to, or response by, any off-site emergency response federal, state or local agency regarding a fire, hazardous materials release, onsite injury, or any physical or cyber security incident.

Notification shall describe the circumstances, status, and expected duration of the incident. If warranted, as soon as it is safe and feasible, the project owner shall implement the safe shutdown of any non-critical equipment and removal of any hazardous materials and waste that pose a threat to public health and safety and to environmental quality (also, see specific conditions of certification for the technical areas of **Hazards, Hazardous Materials Management and Wildfire and Waste Management**).

Within six business days of the incident, the project owner shall submit to the CPM a detailed incident report that includes, as applicable, the following information:

1. A brief description of the incident, including its date, time, and location;
2. A description of the cause of the incident, or likely causes if it is still under investigation;
3. The location of any off-site impacts;
4. Description of any resultant impacts;
5. A description of emergency response actions associated with the incident;
6. Identification of responding agencies;
7. Identification of emergency notifications made to federal, state, and local agencies;
8. Identification of any hazardous materials released and an estimate of the quantity released;
9. A description of any injuries, fatalities, or property damage that occurred as a result of the incident;
10. Fines or violations assessed or being processed by other agencies;
11. Name, phone number, and e-mail address of the appropriate facility contact person having knowledge of the event; and
12. Corrective actions to prevent a recurrence of the incident.

After the submittal of the initial report for any incident, the project owner shall submit to the CPM copies of incident reports within 48 hours of a request. The project owner shall maintain all incident report records for the life of the project, including closure.

If the project owner requests that an incident notification or report be designated as a confidential record and not publicly disclosed, the project owner shall submit copies of notices or reports with an application for confidential designation in accordance with CEC regulations.

COM-15 Non-Operation and Repair/Restoration Plans.

a. If the facility ceases operation temporarily (excluding planned and unplanned maintenance for longer than one week (or other CPM approved date), but less than three months (or other CPM-approved date), the project owner shall notify the CPM. Notice of planned non-operation shall be given at least two weeks prior to the scheduled date. Notice of unplanned non-operation shall be provided no later than one week after non-operation begins.

   For any non-operation, a Repair/Restoration Plan for conducting the activities necessary to restore the facility to availability and reliable and/or improved performance shall be submitted to the CPM within one week after notice of non-operation is given. If non-operation is due to an unplanned incident, temporary repairs and/or corrective actions may be undertaken before the Repair/Restoration Plan is submitted. The Repair/Restoration Plan shall include:

1. Identification of operational and non-operational components of the plant;
2. A detailed description of the repair and inspection or restoration activities;
3. A proposed schedule for completing the repair and inspection or restoration activities;
4. An assessment of whether the proposed activities would require changing, adding, and/or deleting any COCs, and/or would cause noncompliance with any applicable LORS; and
5. Planned activities during non-operation, including any measures to ensure continued compliance with all COCs and LORS.

b. Written monthly updates (or other CPM-approved intervals) to the CPM for non-operational periods, until operation resumes, shall include:
   1. Progress relative to the schedule;
   2. Developments that delayed or advanced progress or that may delay or advance future progress;
   3. Any public, agency, or media comments or complaints; and
   4. Projected date for the resumption of operation.

c. During non-operation, all applicable COCs and reporting requirements remain in effect. If, after one year from the date of the project owner's last report of productive repair/restoration plan work, the facility does not resume operation or does not provide a plan to resume operation, the Executive Director may assign suspended status to the facility and recommend commencement of permanent closure activities. Within 90 days of the Executive Director's determination, the project owner shall do one of the following:
   1. If the facility has a closure plan, the project owner shall update it and submit it for CEC review and approval; or
   2. If the facility does not have a closure plan, the project owner shall develop one consistent with the requirements in this Compliance Plan and submit it for CEC review and approval.

COM-16: Facility Closure Planning. To ensure that a facility's eventual permanent closure and maintenance do not pose a threat to public health and safety and/or to environmental quality, the project owner shall coordinate with the CEC to plan and prepare for eventual permanent closure.

Final Closure Plan

a. No less than one year (or other CPM-approved date) prior to initiating a permanent facility closure, or upon an order compelling permanent closure, the project owner shall submit for CEC review and approval a Final Closure Plan, which includes any site maintenance and monitoring.

Prior to submittal of the facility's Final Closure Plan to the CEC, the project owner and the CPM may hold a meeting to discuss the specific contents of the plan.

b. Final Closure Plan contents include, but are not limited to:

   1. a statement of specific Final Closure Plan objectives;
   2. a statement of qualifications and resumes of the technical experts proposed to conduct the closure activities, with detailed descriptions of previous power plant closure experience;
   3. identification of any facility-related installations or maintenance agreements not part of the CEC certification, designation of who is responsible for these, and an explanation of what will be done with them after closure;
   4. a comprehensive scope of work for permanent plant closure and site maintenance activities, with a description and explanation of methods to be used, broken down by phases, including, but not limited to:
      a. dismantling and demolition;
      b. recycling and site clean-up;
      c. impact mitigation and monitoring;
      d. site remediation and/or restoration;
      e. exterior maintenance, including paint, landscaping and fencing;
      f. site security and lighting; and
      g. any contingencies.
   5. a schedule projecting all phases of closure activities for the power plant site and all appurtenances constructed as part of the CEC-certified project;
   6. an electronic submittal package of all relevant plans, drawings, risk assessments, and maintenance schedules and/or reports, including an above and below-ground infrastructure inventory map and registered engineer's or DCBO's assessment of demolishing the facility;
   7. additionally, for any facility that permanently ceased operation prior to submitting a Final Closure Plan and for which only minimal or no maintenance has been done since, a comprehensive condition report focused on identifying potential hazards;
   8. all information additionally required by the facility's COCs applicable to plant closure;
   9. an equipment disposition plan, including:
      a. recycling and disposal methods for equipment and materials; and
      b. identification and justification for any equipment and materials that will remain on-site after closure.

10. a site disposition plan, including but not limited to proposed rehabilitation, restoration, and/or remediation procedures, as required by the conditions of certification and applicable LORS, and site maintenance activities;
11. identification and assessment of all potential direct, indirect, and cumulative impacts and proposal of mitigation measures to reduce significant adverse impacts to a less-than-significant level. Potential impacts to be considered shall include, but not be limited to:
    a. traffic;
    b. noise and vibration;
    c. soil erosion;
    d. air quality degradation;
    e. solid waste;
    f. hazardous materials;
    g. waste water discharges; and
    h. contaminated soil;
12. identification of all current conditions of certification, LORS, federal, state, regional, and local planning efforts applicable to the facility, and
13. proposed strategies for achieving and maintaining compliance during closure; and
14. updated mailing list and Listserv of all responsible agencies, potentially interested parties, and property owners within one mile of the facility**.**
15. description of and schedule for security measures and safe shutdown of all non-critical equipment and removal of hazardous materials and waste (see COCs Public Health, Waste Management, Hazards, Hazardous Materials Management, and Wildfire and Worker Safety and Fire Protection).

If the CEC-approved Final Closure Plan procedures are not initiated within one year of the plan approval date, it shall be updated and re-submitted to the CEC for supplementary review and approval. If a project owner initiates but then suspends closure activities, and the suspension continues for longer than one year, the CEC may initiate corrective actions against the project owner to complete facility closure. The project owner remains liable for all costs of contingency planning and closure.

9.9 Comments and Responses on the Preliminary Staff Assessment

CURE comments (TN 264343) Deferred Mitigation and Decommissioning.

Comment: Comments were received suggesting the PSA impermissibly defers the preparation of plans, reports, and/or studies as mitigation for the Project's significant environmental effects until after certification and without specific performance standards and that the PSA also defers to other agencies to analyze the impacts or identify mitigation measures for the Project. Specifically, the following measures are identified as improperly deferred until after the CEC has certified the Project: **HAZ-1**, **HAZ-6**, **GEO-1**, **SOLID WASTE-1** and **TRANS-1**.

Staff response: Deferred mitigation relates to an agency either determining impacts after project approval or relying on a mitigation measure of unknown efficacy in concluding that a significant impact will be mitigated to a less than significant level.

Staff disagrees that these standard conditions are deferred mitigation or are inconsistent with CEQA. These conditions are generally not being imposed as mitigation for any project impacts but to ensure compliance with specific laws and reporting requirements related to impact prevention, worker safety, and emergency planning. Moreover, there is nothing unknown regarding the information contained in the reports or the effectiveness of the conditions in achieving both compliance with relevant laws and in supporting CEC facility oversite. Finally, the CEC soliciting input on the various plans from the local jurisdiction does not equate to a deferral of analysis. Staff has already identified the plans are necessary and the content of the plans are standardized based on industry practice or regulatory requirements.

HAZ-1 requires the project owner to prepare a Hazardous Materials Business Plan (HMBP) and a Spill Prevention Control and Countermeasure (SPCC) Plan, and provide these plans to the Kern County Public Health Services Department - Hazardous Materials Program (the CUPA), for review and comment and to the Compliance Project Manager (CPM) for review and approval.

HMBP are standardized informational documents that in part are used by emergency responders to understand the types of chemicals present at the site. Because HMBPs contain standard categories of information, templates for HMBPs can be purchased reflecting a common understanding for the content and use of HMBPs. CalEPA notes that HMBPs contains detailed information that includes the following:

- An inventory of hazardous materials at a facility.
- Emergency response plans and procedures to be followed in the event of a reportable release or threatened release of a hazardous material.

- Requirements to train employees in safety procedures in the event of a release or threatened release of a hazardous material, including onboarding for new employees and annual refresher courses for existing employees.
- A site map that depicts north orientation, loading areas, internal roads, adjacent streets, storm and sewer drains, access and exit points, emergency shutoffs, evacuation staging areas, hazardous material handling and storage areas, and emergency response equipment. (https://calepa.ca.gov/hazardous-materials-business-plan-program/)

Like a HMBP, a SPCC is a preventive measure and informational document that is well defined with mandatory content based on federal requirements. The purpose of the SPCC rule is to help facilities prevent a discharge of oil into navigable waters or adjoining shorelines. The SPCC rule requires facilities to develop, maintain, and implement an oil spill prevention plan, called an SPCC Plan. These Plans help facilities prevent oil spill, as well as control a spill should one occur. See Table 5.7-4 for a list of laws the project will comply with through the development of an HMBP and SPCC.

HAZ-6 requires the project owner to prepare and submit to the CPM a Soils Management Plan (SMP) prior to any ground disturbing activities. The purpose of the SMP is to establish appropriate management practices and procedures for handling impacted soil and/or groundwater or other materials that may be encountered during construction activities to ensure worker protection from toxicant exposure. **HAZ-6** contains specific categories of information to be included in the plan which is consistent with generally accepted practices regarding the content with SMPs. The SMP will ensure the project complies with preventive measure laws. The effectiveness of SMPs is well understood.

GEO-1 informs the project's final design and requires the project owner to complete and submit a geotechnical and geohazard report to the CEC for review and approval. The report will include any final grading and facility design refinements necessary due to actual real time conditions at the site which can only be determined at the initial construction phase. Importantly, **GEO-1** is primarily a condition related to the environment's impact on the project and to ensure project complies with design standards. These standards are listed in Table 5.6-5. Like the other plans, the content of a geotechnical and geohazard report is standardized and its use in refining project design is well understood among engineers. Thus, the effectiveness of **GEO-1** is known.

Solid Waste-1 ensures that the project complies with state and local solid waste and recycling goals. Table 5.12-2 lists the specific laws this condition relates to. Solid Waste-1 requires the preparation of a Construction Waste Management Plan and an Operation Waste Management Plan for all wastes generated during construction and operation of the facility. The condition includes a list of information that must be included in the plans. Importantly, all the key information such as the types and amounts of solid

waste generated and the capacity of the local landfills have been identified and analyzed in Section 5.12 of the PSA.

The plans are standard products with known content, that facilitate a record of materials removed from a jobsite and their byproducts. It lists the site materials, how much can be diverted into recycling or reused, how much is going to a landfill and where it's going. The plans do not reflect any deferred mitigation but record how the facility manages its solid waste consistent with existing laws.

TRANS-1 requires the project owner to prepare a Construction Traffic Management Plan (CTMP). Consistent with project description and relevant laws the CTMP addresses the movement of workers, vehicles, equipment, and materials, including arrival and departure schedules, carpooling, a parking/staging plan, and designated workforce and delivery routes. Table 5.14-9 identifies the relevant laws **TRANS-1** ensures the project complies with. **TRANS-1** contains details categories of information that is required to be included in the CTPM including procedures to restore damage to existing roadways caused by project construction traffic. As with the other plans, CTMP is primarily a tool to track compliance with laws, provide logistical information, and supports the CEC compliance work.

Comment: CURE states that the PSA fails to describe decommissioning activities for the project and that the PSA's cursory discussion fails to disclose even basic details regarding key decommissioning activities such as facility demolition, removal and disposal of Project components, or the return of the site to pre-Project conditions.

Response: CEQA Guidelines section 15145 do not require an agency to speculate which is what would be necessary to include the level of analytical detail suggested by the comment. Because the CEC retains jurisdiction over the project for its life, under the CEC's oversite, decommissioning is a separate process that requires CEC approval. While decommissioning is outside the project certification, the PSA does include robust discussion of decommissioning and includes **COM-16** which details the decommissioning process, and the categories of information required in a decommissioning plan. **See Section 9, Compliance Conditions and Compliance Monitoring Plan** for more details related to decommissioning activities. Ultimately, the contents of the plan will be influenced by the laws in effect at the time of decommissioning and most importantly, the future use of the site. It is not possible or even prudent to attempt to guess today what the legal and developmental situation will be like in 30-40 years.

The solar thermal project, SEGS IX, (Docket 89-AFC-01C) provides an example of the CEC standard decommissioning process. SEGS IX was built in 1990 and after operating for almost 35 years, the project owner filed a decommissioning plan which was approved by the CEC in 2023 (TN 248824). The decommissioning plan was crafted to effectively accommodate the repurposing of the project site to a PV facility, something that would not have been contemplated in 1990. Decommissioning was completed in 2025 and project's certification terminated.

Given the uncertainty, the scope of information in the PSA regarding the decommissioning process and the required contents of the decommissioning plan is sufficient to support a decision on the application especially given decommissioning is not part of the certification.

GEM A-CAES LLC Preliminary Staff Assessment Comments (TN 264316)- Revisions to Compliance Conditions of Certification and Compliance Monitoring Plan pp 66- 70

1. **Comment:** The applicant suggested the revision of **COM-1** Unrestricted Access to remove "take all steps necessary".

   Staff response: Staff agrees this can be removed from **COM-1**. See the COC above.

2. **Comment:** The applicant suggested the revision of **COM-2** Compliance Record to add verbiage "related to CEC license compliance, supplemental, and post-certification".

   Staff response: Staff agrees to add, "related to the CEC license" and "supplemental" but disagrees with the "post-certification" additions to **COM-2** because the CEC requires pre *and* post certification documentation to be maintained by the project owner.

3. **Comment:** The applicant suggested the revision of **COM-3** Compliance Verification Submittals to add "or a cover email".

   Staff response: Staff agrees with the addition to **COM-3** because a cover email is equally effective as a "cover letter".

4. **Comment:** The applicant suggested the revision of **COM-4** Pre-Construction Matrix and Tasks Prior to Start of Construction to remove directive language from the body of the COC.

   Staff response: Staff disagrees with the removal of the COC language because it is directive language. The language also provides important context for the project owner.

5. **Comment:** The applicant suggested the revision of **COM-11** Amendments, Staff-Approved Project Modification, Ownership/Operational Control Changes, Staff and Project Owner Jointly Initiated Amendments and Verification Changes to add "consistent with the requirements of Section 1769".

   Staff response: Staff disagrees with the additional language as it is unnecessary and is redundant. **COM-11** covers the implementation of section 1769 which sets forth the process for project owners to make changes to the facility. Whether staff can approve a change, or it must go to the CEC is directed by the language of

section 1769 which explicitly covers post certification project changes. Thus, stating "consistent with the requirements of section 1769" is unnecessary.

Comment: The applicant suggested the revision of **COM-13** Emergency Response Site Contingency Plan to include, "consistent with any changes in applicable law".

Staff response: Staff disagrees with the additional language because the Emergency Response Site Contingency Plan may require updates at any time and not related to changes in applicable law but to update outdated information. For example, the plan may require an update when points of contact need to be updated.

6. **Comment:** The applicant suggested several deletions in the body of **COM-16** Facility Closure Planning. Deletions include references to public workshops and hearings as part of the approval of the Final Closure Plan. Additionally, references to the Final Cost Estimates, required by **COM-16** were also deleted.

   Staff response: Staff updated **COM-16** to modify the language regarding workshops and the need for alternatives to facility closure as well as the cost estimates associated with the project's eventual decommissioning.

KEY EVENTS LIST

PROJECT: Willow Rock Energy Storage Center

DOCKET #: 21-AFC-02

COMPLIANCE PROJECT MANAGER: Ashley Gutierrez

EVENT DESCRIPTION	DATE
SAFC Certification Date	
Obtain Site Control	
On-line Date (Commercial Operation Date)	
PRE-CONSTRUCTION	
Start Preliminary Site Assessments/Pre-Construction Activities (Biological and Cultural)	
Start Engineering Review & Pre-Approval with Kern County and CBO (Grading Plan/Dawn Road Improvement/Water Supply Line)	
SITE ACTITIES	
Start Site Assessment/Pre-construction (Land Survey)	
Start Site Mobilization/Construction	
Start Grading	
Start Reservoir Excavation	
Start Shaft Construction	
Begin Pouring Major Foundation Concrete (Spheres Piles)	
Start Cavern Construction	
Begin Installation of Major Equipment	
Completion of Installation of Major Equipment	
First Plant Synchronization (Startup)	
TRANSMISSION LINE ACTIVITIES	
Start Transmission Line Construction	
Complete Transmission Line Construction	
Energization and Interconnection Tests	
WATER SUPPLY LINE ACTIVITIES	
Start Water Supply Line Construction	
Complete Water Supply Line Construction	
Start Filling Reservoir	
Complete Filling Reservoir	

COMPLAINT LOG NUMBER:_____ DOCKET NUMBER:_____

PROJECT NAME:_____

COMPLAINANT INFORMATION

NAME:_____ PHONE NUMBER:_____

ADDRESS:_____

COMPLAINT

DATE COMPLAINT RECEIVED:_____ TIME COMPLAINT RECEIVED:_____

COMPLAINT RECEIVED BY: _____ ☐ TELEPHONE ☐ IN WRITING (COPY ATTACHED)

DATE OF FIRST OCCURRENCE:_____

DESCRIPTION OF COMPLAINT (INCLUDING DATES, FREQUENCY, AND DURATION):_____

FINDINGS OF INVESTIGATION BY PLANT PERSONNEL:_____

DOES COMPLAINT RELATE TO VIOLATION OF A CEC REQUIREMENT? ☐ YES ☐ NO

DATE COMPLAINANT CONTACTED TO DISCUSS FINDINGS:_____

DESCRIPTION OF CORRECTIVE MEASURES TAKEN OR OTHER COMPLAINT RESOLUTION:_____

DOES COMPLAINANT AGREE WITH PROPOSED RESOLUTION? ☐ YES ☐ NO

IF NOT, EXPLAIN:_____

CORRECTIVE ACTION

IF CORRECTIVE ACTION NECESSARY, DATE COMPLETED:_____

DATE FIRST LETTER SENT TO COMPLAINANT (COPY ATTACHED):_____

DATE FINAL LETTER SENT TO COMPLAINANT (COPY ATTACHED):_____

OTHER RELEVANT INFORMATION:_____

"This information is certified to be correct."

PLANT MANAGER SIGNATURE: DATE: _____

Section 10

Authors and Reviewers

10 Authors and Reviewers

Lead Agency—California Energy Commission

Section Authors

Kenneth Salyphone (Efficiency and Energy Resources, Facility Reliability)
Ardalan Raisi Sofi (Noise and Vibration, Facility Design)
Laiping Ng, Mark Hesters (Transmission System Engineering)
Alvin J. Greenberg, Ph.D. (Worker Safey and Fire Protection, Hazards, Hazardous Materials/Waste, and Wildfire)
Tao Jiang (Air Quality)
Chris Huntley and Jamie Miner (Biological Resources)
Winston Potts (Climate Change and Greenhouse Gas Emissions)
Patrick Riordan, William E. Larson, Cameron Travis, (Cultural and Tribal Cultural Resources)
Kevin M. DeLano (Geology, Paleontology, and Minerals)
Andrea Koch (Land Use, Agriculture, and Forestry)
Huei-An (Ann) Chu (Public Health)
Ellen LeFevre (Socioeconomics, Environmental Justice, Public Benefits)
James Ackerman (Solid Waste Management, Water Resources)
Sudath Edirisuriya (Transmission Line Safety and Nuisance)
Mark R. Hamblin (Visual Resources)
Francisco Martin (Transportation)
Jeanine Hinde, Collin Crawford (Alternatives)
Ashley Gutierrez (Compliance Conditions and Compliance Monitoring Plan)

Supervision and Management

Brett Fooks, Safety and Reliability Branch Manager
Gabriel Roark, Cultural Resources Unit Supervisor/Assistant Tribal Liaison
Hurshbir Shahi, Compliance and Enforcement Unit Supervisor
Joseph Hughes, Engineering Branch Manager
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Dian Vorters, Deputy Director - Siting, Transmission, and Environmental Protection Division
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Project Assistant

Marichka Haws

Project Management/Legal

Eric Veerkamp, Project Manager
Erika Giorgi, Staff Counsel
Jared Babula, Staff Counsel
Mariah Ponce, Staff Counsel

Section 11

Declarations and Resumes

DECLARATION OF
Alvin J. Greenberg, Ph.D.

I, Alvin J. Greenberg, Ph.D., declare as follows:

1. I am employed by the California Energy Commission as a consultant.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on sections **Worker Safety/Fire Protection** and **Hazards, Hazardous Materials, Hazardous Waste, and Wildfire** for the **Willow Rock Energy Storage Center** based on my independent analysis of the Application for Certification **21-AFC-02** and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

   I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: June 30, 2025 Signed: _____

At: San Rafael, California

Alvin J. Greenberg, Ph.D., QEP*(emeritus)*

37 Mount Whitney Dr., San Rafael, Ca. 94903
office 415-472-6056 cell 415-302-0438
e-mail agreenberg@risksci.com

Alvin J. Greenberg has a B.S. from the University of Illinois, Urbana, and a Ph.D. from the University of California San Francisco. He conducted postdoctoral research in neurotoxicology and served as an Acting Assistant Professor at UCSF. He also attended the prestigious Lovelace Institute of Inhalation Toxicology in 1980 and is Board Certified as a Qualified Environmental Professional (QEPemeritus). Dr. Greenberg was formerly Chair of the Bay Area Air Quality Management District Hearing Board, a former Member of the State of California Occupational Safety and Health Standards Board (appointed by Governor Jerry Brown), and former Assistant Deputy Chief for Health, California OSHA.

Dr. Greenberg's expertise in risk assessment has led to his appointment as a member of several state and federal advisory committees, including the Cal/EPA Department of Toxic Substances Control Program Review Committee, the DTSC Integrated Site Mitigation Committee, the California State Water Resources Control Board Bay Protection and Toxic Cleanup Program Advisory Committee, the California EPA Advisory Committee on Stochastic Risk Assessment Methods, the U.S. EPA Workgroup on Cumulative Risk Assessment, the Cal/EPA Peer Review Committee of the Health Risks of Using Ethanol in Reformulated Gasoline, and the California Air Resources Board Advisory Committee on Diesel Emissions. He has adjudicated several air quality cases while serving as Chair of the Bay Area Air Quality Management District Hearing Board. Perhaps just as important, Dr. Greenberg has considerable experience and expertise in risk communication, has taught a course on Environmental Causes of Cancer, and has trained compliance staff of the California Energy Commission on human health risk assessment. He has also testified in both Superior Court and U.S. District Court as an expert witness.

Dr. Greenberg has considerable experience and ability to prepare CEQA and NEPA documentation for many projects, including gas-fired and solar power plants. In his work under contract to the California Energy Commission, he has authored and defended at Evidentiary Hearing over 150 CEQA-equivalent Staff Assessments for power plant siting cases in California over a 30-year period, including EIRs and EISs for solar power plants, wind turbines, battery energy storage systems (BESS), green hydrogen production, compressed air energy storage, and a coal gasification plant. He is responsible for preparing this documentation in the areas of Hazardous Materials Management, Worker Safety/Fire Protection, Public Health and Safety (human health risk assessment), Glare Risk Assessment, Impacts of Solar Flux on Avian Species, Hazardous Waste Management, and conducting assessments of existing asthma, cancer, and respiratory disease incidence rates in low-income areas.

He has had over four decades of experience in the preparation of human health risk assessments, hazardous waste site characterization, air quality assessments, hazardous materials handling and risk management/prevention, infrastructure vulnerability assessments, occupational safety and health impacts, conducting lead surveys and studies, and site characterization and health hazard assessment of homes impacted by Wildland Urban Interface fires.

DECLARATION OF
Andrea Koch

I, Andrea Koch, declare as follows:

1. I am employed by the California Energy Commission as an Environmental Planning Specialist.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on **Land Use, Agriculture, and Forestry** for the **Willow Rock Energy Storage Center** based on my independent analysis of the Willow Rock Energy Storage Center Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

   I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 7/1/2025 Signed: Andrea Koch

At: Sacramento, California

CALIFORNIA ENERGY COMMISSION

ANDREA KOCH
ENVIRONMENTAL PLANNING SPECIALIST – ENERGY FACILITY SITING

Education, Certification & Associations

- Bachelor of Science Degree, Wildlife, Fish and Conservation Biology, University of California, Davis (2002)
- Master of City and Regional Planning, Cal Poly San Luis Obispo (2004)

Experience

California Energy Commission (CEC) – from 12/2009 to Present

Planner II – Energy Facility Siting

Review power plant applications for: land use, agriculture, and transportation impacts; alternatives; and compliance with applicable laws, ordinances, regulations, and standards. Coordinate with other staff and agencies to conduct environmental reviews. Write environmental analysis documents. Perform compliance oversight of power plants during construction and operation. Assist junior colleagues with environmental review.

City of Sacramento – from 6/2007 to 7/2009

Assistant Planner – Long-Range Planning

Performed long-range planning for the City of Sacramento. Coordinated review of the Draft 2030 General Plan, a comprehensive citywide land use plan. Prepared Ben Ali and Hagginwood neighborhood plans. Worked with City staff and community members to identify strategies for resolving neighborhood issues, such as infrastructure deficiencies. Reviewed 70 development applications, analyzing their consistency with City policy and providing written feedback to applicants.

County of Santa Cruz – from 6/2005 to 6/2007

Resource Planner II – Current Planning

Reviewed development permit applications to ensure their consistency with regulations for creeks, wetlands, grading, geologic hazards, erosion control, and sensitive plant and animal species. Wrote staff reports analyzing development proposals and providing recommendations to the Environmental Planning Division Manager. Performed an average of 5 weekly pre-construction meetings and final inspections at project sites to ensure that development was consistent with County regulations and required mitigations. Regularly assisted the public with resource planning questions, both in-person and over the phone.

County of Monterey – from 11/2004 to 6/2005

Assistant Planner – Current Planning

715 P Street, MS 40 ◆ Sacramento, CA 95814 ◆ andrea.koch@energy.ca.gov

Reviewed development permit applications for consistency with County regulations. Prepared and presented staff reports for development applications. Reports provided recommendations to the Zoning Administrator. Assisted the public with zoning questions, both in-person and over the phone.

DECLARATION OF
Ardalan Raisi Sofi

I, Ardalan Raisi Sofi, declare as follows:

1. I am employed by the California Energy Commission as a Mechanical Engineer.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on **Facility Design and Noise** for the **Willow Rock Energy Storage Center** based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

   I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 07/10/25 Signed: 

At: Sacramento, California

ARDALAN R. SOFI, PHD, PE

OBJECTIVE

MECHANICAL ENGINEER WITH +7 YEARS OF EXPERIENCE IN MECHANICAL DESIGN AND ANALYSIS IN ACADEMIA AND INDUSTRY. SELF-MOTIVATED AND PASSIONATE ENGINEER WITH PROVEN ANALYTICAL AND PRACTICAL SKILLS LOOKING FOR A FULL-TIME MECHANICAL DESIGN POSITION.

EXPERIENCE

- **California Energy Commission (Natural Resources Agency)**, Sacramento, CA, **Mechanical Engineer** *November 2022- Present*
  - Lead technical and mechanical engineering assessments and reviews of new and emerging power generation and storage technologies in support of California's clean energy goals.
  - Analyze and identify power generation and power storage research needs by assessing maturity levels, knowledge gaps, feasibility, and policy direction.
  - Evaluate the efficiency and reliability implications of power generation, supply, and end-use strategies as input to energy policy development.
  - Conduct compliance analyses of facility design codes, noise and vibration impacts, mechanical equipment, pressure vessels, tanks, piping, power plant efficiency, battery energy storage systems, and power plant reliability aspects for power plant Notices of Intent and Applications for Certification.
- **CALTRANS**, Oakland, CA, **Mechanical Engineer** *March 2022- November 2022*
  - Performed professional design work, specification preparation, cost estimating, and inspection work involved in designing, constructing, and maintaining mechanical facilities, including vehicular tunnels, water drainage pumping plants, sewage lift stations, and other transportation-related facilities. Systems in mechanical facilities include gear trains, driveshafts, pneumatics, hydraulics, motors, controls, machinery brakes, HVAC, fans, and pumps.
  - Checks designs, plans, specifications, and cost estimates for in-house designed and consultant-designed transportation facilities to ensure conformance with Office and Department standards for accuracy, and applicable codes.
  - Provided construction engineering support for infrastructure projects by reviewing shop plans, equipment lists, and inspecting and testing completed work for compliance with contract documents
  - Produced reports and analyses summarizing the condition of the facility or system after maintenance inspections and including recommendations and estimates for necessary repairs.
- **CALTRANS**, Oakland, CA, **Transportation Engineer** *November 2021- March 2022*
  - Conducted FCM, SFM, and routine, damage, and in-depth inspections using NDT on transportation infrastructure.
  - Produced comprehensive written reports detailing inspection findings, quantities and condition states of elements and defects, maintenance work recommendations, and inventory data using a computerized Bridge Management System.
  - Performed miscellaneous engineering, training, and administrative functions related to inspections and maintenance of bridges and overhead signs as directed by the Branch Chief or Office Chief.
- **AHMCT Research Center**, University of California, Davis, CA, **Research Assistant** *September 2018-September 2021*
  - Developed FEA and DEM model for thermomechanical modeling of Additive Manufacturing (AM) process.
  - Designed and developed a deep learning model capable of sub-second thermomechanical analysis of the SLS process.
  - Developed Deep Learning models for the determination of macroscopic mechanical properties of AM structures.
  - Developed a nonlinear lumped parameter model for collision between material bodies with strain hardening effects.
  - Developed an ANN model for evaluation of the compliance behavior of material bodies during elastoplastic collision.
- **CMSSL Research Center,** California State University, Northridge, CA, **Research Assistant** *August 2015-July 2017*
  - Developed a nonlinear 3D FEA code for stress-strain analysis of laminated fiber-reinforced composite structures.
  - Designed and analyzed a smart soft composite robotic finger using large deformable composite beams, leading to the development of a functional prototype with improved flexibility and control.
  - Machine Learning (ML) models for sub-second evaluation of stress and strain fields in composite structures, allowing for faster and more accurate analysis of structural performance.
- **DDAB Engineering,** Tarzana, CA, **MEP Engineer** *May 2015-August 2017*
  - Designed Plumbing, HVAC, and electrical systems for residential and commercial buildings
  - Developed Schematic and Design Drawings for Building Mechanical and Electrical Systems with AutoCAD and Revit MEP
  - Prepared T24 report with Energy pro and CBECC softwares to meet Energy Code
- **SAIPA Heavy Dies Manufacturing,** Karaj, Iran, **Mechanical Design Intern** *June 2013-January 2014 & June 2013-January 2014*
  - Designed and developed press tools, milling, and assembly fixture for the automobile industry

- Assisted technical staff in the development and implementation of the manufacturing processes
- Developed CAD models of camshaft follower mechanism with CATIA for simulation purposes

SKILLS

- Strong understanding of Automation of Mechanical System, Solid Mechanics, Mechanical Design, Structural Analysis, physical modeling of engineering systems, Multiphysics modeling, Data-Driven Modeling of Engineering Systems
- California Principles and Practice of Engineering License (PE Mechanical, M 40655)
- Programming Languages: Python, SQL, Octave, MatLab, Java, Scala, C/C++, R
- Engineering software: SolidWorks, CATIA V5 R20, NASTRAN in CAD, ANSYS, PowerMill, AutoCad, Revit MEP
- Data Science Packages and Distributed Computing Technologies: Numpy, Pandas, Scikit-Learn, Keras, Tensorflow, Matplotlib, seaborn, Anaconda, Jupyter, MySQL, Hadoop
- Data Science Related Coursework: Deep Learning Specialization, TensorFlow in Practice Specialization, Python for Data Science and Machine Learning Bootcamp, Complete Guide to TensorFlow, The Complete SQL Bootcamp 2020

PUBLICATION

- **Sofi, A. R.**, Ravani, B., "Sub-second Prediction of the Heatmap of Powder-Beds in Additive Manufacturing using Deep Encoder-Decoder Convolutional Neural Networks", *Journal of Computing and Information Science in Engineering* (Accepted)
- Nasrollahzadeh, A. A., **Sofi, A. R.**, Ravani, B., "Factors Contributing to Roadside Work Zone Collisions", *Journal of Accident Analysis & Prevention 2021,* vol. 158, p. 106203, Aug. 2021, doi: 10.1016/j.aap.2021.106203
- **Sofi, A. R.**, Ravani, B., "Determination of Aggregate Elastic Properties of Powder-Beds in Additive Manufacturing using Convolutional Neural Networks", *Leibniz International Proceedings in Informatics Schloss Dagstuhl – Leibniz-Zentrum für Informatik, Dagstuhl Publishing, Germany.*
- Stronge, W. J., **Sofi, A. R.**, Ravani, B., "Computing the composite coefficient of restitution for inelastic impact of dissimilar bodies," *International Journal of Impact Engineering*, vol. 133, p. 103333, Nov. 2019, doi: 10.1016/j.ijimpeng.2019.103333.
- Bishay, P. L., **Sofi, A. R.**, "Sensitivity analysis of a smart soft composite robotic finger design using geometrically nonlinear laminated composite finite beam elements," *Journal of Materials Today Communications,* vol. 16, 111-118, 2018.
- **Sofi, A. R.**, Bishay, P. L., Atluri, S. N., "Explicit tangent stiffness matrix for the geometrically nonlinear analysis of laminated composite frame structures," *Journal of Composite Structures,* vol. 187, 566-578, 2018.

EDUCATION

Ph.D. in Mechanical Engineering, **University of California**, Davis (**GPA: 3.90**) *September 2021*
Dissertation: "Reduced-Order Modeling of Mechanical Interactions Between Material Bodies."

M.Sc. in Mechanical Engineering, **California State University**, Northridge (**GPA: 3.89**) *May 2017*
Dissertation: "Geometrically Nonlinear Analysis of Laminated Composite Space Frame Structures."

B.Sc. in Mechanical Engineering, **Azad University**, Tehran (**GPA: 3.7**) *June 2013*
Concentration: Mechanical Design and Manufacturing

HONORS & AWARDS

- Edison scholarship for graduate students in science, technology, engineering, and mathematics (STEM) *August 2016*
- Sally Casanova Pre-Doctoral Scholarship *June 2016*
- Outstanding Academic Achievement (Best Graduate Student in the MEA Department) *May 2017*

DECLARATION OF
Ashley Gutierrez

I, Ashley Gutierrez, declare as follows:

1. I am employed by the California Energy Commission as a Compliance Project Manager.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on **Compliance Conditions and Compliance Monitoring Plan** for the **Willow Rock Energy Storage Center** based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

   I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 7/8/2025 Signed: Ashley Gutierrez

At: Sacramento, California

CALIFORNIA ENERGY COMMISSION

ASHLEY GUTIERREZ

Education & Certifications

- Bachelor of Arts, Geography with a concentration in Natural Resource Management, San Francisco State University (2013)
- Land Use and Environmental Planning Certification, University California Davis Extension Program (2019)

Experience

California Energy Commission - 2015 to Present

Compliance Project Manager, Compliance Monitoring and Enforcement Unit 2023-Present

As part of the Compliance Monitoring and Enforcement Unit, Mrs. Gutierrez serves as a project leader responsible for the overall guidance on highly complex and technical compliance projects such as power plant amendments, both major and minor in nature and conducts all construction and operational oversight for the California Energy Commission (CEC) jurisdictional power plant fleet. She provides technical support to the Reliability, Renewable Energy and Decarbonization Incentives (RREDI) Division's Distributed Electricity Backup Asset (DEBA) team by assisting with the review of California Environmental Quality Act (CEQA) determinations included in the grant applications and prepares categorical exemptions, if appropriate. Mrs. Gutierrez coordinates with the Inspection and Investigations Unit and CEC technical staff (i.e. Biology, Hazardous Materials and Soil and Water Resources) to successfully bring power facilities into compliance with their Conditions of Certification. Mrs. Gutierrez's communication and reporting skills allows her to work on various projects simultaneously. She also continues to fulfill her former duties as a Planner II for the Environmental Protection Office to ensure her technical sections for several Small Power Plant Exemptions (SPPEs) projects are completed and when called upon provides technical support. Lastly, she regularly uses a variety of tools such as Microsoft Word, Planner, Shareporint, and Excel.

Planner II (Energy Facility Siting), Environmental Protection Office 2020-2023

As part of Environmental Protection Unit, Mrs. Gutierrez served as a technical lead for the preparation of environmental impact analysis in the areas of transportation, land use, visual resources and socioeconomics (recreation, population/housing, public services) for Notices of Intention, Applications for Certification (AFC), and SPPEs as required by CEQA for thermal electric generating facilities (50 MWs and greater) and related linear facilities (electric transmission lines, natural gas and water pipelines). Mrs. Gutierrez also evaluated energy facility compliance with conditions of certification throughout the life (construction, operation, and decommissioning) of the project. She examined and evaluated amendments and project changes in accordance with the Warren-Alquist Act, CEQA, existing and proposed laws, ordinances, regulations, and standards (LORS). As well as participated in public workshops and provided testimony at hearings regarding project proposals. When necessary, she performed site visits. Mrs. Gutierrez also prepared a variety of CEQA categorical exemptions for the Energy Research and Development (ERDD) Division under the Food Production Investment Program (FPIP) and the Electric Program Investment Charge (EPIC) Program.

Planner I (Energy Facility Siting), Environmental Protection Office 2016-2020

Ms. Gutierrez prepared technical analysis for facility siting cases and planning studies in the areas of traffic and transportation and visual resources and formulated solutions to difficult problems. She provided technical expertise evaluating the environmental and socioeconomic effects of proposed energy facilities, transmission projects, policies, and plans for energy development to satisfy the Warren-Alquist Act and CEQA. Analyzed AFCs and proponent environmental assessments (PEAs) for an inter-agency contract with the California Public Utilities Commission. Applied knowledge of environmental issues associated with energy facility siting and legal requirements to protect traffic and transportation, land use, visual resources, socioeconomics and formulated mitigation techniques to prevent significant impacts. Periodically traveled to participate in site visits, public workshops and hearings.

Energy Analyst, Environmental Protection Office 2015-2016

As part of the Siting, Transmission, and Environmental Protection (STEP) Division, Mrs. Gutierrez served as a technical lead for the preparation of environmental impact analysis in the areas of transportation, land use, visual resources and socioeconomics (recreation, population/housing, public services) for Notices of Intention, Applications for Certification, and SPPEs as required by CEQA for thermal electric generating facilities and related linear facilities. Mrs. Gutierrez also evaluated energy facility compliance with conditions of certification throughout the life (construction, operation, and decommissioning) of the project. She examined and evaluated amendments and project changes in accordance with the Warren-Alquist Act, CEQA, existing and proposed laws, ordinances,

Assistant Store Manager, Abercrombie and Fitch

Mrs. Gutierrez's position as an assistant store manager was a multi-faceted role that merged business strategy, operations, creativity, and management. She was responsible for driving sales results by analyzing the business and providing best-in-class customer service. She was responsible for overseeing daily store operations including opening and closing routines and driving efficiency in all store processes. She leveraged her creative expertise through floorset updates, styling recommendations and product knowledge. She was also a talent leader, driving everything from recruiting and training to engagement and development.

Projects

- Lodi Energy Center FX Turbine Upgrade, San Joaquin County, CA. Prepared the Petition to Amend and related CEQA documents for the licensing of the FX Turbine project at the Lodi Energy Center. Prepared business materials and presented to the Commissioners for approval. Also coordinated with the RREDI group for simultaneous grant award of over 7 million dollars.

- Roseville State Power Augmentation Power Site (RSPAPS) Efficiency Upgrade, Placer County, CA. Prepared the categorical exemption under CEQA for the issuance of a 1.5 million dollar CEC efficiency enhancement grant to install a hot gas path and evaporative coolers to existing temporary power generators.

- UCSD BESS Project, San Diego County, CA.
Prepared the categorical exemption under CEQA for the issuance of a 7 million dollar CEC efficiency enhancement grant for a new BESS at UCSD's campus utility plant.

- Viejas Tribe of Kumeyaay Indians- Alpine, San Diego County, CA.
Prepared the categorical exemption under CEQA for the issuance of a 31 million dollar CEC grant for a cutting edge, long duration energy storage system that provided renewable backup power for the Viejas Tribe of Kumeyaay Indians. This installation provided support to statewide grid reliability in the event of an emergency.

- San Jose Data Center Project- San Jose, Santa Clara County, CA.
Prepared the Transportation section and assisted with the preparation of the Cumulative analysis.

- Stack Data Center Project- Santa Clara, Santa Clara County, CA.
Prepared the Transportation section.

- Lafayette Data Center Project- Santa Clara, Santa Clara County, CA.
Prepared the Transportation section.

- Great Oaks South Data Center Project - San Jose, Santa Clara County, CA.
Prepared the Transportation section and assisted with the preparation of the Alternatives section.

- Mission College Data Center – Santa Clara, Santa Clara County, CA.
Prepared the cumulative impact analysis, Public Services, Population and Housing, and Recreation environmental analysis sections.

- Vierra Transmission Line Reinforcement Project - Lathrop, San Joaquin County, CA.
Prepared the Public Services, Population and Housing and Recreation sections and cumulative section.

- Ravenswood Reconductoring Project, East Palo Alto, San Mateo County, CA.
Prepared the Transportation and cumulative impact analysis.

- SEGS III-VII Facility Decommissioning – Boron, San Bernardino County, CA.
Prepared the Transportation analysis for the Decommissioning Plan Staff Assessment.

- Stanton Energy Reliability Center- Stanton, Orange County, CA.
Prepared the cumulative analysis and assisted with the preparation of the Transportation section.

- Puente Power Project - Oxnard, Ventura County, CA.
Prepared the Land Use and cumulative analysis.

- Mission Rock Energy Center- Santa Paula, Ventura County, CA. Prepared the cumulative analysis.

- Chemehuevi Community Center Solar Grant Proposal, County, CA. Assisted with grant review.

DECLARATION OF
Cameron Travis

I, Cameron Travis, declare as follows:

1. I am employed by the California Energy Commission as a Associate Energy Specialist.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on **Cultural and Tribal Cultural Resources** for the **Willow Rock Energy Storage Center** based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

   I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: July 10,2025 Signed: Cameron Travis

At: Sacramento, California

Cameron Travis

EDUCATION

BACHELOR OF ARTS, HISTORY, 2016, Sonoma State University, Rohnert Park, CALIFORNIA
Major studies in History. Senior thesis: Analysis of historical divisions and coalitions in feminist, black, and lesbian activism. Minor studies in minor studies in Anthropology.

PROFESSIONAL EXPERIENCE/QUALIFICATIONS

HISTORIC PRESERVATION:

August 2023 to Present: Participate in analyses and assist in the preparation of assessments in the area of cultural resources, and more specifically built environment, ethnographic, and prehistoric archaeological analyses for energy facility siting cases (Notice of Intention, Applications for Certification, Small Power Plant Exemptions, and Commission Reports). Identify, collect, organize, enter, describe, and analyze cultural resource data related to electrical energy production facilities, alternative energy technologies, energy research and development and Commission programs and policies. This entails project lead responsibilities for the Cultural Resources Unit Inventory System (GRUIS), such duties include staff instruction, upkeep of the GRUIS operational manual, and maintaining knowledge of GRUIS related software. Prepare correspondence for their supervisor's distribution to cultural resource protection and management agencies, tribal governments, environmental organizations, universities, and special interest groups to ensure their input into Commission programs.

January 2020 to August 2023: Energy Analyst, California Energy Commission, Siting, Transmission and Environmental Protection Division. Participate in analyses and assist in the preparation of assessments in the area of cultural resources, and more specifically built environment, ethnographic, and prehistoric archaeological analyses for energy facility siting cases (Notice of Intention, Applications for Certification, Small Power Plant Exemptions, and Commission Reports). Identify, collect, organize, enter, describe, and analyze cultural resource data related to electrical energy production facilities, alternative energy technologies, energy research and development and Commission programs and policies. This entails project lead responsibilities for the Cultural Resources Unit Inventory System (GRUIS), such duties include staff instruction, upkeep of the GRUIS operational manual, and maintaining knowledge of GRUIS related software. Prepare correspondence for their supervisor's distribution to cultural resource protection and management agencies, tribal governments, environmental organizations, universities, and special interest groups to ensure their input into Commission programs.

2016-2019: Student Assistant, California Energy Commission. Analyze and inputting cultural resource data into a cultural resource database using GIS software, archive cultural resource files, assist cultural resource staff with projects, manage the Tribal Program's tribal contact database, draft and send letters to California Native American tribal governments. In this position, I also helped develop the Cultural Resources Unit's inventory system (CRUIS) processes and procedures, wrote the CRUIS manual, and led CRUIS training workshops.

Relevant Trainings:

Tribal Sovereignty, Tribal Cultural Resources and CEQA, and Implementation of AB52
Training through CalEPA Webinar. November 2019.
Native American Sacred Sites and the Federal Government
Training through the United States Department of Justice Website. October 2019.
Early Coordination with Indian Tribes for Infrastructure Projects
Training through the Advisory Council on Historic Preservation. September 30, 2019.
Basics of NEPA and Section 106 Integration
Training through the Advisory Council on Historic Preservation. August 26, 2019.
Coordinating NEPA and Section 106
Training through the Advisory Council on Historic Preservation. August 26, 2019.
Governor's Tribal Advisor Tribal Training Program
Training through the CalEPA. June 13, 2017.

DECLARATION OF
Chris Huntley

I, Chris Huntley, declare as follows:

1. I am employed by the California Energy Commission as a Senior Biologist.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on **Biological Resources(s)** for the **Willow Rock Energy Storage Center** based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

   I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: July 8, 2025 Signed: 

At: Sacramento, California

Christian S. Huntley

VICE PRESIDENT / BIOLOGICAL RESOURCES

PROFILE: Mr. Huntley is the Director of Biological Resources at Aspen and has been with the company for 27 years. He acts as the Program Manager or Deputy for several on-call contracts and has extensive experience conducting surveys for sensitive species and managing CEQA/NEPA projects in California, Nevada, and Arizona. Mr. Huntley has been the lead biologist and regulatory specialist for numerous large-scale infrastructure projects including solar thermal, photovoltaic, geo-thermal, battery storage, natural gas, and wind power generation facilities, and many large-scale transmission and flood control projects. He worked as part of an interagency team with the CDFW, USFWS, BLM, and CPUC to develop nesting bird management strategies for large construction projects and worked with the USFWS, BLM, CDFW, and CEC to address impacts to birds from landscape level solar energy projects. He has also conducted extensive surveys for desert tortoise, burrowing owl, desert kit fox, and big horn sheep to verify applicant data for the CEC and CPUC.

EDUCATION:

- Graduate Studies, Biology, California State University Northridge
- BA, Biology, University of California at Santa Cruz, 1992

PROFESSIONAL EXPERIENCE

SITING, TRANSMISSION, AND ENVIRONMENTAL PROTECTION, OPT-IN SUPPORT, AND BATTERY STORAGE: BIOLOGICAL RESOURCES

California Energy Commission, 2022-Present

The Siting, Transmission, and Environmental Protection Workload, Opt-In Support, and Battery Storage are multi-year, multi-task, statewide contracts with the California Energy Commission. These contracts include the evaluation of energy projects that require evaluation under CEQA, such as: Application for Certification (AFC) review of new gas-fired and renewable power plants and related transmission lines and battery storage projects; compliance monitoring of permitted facilities; designation of transmission corridors; and other activities in the areas of environmental impact assessment, engineering, and related regulatory matters. Mr. Huntley prepared or assisted with the preparation of the **biological resources section of the CEQA analysis** for the Bowers Backup Generating Facility, Elmore North Geothermal Project, Morton Bay Geothermal Project, Black Rock Geothermal Project, Sutter Energy Decarbonization Project, Compass Battery Energy Storage Project, Form Energy Project, Viracocha Battery Storage Project, and Valley Children's Hospital Microgrid Project.

SODA MOUNTAIN SOLAR PROJECT

California Energy Commission, 2024-2025

Mr. Huntley is one of the primary authors preparing the biological resources section of the Staff Assessment for this utility-scale solar photovoltaic electrical generating and storage facility located on approximately 2,670 acres of land administered by the Bureau of Land Management in San Bernardino County, California. The main facilities of the project include the solar plant site, a substation and switchyard, and an approximately 300-megawatt battery energy storage system. The primary issues of this project include construction and operational impacts to desert bighorn sheep. Other considerations include potential impacts to desert tortoise and western burrowing owl, among other sensitive biological resources.

WILLOW ROCK ENERGY STORAGE CENTER
California Energy Commission, 2024-2025

Mr. Huntley is one of the primary authors who prepared the biological resources analysis of the Staff Assessment for this 500-megawatt compressed air storage energy facility located within unincorporated Kern County, California. The overall facility would consist of four nominal 130-megawatt power turbine trains, each containing an electric motor-driven air compressor drivetrain, heat exchangers, an air turbine generator, air exhaust stacks, and ancillary equipment. Each train would share a common set of thermal storage tanks, as well as an air storage cavern. Key issues of this project include extensive analysis on potential impacts to western Joshua tree, Crotch's bumble bee, and western burrowing owl. Other important considerations include impacts to special-status plants, desert tortoise, and Mohave ground squirrel.

COMPASS BATERY STORAGE PROJECT
California Energy Commission, 2024-2025

Mr. Huntley s one of the primary authors preparing the biological resources analysis of the Staff Assessment for this 250-megawatt battery energy storage system facility located in the City of San Juan Capistrano, California. This facility would be composed of lithium-iron phosphate batteries, or similar technology batteries, inverters, medium-voltage transformers, a switchyard, a collector substation, and other associated equipment to interconnect into an existing San Diego Gas and Electric transmission line. Primary concerns of this highly controversial project include impacts to Crotch's bumble bee, southwestern pond turtle, western burrowing owl, along with special-status plants and migratory birds.

PRAIRIE SONG RELIABILITY PROJECT
California Energy Commission, 2024-2025

Mr. Huntley is one of the primary authors preparing the biological resources analysis of the Staff Assessment for this 1,150-megawatt batter energy storage system facility located in the Antelope Valley of northern Los Angeles County, California. The project includes the containerized battery energy storage system, a substation, and associated operations and maintenance buildings. The analysis focuses on potential impacts to Crotch's bumble bee, migratory birds, and other sensitive biological resources.

BOWERS BACKUP GENERATING FACILITY
California Energy Commission, 2022-2023

The project proposes to develop an emergency backup generating facility at a site in Santa Clara, CA, to provide uninterrupted power supply to its tenant's servers at the Bowers Data Center. As the lead agency, CEC prepares the CEQA document with support by Aspen. Mr. Huntley provided technical guidance and oversight to staff on this project.

FORM ENERGY BATTERY PROJECT
California Energy Commission, 2023-2024

The Form Energy Project has been proposed as a collaboration between Form Energy, Inc and Pacific Gas and Electric in Mendocino County, which consists of a commercial-scale demonstration of a new form of low-cost, long-duration energy storage; Form Energy's 100-hour, iron-air battery technology. Mr. Huntley provided technical guidance and oversight to staff during the preparation of the Biological Resources Technical Report, biological resources section of the CEQA document, and response to CEC and applicant comments.

BHE GEOTHERMAL PROJECTS
California Energy Commission, 2023-2025

The BHE Geothermal Projects, Elmore North, Morton Bay, and Black Rock, are located within the Salton Sea Known Geothermal Resource Area located near Calipatria, Imperial County. The Projects include three

renewable geothermal power plant and related facilities. Mr. Huntley supported the preparation the biological resources section of the Preliminary Staff Assessment document (CEQA-equivalent) for the three projects, which shared construction staging, parking areas, and facilities. Known resources in the area include marshland habitat, burrowing owls, desert pupfish, Yuma Ridgeway's rail, California black rail, and numerous other bird species.

FOUNTAIN WIND ENERGY PROJECT

California Energy Commission, 2022-2024

The Fountain Wind Energy Project is a proposed wind energy generation development in unincorporated Shasta County, that would construct up to 48 wind turbines with a nameplate generating capacity of up to 7.2 megawatts (MW) each, and ancillary facilities. Mr. Huntley s serving as a technical expert and supporting author preparing the biological resources analysis of the Staff Assessment for this wind energy generation facility located on approximately 2,855 acres in unincorporated Shasta County, California. The project proposes to construct up to 48 turbines, overhead and underground collector systems, an onsite substation, fiberoptic communication lines, and an onsite switching station. The project analysis includes an evaluation of potential impacts to monarch butterfly, greater sandhill crane, and other migratory birds from turbine collisions. It also assesses potential impacts to biological resources associated with reduced fire-fighting capacity in a very remote and rugged area.

CALICO SOLAR ELECTRIC GENERATING STATION PROJECT

California Energy Commission, 2009-2010

Prepared the biological resources analysis of the Staff Assessment/EIS proposed by Calico Solar, LLC for this 8,000-acre solar thermal project located east of Newberry Springs. Key issues include potential impacts to desert tortoise, Mojave fringe-toed lizard, Nelson's bighorn sheep, burrowing owl, golden eagle, and large-scale modifications to existing drainages and interference with regional wildlife movement. As part of this effort Mr. Huntley conducted surveys for desert tortoise, Mojave fringe-toed lizards, kit fox, and burrowing owls over the project site to verify applicant data.

HIDDEN HILLS SOLAR ENERGY GENERATING STATION

California Energy Commission, 2012-2013

Mr. Huntley was one of the primary authors who prepared the biological resources analysis of the Staff Assessment for this 3,277-acre solar thermal energy project located in Inyo County, California. The proposed project was composed of two solar fields, each one containing approximately 85,000 heliostats and each capable of generating 270 megawatts (MW). Key issues of this project involved extensive analysis and research on potential impacts to migratory birds from exposure to elevated levels of solar energy produced by the heliostats. Other important considerations included impacts to desert tortoise, Nelson's bighorn sheep, burrowing owl, golden eagle, and rare plants from loss of groundwater. As part of this effort Mr. Huntley conducted protocol level surveys for desert tortoise and burrowing owls over the project site to verify applicant data.

PALEN SOLAR ELECTRIC GENERATING STATION PROJECT

California Energy Commission, 2013-2015

Mr. Huntley was one of the primary authors who prepared the biological resources analysis of the Staff Assessment for this 3,794-acre solar thermal solar energy project located east of Palm Desert. The project consisted of two 250 MW power-generating units, each consisting of a dedicated field of approximately 85,000 heliostats, a 750-foot solar tower and receiver, and a power block. As part of this effort Mr. Huntley conducted surveys for desert tortoise, Mojave fringe-toed lizards, kit fox and burrowing owls over the project site to verify applicant data.

PALMDALE HYBRID POWER PLANT
California Energy Commission, 2009-2011

Mr. Huntley prepared the biological resources analysis of the Staff Assessment for this power generation project proposed by the City of Palmdale. Key issues included potential impacts to Swainson's hawk, desert tortoise, Mojave ground squirrel, and golden eagle.

RICE SOLAR ENERGY PROJECT
California Energy Commission, 2009-2010

Mr. Huntley contributed to the biological resources analysis of the Staff Assessment/EIS prepared for this solar energy project proposed by Rice Solar Energy, LLC (a wholly owned subsidiary of SolarReserve, LLC). Key issues include potential impacts to desert tortoise and golden eagle, and potential impacts to birds in general from the solar technology.

EMERGENCY SITING TEAM POWER PLANT DEVELOPMENT
California Energy Commission, 2009-2010

For two years, Mr. Huntley's duties included management of technical staff for the completion of CEQA equivalent environmental permitting for over nine new emergency power plants, review of applicant submittals, drafting of Memoranda of Understanding with Chief Building Officials, conducting audits of building officials, and coordinating with affected agencies to resolve concerns with potential resource impacts. Other duties included maintaining contractor construction milestones, compliance monitoring and reporting, development of mitigation measures and conflict resolution for power plant compliance issues.

TOPAZ SOLAR FARM EIR
San Luis Obispo County

Mr. Huntley acted as the issue area coordinator for natural resources on this solar energy project proposed by Topaz Solar Farms, LLC (wholly owned by First Solar, Inc.). Key issues include potential impacts to San Joaquin kit fox, jurisdictional drainages, vernal pools, rare plants, and nesting birds.

CALIFORNIA VALLEY SOLAR RANCH EIR
San Luis Obispo County

Mr. Huntley acted as the issue area coordinator for biological resources on this solar energy project. Key issues include potential impacts to San Joaquin kit fox, blunt-nosed leopard lizard, and giant kangaroo rat.

PANOCHE VALLEY SOLAR FARM EIR,
County of San Benito

Mr. Huntley was technical support for this large-scale solar energy project. Key issues include potential impacts to California tiger salamander, blunt-nosed leopard lizard, San Joaquin antelope squirrel, giant kangaroo rat, San Joaquin kit fox, San Joaquin coachwhip, mountain plover, golden eagle, northern harrier, burrowing owl, loggerhead shrike, and American badger.

PACIFIC WIND ENERGY PROJECT EIR
Kern County

Mr. Huntley oversaw the preparation of the biological resource analysis of this EIR evaluating a proposed 250-MW wind energy generation facility in the Mojave region of Kern County. The proposed project would be located on approximately 8,300 acres in the Tehachapi Wind Resource Area.

ALTA-OAK CREEK MOJAVE PROJECT EIR
Kern County

Mr. Huntley oversaw the preparation of the biological resource analysis of this Initial Study and EIR evaluating a proposed 800 MW wind development in the Tehachapi Wind Resource Area. The proposed project site consists of three distinct land areas comprising a total of approximately 10,750 acres.

MORGAN HILLS WIND ENERGY PROJECT
Kern County

Mr. Huntley oversaw the preparation of the biological resource analysis of the EIR for a proposed 230-MW wind energy generation facility in the Mojave region of Kern County.

ANTELOPE NORTH SOLAR PROJECT
City of Lancaster

Mr. Huntley worked as a technical lead to support the biological resource sections of the EIR for this proposed 72-MW solar photovoltaic solar project, including gen-tie and communication line, on 430 acres in the City of Lancaster.

DEL SUR SOLAR PROJECT
City of Lancaster

Mr. Huntley worked as a technical lead to support the biological resource sections of the EIR for this proposed 100-MW solar photovoltaic solar project, including gen-tie and communication line, on 725 acres in the City of Lancaster.

LINE 401 PG&E REDWOOD EXPANSION PROJECT
California Public Utilities Commission

Under contract to the California Public Utilities Commission (CPUC), Mr. Huntley acted as Lead Environmental Monitor and supervised two environmental monitors in the field on the implementation of the CPUC's conditions of approval for construction of this 14-mile natural gas pipeline.

BARREN RIDGE RENEWABLE TRANSMISSION PROJECT LINES 1, 2, AND 3.
Los Angeles Department of Water and Power/U.S. Forest Service, 2015-present

Mr. Huntley is managing and leading a team of biologists, paleontologists, and other technical staff to conduct pre-construction surveys, clearance surveys, nest monitoring, and reporting in support this multi phased 75 mile 230-kV transmission line project that crosses the Mojave Desert and the Angeles National Forest. He conducted extensive surveys for desert tortoise, burrowing owl, desert kit fox, and other sensitive species and managed the construction monitoring team during the initial phase of construction for Lines 2 and 3. He is currently managing the team for the implementation of the Line 1 portion of the project and works closely with LADWP staff to support agency coordination. Some of the key issues on this project include potential impacts to Mojave ground squirrel, desert tortoise, arroyo toads, California condors, least Bell's vireo, California red-legged frogs, spotted owl, desert kit fox, and a host of forest sensitive plant and wildlife species.

MCCULLOUGH-VICTORVILLE TRANSMISSION LINES 1 & 2 BIOLOGICAL AND CULTURAL RESOURCES SUPPORT
Los Angeles Department of Water and Power, 2020-present

Mr. Huntley serves as the Senior Technical Lead for Biological Resources and project manager for this transmission line project. These transmission lines extend approximately 165 miles from McCullough Substation, located outside of Henderson, Nevada, to Victorville Substation in Victorville, California. He leads the Aspen team conducting research, collecting biological resource data from the field and prepared a detailed biotechnical study for the project. He participated in surveys for desert tortoise, burrowing owl, desert kit fox, Joshua trees, and other sensitive plants.

TEHACHAPI RENEWABLE TRANSMISSION PROJECT
California Public Utilities Commission (CPUC)/USFS, 2007-2017

Mr. Huntley was the issue area coordinator and principal author for biological resources on this 500-kV transmission line project proposed by Southern California Edison in support of wind energy projects. This transmission line is 173 miles in length and includes two separate segments that cross the Angeles National Forest. Currently Mr. Huntley supports nesting bird management on this project. As part of this effort Mr. Huntley conducted surveys for desert tortoise, kit fox and burrowing owls over the desert portion of the project site to verify applicant data.

DEVERS–PALO VERDE NO. 2 TRANSMISSION LINE PROJECT
CPUC/Bureau of Land Management (BLM), 2005-2006

Mr. Huntley acted as issue area coordinator for biological resources on this 230-mile 500-kV transmission line upgrade to be completed by Southern California Edison (SCE). He supported the biological monitoring team for this project and reviewed the proposed mitigation lands proposal for the CPUC. As part of this effort he verified habitat conditions for desert tortoise and burrowing owls along the right of way and proposed mitigation lands.

DOWNS SUBSTATION
California Public Utilities Commission, 2014-2016

Mr. Huntley was the issue area coordinator and conducted biological surveys for desert tortoise, burrowing owl, and other desert species to support the Initial Study and Mitigated Negative Declaration for SCE substation upgrade project.

COOLWATER-LUGO TRANSMISSION PROJECT
California Public Utilities Commission, 2014-2017

Mr. Huntley was the issue area coordinator and principal author for biological resources on this transmission line project proposed by Southern California Edison. As part of this effort Mr. Huntley conducted surveys for desert tortoise, Mojave fringe-toed lizards, kit fox and burrowing owls over the project site to verify applicant data.

ANTELOPE TRANSMISSION PROJECT
California Public Utilities Commission, 2006-2015

Mr. Huntley acted as the issue area coordinator for biological resources on this 500 kV transmission line proposed by SCE in support of wind energy projects. Mr. Huntley conducted surveys for desert tortoise, kit fox and burrowing owls over the project site to verify applicant data.

EL CASCO SUB-TRANSMISSION PROJECT EIR
California Public Utilities Commission, 2007-2015

Mr. Huntley was the issue area coordinator for biological resources and completed the impact analysis section of the EIR for this 17-mile sub-transmission line upgrade to be completed by SCE.

SUNSET SUBSTATION IS/MND AND BIOLOGICAL SITE ASSESSMENT
City of Banning, 2006-2007

Mr. Huntley prepared the biology section of the IS/MND as a subcontractor to R.W. Beck. In addition, Mr. Huntley conducted burrowing owl surveys and managed surveys for Los Angeles pocket mouse at select locations along the proposed right-of-way.

POWER PLANT 1 & 2 TRANSMISSION LINE CLEARANCE ISSUES AND MITIGATION PLAN
Los Angeles Department of Water and Power/U.S. Forest Service, 2016-2018

Mr. Huntley conducted biological surveys and managed the biological resource team for the preparation of a joint EA/MND for this power line clearance mitigation project. The transmission lines are in easements in the Angeles National Forest, and the USDA Forest Service is the NEPA Lead Agency for the EA, BA, and BE.

FORT IRWIN ENVIRONEMNTAL BASELINE SURVEY REPORTS
US Army Corps of Engineers, 1999-2000

Mr. Huntley managed the preparation of two Environmental Baseline Survey reports near Fort Irwin, San Bernardino County to support the land acquisition of over 95 parcels by the US Army for the Fort Irwin National Training Center. Mr. Huntley conducted site investigations, documented existing biological conditions, including surveys for desert tortoise, burrowing owl, and lane mountain milk-vetch.

PATRIOT INTEGRATED AIR DEFENSE EXERCISE PROJECT ENVIRONMENTAL ASSESSMENT AND ENVIRONMENTAL BASELINE SURVEY
United States Air Force 2006
Mr. Huntley was the Project Manager/Biologist to support the development of an integrated air/land exercise on lands under the operational airspace of Nellis Air Force Base.

JOINT RED FLAG '05 EXERCISE ENVIRONMENTAL ASSESSMENT

US Army Corps of Engineers/Bureau of Land Management, *Nellis Air Force Base Nevada (2004-2005)*
Mr. Huntley was the Project Manager/Biologist to support the Red Flag air ground training exercise located on lands under the operational airspace of Nellis Air Force Base.

ON-CALL SERVICES CONTRACT
Metropolitan Water District of Southern California, 2019-present

Mr. Huntley is the Program Manager for this contract and is responsible for the daily management of biological resource tasks and environmental permitting for this multi-year, multi-task, contract. He has supported over 16 Task orders and completed biological surveys, monitoring, and CEQA tasks for metropolitan. Most of these projects require surveys for desert species including desert tortoise, burrowing owl, desert kit fox, wood rat, and sensitive plants.

AIR QUALITY AND ENVIRONMENTAL SERVICES AGREEMENT ON-CALL CONTRACT
Los Angeles Department of Water and Power, present

Mr. Huntley serves as the Deputy Program Manager for this contract and is responsible for the daily management of biological resource tasks and environmental permitting for this multi-year, multi-task, contract. He manages teams of in-house staff and sub-contractors to support LADWP projects. Project budgets range from a few thousand dollars to over nine million dollars.

MISCELLANEOUS ENVIRONMENTAL SERVICES CONTRACTS
U.S. Army Corps of Engineers, 1995-2012

Mr. Huntley served as Deputy Program Manager for two consecutive multi-year environmental services contract with the Corps' Los Angeles District. Mr. Huntley was responsible for supporting the Program Manager with agency coordination, leading survey teams, managing biological sub-contractors and preparing NEPA documents.

WILDFIRE RISK REDUCTION, RELIABILITY, AND ASSET PROTECTION (WRAP) PROJECT
Trinity Public Utilities District/Western Area Power Administration, 2018-present

Mr. Huntley is the senior project biologist for the WRAP Project, which has been proposed to expand the rights-of-way (ROW) of TPUD and WAPA utility lines to reduce risk of catastrophic wildfire in Trinity County. Mr. Huntley worked to develop the project from the ground up by coordinating with the state and federal land management agencies and resource agencies from the project initiation. Mr. Huntley trained and led a team of senior botanists and wildlife biologists to conduct approximately 300 miles of habitat-based surveys along the ROW in difficult terrain and on a condensed schedule. Mr. Huntley and his team prepared the Biological Resources Report and Aquatic Resources Delineation and will continue to support the project by drafting the EIR/EIS and conducting permitting consultation with CDFW, USFWS, and RWQCB.

SAN GABRIEL TOWER & IMPROVEMENTS PROJECT
Metropolitan Water District of Southern California, 2018-present

Mr. Huntley is the lead Biologist providing CEQA and permitting services for improvements to the San Gabriel Tower, which regulates, and isolates flows from Morris Dam (and the Morris Reservoir) into the Monrovia Tunnel system. The water is then transported for treatment and delivery to Metropolitan customers in Los Angeles. The Project would lower the height of San Gabriel Tower and replace the original slide gates and actuators.

COLORADO RIVER AQUEDUCT REPAIR PROJECT
Metropolitan Water District of Southern California, 2018-present

As lead biologist/project manager, Mr. Huntley has supported Metropolitan on several repair and maintenance projects located along the Colorado River Aqueduct. This has included emergency repairs, barrel protection, and facility maintenance.

SAN DIEGO PIPELINE REPAIR PROJECT
Metropolitan Water District of Southern California, 2018-present

Mr. Huntley managed the field work for biological surveys and monitoring for a portion of the pipeline located in Temecula, CA.

MCCULLOUGH-VICTORVILLE LINES 2 & 3 TRANSMISSION PROJECT
Los Angeles Department of Water and Power, 2004-present

Mr. Huntley is leading up a team of cultural and biological resource specialists to survey over 1,700 transmission towers located along an existing 165-mile transmission line between Victorville, CA, and Henderson, NV.

LITTLEROCK DAM AND RESERVOIR RESTORATION PROJECT EIR/EIS-BE/BA
Palmdale Water District/U.S. Forest Service, 2020-present

Mr. Huntley is the deputy project manager and project biologist for the sediment removal activities associated with the Littlerock Dam and Reservoir in the Angeles National Forest. Mr. Huntley developed project alternatives for sediment disposal while avoiding impacts to federally endangered arroyo toads. Mr. Huntley managed the sensitive species surveys and was the primary author of the biological resource section of the EIR/EIS, Management Indicator Species Report, Biological Evaluation and Biological Assessment. Currently Mr. Huntley is acquiring regulatory permits for compliance with Section 404/401 of the Clean Water Act and Section 1602 and 1605 of the California Fish and Game Code. He is currently directing a team of biologists during the construction of the facility.

MATILIJA DAM ECOSYSTEM RESTORATION PROJECT EIR
Ventura County Watershed Protection District, 2018-present

Mr. Huntley is the lead biological resource specialist for this Subsequent Environmental Impact Report SEIR analyzing the impacts and benefits from the removal of the Matilija Dam located in Ventura County, CA. The

project would restore access to historic spawning habitat for southern steelhead and restore natural stream hydrology to the watershed.

COGSWELL RESERVOIR SEDIMENT REMOVAL PROJECT
Los Angeles County Public Works, 2019-present

Mr. Huntley has provided a variety of services including field surveys and the verification of existing studies for this large-scale sediment removal project. The project would remove 2.5 million cubic yards of sediment from the reservoir. Aspen has completed numerous tasks including jurisdictional delineation, hydrology study, vegetation mapping, habitat restoration plan, a CEQA addendum, regulatory permit support, construction monitoring, and numerous other tasks.

SAWTOOTH RIDGE COMMUNICATION TOWER
California Department of General Services, 2018-2022

As Lead Biologist, Mr. Huntley managed the preparation of an IS/MND and BA for a proposed California Highway Patrol communication tower near Needles, CA. Mr. Huntley managed the surveys for desert tortoise and assisted with permit applications.

DIABLO CANYON NUCLEAR GENERATING STATION DECOMMISSIONING
County of San Luis Obispo, 2021-2023

Mr. Huntley is leading a team of biologists and preparing the biological resource section of an EIR to evaluate impacts related to the decommissioning of the Diablo Canyon Nuclear Generating Facility. In addition, several alternative strategies are being considered and two potential off-site transport areas are being evaluated.

SAN ONOFRE NUCLEAR GENERATING STATION DECOMMISSIONING
California State Lands Commission, 2019

Mr. Huntley managed the biological resource group and provided technical analysis to evaluate impacts related to marine and terrestrial resources. The EIR evaluated impacts associated with the decommissioning of the San Onofre Nuclear Generating Station including removal of the offshore components.

THOUSAND PALMS WHITEWATER RIVER BASIN FLOOD CONTROL PROJECT SUBSEQUENT EIR/ SUBSEQUENT EIS
Riverside County, 2010-present

Mr. Huntley is the Project Manager and biological resource specialist for this Subsequent Environmental Impact Report (SEIR) / Subsequent Environmental Impact Statement (SEIS) for a proposed flood control improvement project located in the Thousand Palms area of Riverside County. The proposed project includes a series of levees and channels to direct stormwater flows from the Indio Mountains away from developed areas and into an existing stormwater conveyance system, to protect community areas from flooding hazards.

NEWHALL RANCH PROJECT
CALIFORNIA DEPARTMENT OF FISH AND GAME, 2010

Mr. Huntley provided biological expertise and assisted CDFG staff in reviewing and revising the EIR/EIS for the Newhall Development Plan EIR/EIS in Santa Clarita. Primary issues concern the land use conversion of several thousand acres of wild lands and agricultural areas located in and adjacent to the Santa Clara River.

SANTA CLARA RIVER LEVEE (SCR-3) IMPROVEMENT PROJECT
Ventura County Watershed Protection District, 2004-2005

Mr. Huntley was the Lead Biologist preparing the biological resources section of the EIR a levee improvement project along the Santa Clara River in Ventura. He also managed the team of monitors during construction of the levees.

TRANSPACIFIC FIBER OPTIC CABLE SYSTEMS PROJECT

City of Hermosa Beach, 2004-2005

Mr. Huntley was the lead biologist and deputy project manager for this transpacific offshore cable EIR. The project included the placement of a fiber optic cable, beach landings, and terrestrial conduit system.

SANTA MONICA MOUNTAINS NORTH AREA PLAN UPDATE AND COMMUNITY STANDARDS DISTRICT (EIR)

Los Angeles Department of Regional Planning

Mr. Huntley was the lead biologist who coordinated with and prepared the biological resource section to update the North Area Plan. He was part of a team of biologists who developed guidance on proposed land development standards and methods to reduce or avoid impacts to natural resources.

SANTA CLARA RIVER LEVEE (SCR-1) PROJECT

Ventura County Watershed Protection District, 2004-2005

Mr. Huntley is the Lead Biologist preparing the biological resources section of the EIR for a levee improvement project along the Santa Clara River in Ventura. He is also part of an interagency team working to develop educational benefits to the Rio School district for a new elementary school being constructed adjacent to the levee.

SPECIAL CERTIFICATIONS

- USACE Certificate of Appreciation 2013
- SWPPP trained 2006
- CDFW Scientific Collecting Permit for pond turtle and garter snake.
- Desert Tortoise Handling Workshop, Ridgecrest California 2001
- California Energy Commission Outstanding Performance Award, 2001
- Certified Caltrans Horizontal Directional Drilling Inspector 2001
- CEC Expert Witness Training 2001 and 2013
- Railroad Right-of-Way Safety Training 2002
- Small boat handling, licensed and certified since 1993
- Research Scuba-diving certification and training since 1989

DECLARATION OF
Collin Crawford-Martin

I, Collin Crawford-Martin, declare as follows:

1. I am employed by the California Energy Commission as an Environmental Scientist and Planner.

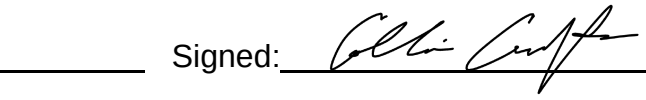
2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on **Alternatives** for the **Willow Rock A-CAES Project** based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

   I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 06/30/2025 Signed: 

At: Sacramento, California

Collin Crawford-Martin

ENVIRONMENTAL SCIENTIST

PROFILE: Mr. Crawford-Martin is a highly experienced Environmental Planner and Scientist with a strong background in California Environmental Quality Act/National Environmental Policy Act (CEQA/NEPA) compliance, construction practices, city planning, and energy analyses. With extensive expertise across interdisciplinary fields, he specializes in conducting Air Quality, Greenhouse Gas (GHG) Emissions, Noise, and Energy analyses delivering comprehensive technical reports for both public and private sector clients. In addition to these core competencies, he has expanded his expertise to include Socioeconomics, Environmental Justice, Hazardous Materials, Transportation, and Alternatives analyses.

Collin has played a key role in compiling, contributing to, and authoring a variety of environmental documents, including Initial Studies, Mitigated Negative Declarations, Environmental Impact Reports and Addendums, and Energy Commission Staff Assessments. His experience also extends to long-range planning documents, such as General Plan Amendments, Regional Transportation Plans, and Specific and Programmatic Plans. Recently, his focus has shifted toward large-scale renewable energy projects, statewide transportation policy initiatives, and technical analyses for the California Energy Commission, as well as technical editing for various innovative grant opportunities.

With exceptional writing and communication skills and a meticulous, methodical approach to environmental analysis, Collin is committed to delivering high-quality work that supports sustainable development and regulatory compliance. He has a passion for continuous learning and professional growth in the environmental and energy sectors.

EDUCATION:

- B.S., Energy and Earth Resources, California State University Chico, 2015

PROFESSIONAL EXPERIENCE

NON-LITHIUM LONG DURATION ENERGY STORAGE CONTRACT

California Energy Commission, 2023-present

Served as the Environmental Planner charged with providing environmental analyses for the Non-lithium Long-Duration Energy Storage (LDES) Contract to support energy storage projects within the State of California that include the following:

- Navy Base San Diego, San Diego
- Haybarn Energy Reliability Center, Marine Corps Base Camp Pendleton
- Viejas Casino, Alpine
- Sandia National Laboratory, Livermore
- Sacramento Municipal Utilities District Power Academy, Sacramento

OPT-IN SITING WORKLOAD CONTRACT

California Energy Commission, 2024-present

Mr. Crawford-Martin is currently authoring multiple sections of Staff Assessments (CEQA-equivalent Environmental Impact Reports [EIRs]) for large-capacity energy storage and generation projects. Under this contract, he supports CEC staff in evaluating opt-in applications for renewable energy power plants, battery storage systems, transmission lines, and other discretionary projects. His work aligns with the expedited timelines established in Assembly Bill 205 (AB 205), ensuring thorough and timely environmental assessments. Mr. Crawford-Martin is authoring sections in the following Opt-In projects:

- Compass Energy Storage Project (Socioeconomics/Alternatives)
- Soda Mountain Solar Project (Socioeconomics/Alternatives)

SITING, TRANSMISSION, AND ENVIRONMENTAL PROTECTION WORKLOAD

California Energy Commission, 2024-present

Mr. Crawford-Martin is currently authoring multiple sections of Staff Assessments (CEQA-equivalent EIRs or Initial Studies/Mitigated Negative Declarations [IS/MNDs]) for large- to medium-scaled energy projects, including geothermal and compressed-air energy storage facilities, gas-fired and renewable power plants, associated transmission infrastructure, and other discretionary projects. In this role, Mr. Crawford-Martin supports CEC staff in evaluating siting applications, ensuring projects comply with environmental regulations and align with the state's zero-carbon energy goals. Mr. Crawford-Martin is currently authoring the following Siting projects:

- Willow Rock Energy Storage Center (Alternatives)
- AVAIO Pittsburg Backup Generating Facility (Population Housing/Public Services)

PARKWAY VILLAGE SPECIFIC PLAN EIR

City of Lancaster, 2024-present

Mr. Crawford-Martin contributed to multiple sections of this Specific Plan EIR, which assesses the proposed development of 434.7 acres of vacant land in Lancaster, California. The project includes residential neighborhoods, hotels, schools, parks, a hospital, and commercial spaces. He authored the Energy, Land Use and Planning, Transportation and Traffic, and Noise sections of the EIR, while also providing input on Other CEQA Considerations and Alternatives.

REPLACEMENT TIRE EFFICIENCY PROGRAM EIR

California Energy Commission, 2024-present

Mr. Crawford-Martin was charged with authoring the Transportation and Traffic and Hazardous Materials sections for this EIR. The Replacement Tire Efficiency Program (RTEP) aims to ensure that replacement tires sold in California are, on average, at least as energy-efficient as the original equipment (OE) tires installed on new passenger vehicles and light-duty trucks. In compliance with Public Resources Code (PRC) sections 25770–25773, the program's primary goal is to establish regulations that maintain or improve the energy efficiency of replacement tires compared to their OE counterparts.

PORT OF LOS ANGELES BERTH 44 SHIPYARD PROJECT

Port of Los Angeles, 2024-present

Mr. Crawford-Martin authored the Noise section of an EIR evaluating the potential noise impacts associated with the construction and operation of a new shipyard facility at the Port of Los Angeles. The project site is located near liveaboard tenants in adjacent marinas and directly next to a Los Angeles County fire station. His analysis assessed project-generated noise levels relative to local regulations – some of which were undergoing revision – and evaluated whether construction and operational activities would exceed county thresholds. Mitigation measures were developed to reduce potential impacts to less than significant levels, ensuring compliance with county, state, and federal noise standards. In addition to authoring the Noise section, Mr. Crawford-Martin reviewed the Air Quality and GHG sections of the EIR for technical accuracy, regulatory consistency, and overall quality assurance.

PIER WIND TERMINAL DEVELOPMENT PROJECT

Port of Long Beach, 2025

Mr. Crawford-Martin conducted a comprehensive peer review of multiple technical sections of the ongoing EIR for the proposed Pier Wind Terminal Project at the Port of Long Beach, California. This $4.7 billion offshore wind

turbine assembly facility is designed to support California's renewable energy goals by accommodating some of the world's largest floating wind turbines. His review encompassed the Noise Technical Report and the EIR sections on Cultural Resources, Hazardous Materials, Geology and Soils, and Mineral Resources. Mr. Crawford-Martin evaluated the methodologies, regulatory consistency, and technical accuracy of these sections, ensuring that the analyses met applicable local, state, and federal environmental standards.

TORRANCE DEL AMO TECHNOLOGY CENTER PROJECT

City of Torrance, 2025

Mr. Crawford-Martin conducted a peer review of the Noise Assessment prepared for the Del Amo Technology Center Project in the City of Torrance, California, which consists of 362,730 square feet of High-Cube Fulfillment Center and 40,303 square feet of High-Cube Cold Storage Warehouse. He evaluated the project's compliance with applicable local (City of Torrance) and state (CEQA) noise regulations related to both construction and operational activities. He authored the Noise section of the project's EIR, which assessed potential noise impacts to multiple sensitive receptors surrounding the site in a dense urban setting. His work included analyzing potential construction and truck-related noise, identifying significance under CEQA thresholds, and recommending mitigation measures to ensure regulatory compliance and defensibility.

GREENBARK 30 BESS PROJECT

City of Goleta, 2025

Mr. Crawford-Martin authored multiple sections of an IS/MND to support the City of Goleta's CEQA compliance for a proposed 30-MW BESS facility. The project site is located adjacent to the Union Pacific Railroad (UPRR), U.S. Highway 101, and an existing Southern California Edison (SCE) substation, with several noise-sensitive receptors nearby, including an elder care facility directly next door. The BESS facility was designed to store renewable energy generated during periods of peak solar and wind production and discharge it during high-demand periods, thereby enhancing grid resiliency and the reliability of local renewable energy distribution. Mr. Crawford-Martin prepared the Aesthetics, Land Use and Planning, Mineral Resources, Noise, Population and Housing, Public Services, Recreation, and Transportation sections of the IS/MND, ensuring thorough environmental disclosure and consistency with applicable CEQA thresholds, General Plan policies, and local development standards.

ON-CALL ENVIRONMENTAL CONSULTING SERVICES CONTRACT

City of Orland, 2021-2024

Mr. Crawford-Martin served as an Environmental Planner and Assistant City Planner under ECORP's on-call contract with the City of Orland, California. In this role, he provided day-to-day CEQA and NEPA expertise to support land development and municipal infrastructure projects across the city. His responsibilities included processing Conditional Use Permit (CUP) applications, annexations, residential lot splits, and Use Permits, as well as drafting and presenting General Plan amendments, city ordinances, formal resolutions, and staff reports at Planning Commission hearings. Mr. Crawford-Martin conducted Air Quality and Noise studies for various city projects and offered both online and over-the-phone planning support to residents. He also delivered planning recommendations to the mayor, council members, and administrative officials, and regularly attended City Council meetings, coordinating with commissioners and department heads across public works, parks and recreation, economic development, engineering, and public safety to ensure regulatory consistency and streamline project approvals.

VEGA SES COMPLEX SOLAR ENERGY AND STORAGE PROJECT

Imperial County – Vega SES, LLC, 2021

Mr. Crawford-Martin conducted Air Quality, Noise, GHG, and Energy analyses to support the EIR for a proposed 350-megawatt solar energy facility in Central Imperial County. He extrapolated qualitative and quantitative data

from ECORP's environmental monitoring activities and conducted detailed research on county and state regulations to develop recommendations for Apex Energy Solutions aimed at reducing construction-related environmental impacts. Collin performed fossil fuel displacement calculations to illustrate the project's potential environmental benefits through reduced reliance on traditional fossil fuel sources.

SHASTA COUNTY REGIONAL TRANSPORTATION PLAN PROJECT

Shasta County – Shasta County Regional Transportation Agency, 2021-2022

Mr. Crawford-Martin contributed specialized noise analysis to the Shasta County Regional Transportation Plan (RTP), a comprehensive 20-year investment strategy developed by the Shasta Regional Transportation Agency (SRTA). His role involved evaluating existing and projected transportation-related noise impacts across Shasta County, ensuring alignment with the Noise Element of the Shasta County General Plan and compliance with the CEQA requirements. Using advanced modeling tools and methodologies, Mr. Crawford-Martin assessed the potential noise implications of proposed transportation projects, including roadway expansions and transit developments. His analysis informed the development of mitigation strategies aimed at minimizing noise exposure to sensitive receptors; thereby, supporting SRTA's goals of enhancing community livability and environmental quality.

SAN FELIPE (SALTON SEA PLOT STUDIES) PROJECT

Imperial County – Imperial Irrigation District, 2021

Mr. Crawford-Martin served as the Environmental Analyst responsible for providing Air Quality, GHG, and Noise assessments for the Imperial Irrigation District's (IID's) proposed development of a groundwater well and associated features. The project focused on establishing and sustaining vegetation cover and implementing waterless dust control measures across 375 acres of exposed playa along the southwestern shores of the Salton Sea. Technical reports were prepared to support mitigation measures under the Salton Sea Air Quality Mitigation Program, as recommended in the Final EIR/EIS for the IID Water Conservation and Transfer Project and Habitat Conservation Plan. Analyses incorporated consideration of applicable state and federal regulations, including a General Conformity Determination to ensure no new National Ambient Air Quality Standards (NAAQS) violations, no exacerbation of existing violations, and no delay in NAAQS attainment.

RECTOR RESERVOIR BYPASS VALVE PROJECT

California Department of General Services – Napa County, 2021

Mr. Crawford-Martin served as the Noise and Energy Environmental Analyst for the Rector Reservoir Bypass Valve Project in Napa County, California. This initiative, led by the California Department of Veterans Affairs (CalVet), aimed to construct a bypass valve and associated infrastructure to facilitate controlled environmental water releases from Rector Reservoir into Rector Creek. The project's primary objective was to comply with the California Fish and Game Code Section 5937 by ensuring adequate downstream flows to support aquatic habitats, particularly for native fish species. In this role, Mr. Crawford-Martin conducted comprehensive assessments of potential noise and energy impacts associated with the construction and operation of the bypass valve system. His analyses ensured adherence to the Napa County General Plan and Municipal Code, as well as compliance with state and federal environmental regulations. The findings contributed to the development of mitigation strategies designed to minimize environmental disturbances; thereby, supporting the project's goal of enhancing ecological conditions in Rector Creek while maintaining the reservoir's water supply functions.

MADENA 2, 3, & 4 SOLAR ENERGY STORAGE PROJECTS

Apex Energy Solutions – Yuba and Placer Counties, 2021

Mr. Crawford-Martin analyzed environmental issues and prepared Air Quality, Noise, GHG, and Energy technical reports and memoranda for three proposed 5-megawatt solar energy generation and battery storage facilities located in Yuba and Placer counties, California. His responsibilities included conducting energy displacement calculations, modeling criteria air pollutant and GHG emissions, and assessing the potential positive and negative

impacts associated with project implementation. Modeling software such as CalEEMod, the Federal Highway Administrations's (FHWA's) Roadway Construction Noise Model (RCNM), and SoundPLAN were used to predict project impacts. Results were evaluated against thresholds established by applicable county general plans and regulatory agencies to ensure compliance. Mitigation measures were recommended where necessary to minimize environmental effects on surrounding sensitive receptors.

OROVILLE FEATHER RANCH EIR

City of Oroville, 2022

Mr. Crawford-Martin assisted in drafting an EIR and conducted a Noise Assessment for a proposed 44.97-acre residential subdivision consisting of 172 single-family lots in Butte County, California. The project, designed as a phased map, sought to provide permanent housing solutions for survivors displaced by the Camp Fire disaster. It proposed the rezoning of a vacant, isolated airport business park to a medium-density residential designation. Project amenities included a passive park, integrated bicycle and pedestrian pathways, storm drainage improvements, and a network of internal cul-de-sacs to support community connectivity. Mr. Crawford-Martin's environmental review addressed key impact areas including land use, noise, transportation, public services, hazards and hazardous materials, and biological and cultural resources, supporting mitigation strategies to minimize environmental impacts and facilitate expedited project approval.

PREVIOUS EXPERIENCE

- Environmental Planner/Assistant City Planner/Air Quality, GHG, Noise, Energy Analyst; ECORP Consulting, Chico, CA (2021-2024)
  - CEQA/NEPA
  - Field data gathering for the production of Air Quality, Noise, GHG, and Energy technical reports.
  - Drafted, interpreted, and analyzed AutoCAD files.
  - Developed and maintained comprehensive citywide plans with general, programmatic, and specific initiatives.
- Environmental Analyst, Pacific North Consulting, Chico, CA (2017-2018)
  - Conducted thorough examinations of environmental conditions, accompanied with extensive literature reviews, to analyze and ascertain potential impacts.
  - Generated and refined scientific reports, while devising mitigation recommendations to meet client requirements.
  - Identified hydrological resources for Wetland Determinations and assessed impacts associated with Streambed Alterations.
- Energy Engineer/Program Inspector, DNV GL Group, Oakland, CA (2015-2016)
  - Inspected lighting upgrade project sites, approved product specs for eligibility, and built energy saving proposals for a multitude of clientele.
  - Performed energy audits for customers and consulted them on the benefits of implementing energy efficiency measures.
  - Instructed contractors on the program details and trained them on methods for increasing energy efficiency within their projects.

CERTIFICATIONS

- FAA Commercial Drone Remote Pilot Certification
- Dust Control Plan Training and Certification

SKILLS

- SoundPLAN
- CalEEMod
- FHWA's RCNM

DECLARATION OF
Ellen LeFevre

I, Ellen LeFevre, declare as follows:

1. I am employed by the California Energy Commission as an Energy Commission Specialist II.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on **Socioeconomics** for the **WILLOW ROCK ENERGY STORAGE CENTER** based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

   I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: July 1, 2025 Signed: Ellen LeFevre

At: Sacramento, California

CALIFORNIA ENERGY COMMISSION

Ellen LeFevre

Energy Commission Specialist II

Education, Certification & Associations

Sacramento State
Degree: Bachelor of Science in Geology

UC Davis Extension
Land Use and Environmental Planning courses

Experience

California Energy Commission

Energy Commission Specialist II – 2024 to present

- Prepare socioeconomic and environmental justice analyses for proposed and existing energy facility sites. Prepare final analyses for power plant applications in the form of expert technical testimony.
- Coordinate and work with federal, state, regional, and local governments regarding energy-related issues and to assure their input into the Commission power plant siting process.
- Evaluate projects in accordance with the Warren-Alqueist Act, California Environmental Quality Act (CEQA), California Energy Commission siting regulations, federal, state, and local laws, ordinances, regulations, and standards.
- Evaluate the licensee's compliance with conditions of certification for power plant facilities.

Planner II – 2017 to 2024

- Prepare socioeconomic, land use, transportation, and environmental justice analyses for proposed and existing energy facility sites. Prepare final analyses for power plant applications in the form of expert technical testimony.

Planner I – 2015 to 2017

- Evaluate and analyze environmental and socioeconomic impacts of proposed energy facilities to ensure the requirements of the Warren-Alquist Act and California Environmental Quality Act are satisfied.

1516 Ninth Street, MS 40◆Sacramento, CA 95814 ◆ ellen.lefevre@energy.ca.gov

DECLARATION OF
Francisco Martin

I, Francisco Martin, declare as follows:

1. I am employed by the California Energy Commission as a Principal Transportation Engineering Consultant.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on Section 5.14 Transportation for the Willow Rock Energy Storage Center Project Final Staff Assessment based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

   I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 6/30/2025 Signed: 

At: Stockton, California

Francisco Martin, PE

Principal

About

Francisco Martin is a Principal and registered civil engineer with over 18 years of experience managing a wide range transportation infrastructure and land development projects throughout the Bay Area and Central Valley. Now leading Fehr & Peers' Stockton office, his experience, expertise, and leadership build upon the firm's 25+ years of service and commitment to Central Valley clients. As a Central Valley resident, Francisco understands the region's needs firsthand and can leverage Fehr & Peers' state-of-the-practice resources to help improve local communities. He is an expert in forecasting travel demand and multimodal operations, regularly working on complex projects involving a variety of modes. Drawing from his experience as a former development project manager, Francisco provides expert advice on policy, project, and program development. His insights help clients deliver land development and infrastructure projects that align with strategic goals and financial parameters.

Education

Bachelor of Science, Civil Engineering, University of California, Berkeley, 2007

Registrations

Licensed Civil Engineer, State of California (# C 79898)

Years of Experience

Total: 18

With Fehr & Peers: 14

Affiliations

Institute of Transportation Engineers (ITE)

Expertise

- Transportation & Land Use Planning
- Environmental Impact Analyses
- General Plans, Specific Plans & Master Plans
- Travel Behavior Forecasting
- Traffic Operations Analyses
- Active Transportation Planning
- Complete Streets Planning
- Station Area Planning
- Site Plan Review
- Transit & Mobility Hub Planning
- Parking Systems Planning & Design
- Freeway & Interchange Planning
- Infrastructure Cost Planning
- Development Impact Fee Programs & Nexus Studies

Project Experience

Google Development Ventures (Silicon Valley, CA)

As a former development project manager, Francisco played a key role on the Google Development Ventures team. His primary focus was on the master planning, entitlement and concept design of approximately 400 acres of Google's land throughout the cities of Mountain View, San José, and Sunnyvale. Combined, the projects were valued at over $15 billion, encompassing residential, commercial, and infrastructure developments. In this dynamic, cross-functional role, Francisco was tasked with obtaining necessary approvals from local authorities. Francisco oversaw the appointment and coordination of consultants for planning, design, cost estimation, entitlements, and permitting tasks. He managed the preparation of engineering and architectural plans, along with transportation demand management (TDM) and parking plans. He regularly advised Google on transportation planning and engineering issues, assisting them with the management of their TDM programs and infrastructure projects. He frequently collaborated with placemaking specialists to plan and design site access, circulation, and servicing operations for various development sites. Francisco also supported cost planning efforts to inform Google leadership in the decision-making for development programs and land transactions.

San Joaquin Regional Mobility Hub Plan (San Joaquin County, CA)

Francisco recently managed the development of the San Joaquin Regional Mobility Hub Plan, led by SJCOG and funded through the REAP 2.0 program. The Plan aims to establish a sustainable and equitable network of mobility hubs that reduce VMT, support infill housing, and improve access to clean, efficient transportation options. Francisco also led the site selection process for a mobility hub demonstration project; Fehr & Peers is currently working with SJCOG and the City of Tracy to design and implement mobility hub improvements at the Tracy Transit Station.

Infrastructure Project Development

Francisco served as Project Manager or lead Project Engineer on various infrastructure development studies, including Project Study Reports–Project Development Support (PSR-PDS), Project Approvals/Environmental Documents (PA/ED) in Caltrans Districts 4 and 10. Tasks typically included existing conditions traffic operations analysis, sub-area model validation, travel demand forecasting, project impact analyses, identifying mitigation measures, and conceptual design. Projects include:

- I-205 Auxiliary Lanes, Tracy
- I-205 Managed Lanes Project, San Joaquin County
- I-680 HOV Gap Closure, Contra Costa County
- I-880 Regional Express Lanes Phase I Project, Alameda County
- North County Corridor, Stanislaus County
- Northbound I-680 Express Lane, Alameda County
- SR 99 / Eight Mile Road Interchange, Stockton
- SR 99 / Morada Lane Interchange, Stockton
- SR 99 / Pelandale Avenue Interchange, Modesto
- SR 132 West Freeway/Expressway, Stanislaus County
- SR 242 / Clayton Road Interchange, Concord
- US 101 / Holly Street Interchange, San Carlos
- US 101 / Mabury Road Interchange, San José

Transportation Impact Analysis Experience

Francisco served as Project Manager or lead Project Engineer/Planner on various transportation impact studies. Tasks typically included transportation analysis and environmental impact review for CEQA documents, analysis of existing transportation conditions, project trip generation and distribution, site plan review, determination of project impacts, identifying mitigation measures that address impacts, and fair share calculations for capital improvements. Projects include:

- Claremont Hotel Expansion EIR, Oakland
- Cal Aquatics Center EIR, Berkeley
- Eden Medical Center, Castro Valley
- Middlefield Park Master Plan, Mountain View
- North Bayshore Master Plan, Mountain View
- Oak Knoll Mixed-Use Development, Oakland
- Safeway Stores in Berkeley, Hercules, Oakland, and Pleasant Hill
- San Pablo City Hall Site Reuse, San Pablo
- University Village at San Pablo, Albany
- West County Health Center Expansion, San Pablo

Transportation Planning Experience

Francisco served as Project Manager or Project Planner on various transportation planning projects, including analysis of automobile, transit, pedestrian, and bicycle access and circulation. Development of multimodal transportation plans has been a key component of several projects. Tasks typically included developing plan vision, goals, and recommendations that inform land use and transportation policy decisions. Projects include:

- Alameda Countywide Goods Movement Plan
- Alameda Countywide Multimodal Arterial Plan
- Ashland-Cherryland Business District Specific Plan, Alameda County
- City of Tracy Transportation Master Plan
- Fairfield Train Station Area Specific Plan
- Milvia Bikeway Plan, Berkeley
- Moffett Park Specific Plan, Sunnyvale
- San Pablo Avenue Corridor Project, Alameda and Contra Costa Counties
- Union City Station District Specific Plan

Parking Planning Experience

Francisco served as Project Manager or lead Project Engineer/Planner on various parking studies, overseeing the analysis of existing parking conditions, evaluating future parking demand for specific developments and area wide. Tasks also included a shared-parking demand analysis for mixed-use developments. Francisco has also managed consultant teams to develop the concept design for large parking structures to serve future mixed-use developments. Projects include:

- 400 E. Caribbean Drive Google Parking Garage Concept Design, Sunnyvale
- Alta Bates Medical Center, Berkeley
- Downtown Richmond Parking Study
- Hugo Terrace Shopping Center, Fremont
- Lawrence Berkeley National Laboratory, Berkeley
- Village Green Development, Alameda County
- Wind River Way Office Park, Alameda

Impact Fee Program Experience

Francisco served as the Deputy Project Manager assisting the West Contra Costa County Transportation Advisory Committee with updating the Subregional Transportation Mitigation Program nexus study to adopt a new fee schedule and ensure new developments pay their fair share towards regional transportation improvements.

DECLARATION OF
Huei-An (Ann) Chu

I, Huei-An (Ann) Chu, declare as follows:

1. I am employed by the California Energy Commission as an Air Resources Engineer.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on **Public Health** for the **Willow Rock Energy Storage Center** based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

   I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 7/9/2025 Signed: Huei-An Chu

At: Sacramento, California

Huei-An (Ann) Chu

715 P Street, MS-46, Sacramento, CA 95814
Phone: 916-237-2547, Email: Ann.Chu@energy.ca.gov
Citizenship Status: U.S. Citizen

EDUCATION

PhD, Environmental Sciences and Engineering, 05/2006
School of Public Health, University of North Carolina at Chapel Hill
Area of Specialization: Environmental Risk Assessment, Environmental Management and Policy, Risk-Based Regulation, Biostatistics, Environmental Epidemiology

MEM, Environmental Management, 05/2000
School of Forestry and Environmental Studies, Yale University, New Haven, CT

MS, Environmental Engineering, 06/1998
National Taiwan University, Taipei, Taiwan

BA, Geography, with honors, 06/1996
National Taiwan University, Taipei, Taiwan

SKILLS

Language: Fluent in Chinese and English.

Computer software and programming skills: Hotspot Analysis Reporting Program (HARP), SAS, Stata, Minitab, ArcGIS, Stella, Crystal Ball, ISC, Microsoft Excel, PowerPoint, Word.

WORK EXPERIENCE

Air Resources Engineer, California Energy Commission, 1/12/2012 - Present

- Independently performs responsible, varied analyses assessing impacts from thermal power plants 50 megawatts and larger and the plants related facilities such as emergency engines and transmission lines, etc.
- Task scopes include public health impacts and transmission line safety and nuisance.
- Model air quality and public health impacts of stationary sources using HARP (Hot Spot Analysis and Reporting Program).
- Identify air quality and public health impacts of stationary sources and measures to mitigate these impacts following California Environmental Quality Act and regulations of US EPA (including the National Environmental Policy Act), ARB, and the Districts.
- Identify safety issues and nuisance impacts of transmission lines and measures to mitigate these impacts following guidelines of California Public Utilities Commission (CPUC) and Federal Aviation Administration (FAA).
- Collect, analyze, and evaluate data on the effects of air pollutants and power plant emissions on human health, and the environment.
- Ensure conditions of certification are met and recommending enforcement actions for violations.

Research Associate, Taiwan Development Institute, 10/01/2010 – 12/31/2011

- Provided professional consultation for the environmental risk assessment of Taiwan's techno-industrial development initiatives
- Reviewed the environmental risk assessment reports of Taiwan's techno-industrial development initiatives
- Presented in various distinguished lecturer series about environmental risk assessment

Consultant, Chu Consulting, 08/2007 - 07/2010
- Conducted a cumulative risk assessment to evaluate the risk associated with the emissions of VOCs from a petrochemical plants in southern Taiwan
- Used EPA's ISC3 model (based on Gaussian dispersion model) to simulate the dispersion and deposition of VOCs from this petrochemical plant to the neighboring areas, then used ArcGIS to spatially combine the population data and VOC simulation data (and further calculated risks)
- Built a framework of risk-based decision making to set the emission levels of VOCs to reduce people's exposure and the risk of experiencing health problems
- Presented in conference: SRA 2007
- Awarded: CSU-Chico BBS Faculty Travel Funds (2007)

Environmental Justice Intern, Clean Water for North Carolina (CWFNC), Summer, 2005
- Reviewed and critiqued key state environmental policies and the federal EPA Public Participation Policy.
- Interviewed impacted communities, member organizations of the NC Environmental Justice Network, state policy officials about how those policies are actually implemented.
- Wrote a report about the survey and review of environmental justice needs for key state policies.
- Report Publication: "Achieving Environmental Justice in North Carolina Public Participation Policy" (Aug, 2005).

Volunteer, New Haven Recycles and Yale Recycling, 08/1998 – 05/2000
- Promoted recycling and conservation
- Checked trash cans (chosen randomly) and recycling bins at each entryway of residential college, then gave grades.

Volunteer, Urban Resource Initiative (URI), Summer, 1998
- Planted trees for local community of New Haven for a better and sustainable environment

RESEARCH EXPERIENCE

Postdoctoral Research

Department of Public Health Sciences, University of California, Davis, 07/01/2010 – 09/30/2012
Research advisor: Dr. Deborah H. Bennett and Dr. Irva Hertz-Picciotto
- Work on two projects: NIEHS-funded ***Childhood Autism Risks from Genetics and Environment (CHARGE)*** and EPA-funded ***Study of Use of Products and Exposure Related Behavior* (*SUPERB)***.
- Perform statistical and quantitative analyses with SAS to analyze collected house dust data and children's urine concentrations of metabolites.
- Conduct exposure assessment to investigate if pesticides, flame retardants, and phthalates are risk factors for children autism.
- Conduct exposure assessment to explore the relationships between children's exposure to phthalate, benzophenone-3 (oxybenzone), triclosan, and parabens, and the use of personal care products.
- Produce scholarly peer-reviewed publications of methodology and findings, and write the final reports of both projects.

Carolina Environmental Program, University of North Carolina at Chapel Hill, 01/01/2006 – 12/31/2006
Research advisor: Dr. Douglas J. Crawford-Brown
- Applied a framework of risk-based decision-making to perchlorate in drinking water. (Awarded: SRA Annual Meeting Travel Award 2006)
- Conducted a material and energy flow analysis (MEFA) to quantify the overall environmental impact of Bank of America operations, and quantitatively analyze the strategies BOA might adopt to reduce these impacts and achieve sustainability. (Report Publication: "Environmental Footprint Assessment")

Doctoral Research, 08/2000-12/2005

Department of Environmental Sciences and Engineering, School of Public Health, University of North Carolina at Chapel Hill
Research advisor: Dr. Douglas J. Crawford-Brown

- Dissertation topic: "**A framework of Risk-Based Decision Making by Characterizing Variability and Uncertainty Probabilistically: Using Arsenic in Drinking Water as an Example**".
- Conducted risk assessment for arsenic in drinking water.
- Conducted theoretical analysis on the variability and uncertainty issues of risk assessment.
- Conducted a meta-analysis to improve dose-response assessment.
- Conducted analytical and numerical analysis to build a new framework of risk-based decision-making which can be applied coherently across the regulation decisions for different contaminants.
- Presented in conferences: APPAM (2004), SRA (2004, 2005 and 2006), DESE Seminar (2005), CEP Symposium on Safe Drinking Water (2006).
- Awarded: SRA Annual Meeting Student Travel Award (2004 & 2005), UNC-CH Graduate School Travel Grants (2004), UCIS Doctoral Research Travel Awards (2002).

Master's Research

School of Forestry and Environmental Studies, Yale University, 08/1999 - 06/2000
Research advisor: Dr. Xuhui Lee

- Master's project: "**Forest Stand Dynamics and Carbon Cycle**".
- Research project: "Monitoring Forest CO_2 Uptaking"
- Used remote sensing (ERMapper) to investigate the role of forest in the uptake of CO_2.
- Awarded from Teresa Heinz Scholars for Environmental Research Program (2000) and Klemme Award (1999).

Graduate Institute of Environmental Engineering, National Taiwan University, 06/1996 - 06/1998
Research advisor: Dr. Shang-Lien Loh

- Master's thesis: "**The Loads of Air Pollutants from Urban Areas on a Neighboring Dam and its Water Quality**"
- Research Projects: "Research on Air Pollutant Deposition in Urban Areas" and "the Fate and Flow of Recyclable Materials"
- Used Gaussian's Dispersion model (ISC3) to investigate the loads of air pollutants on dam water.

TEACHING EXPERIENCE

Lecturer

Department of Environmental Studies, California State University at Sacramento

- Environmental Politics and Policy, Fall 2011

Department of Geological & Environmental Science, California State University at Chico

- Environmental Risk Assessment, Spring 2009 & 2010
- Applied Ecology, Spring 2008
- Pollution Ecology, Fall, 2007

Department of Geography & Planning, California State University at Chico

- Seminar in Applied Geography & Planning – Environmental Regulation and Policy, Fall, 2007

Department of Forestry and Environmental Resources, North Carolina State University

- Environmental Regulation, Fall, 2006

Teaching Assistant

Department of Environmental Sciences and Engineering, UNC-Chapel Hill
- Environmental Risk Assessment, Spring, 2002
- Introduction to Environmental Science, Fall, 2001
- Analysis and Solution of Environmental Problems, Fall, 2001

Lab Instructor

Department of Environmental Sciences and Engineering, UNC-Chapel Hill
- Biology for Environmental Science, Fall, 2000

Graduate Institute of Environmental Engineering, National Taiwan University
- Water Quality Analysis, Fall, 1997

AWARDS and HONORS

- CSU-Chico BBS Faculty Travel Funds, 2007
- Member of Society of Risk Analysis (SRA), 2006-2008
- SRA Annual Meeting Student Travel Award, 2004-2006
- UNC-CH Graduate School Travel Grants, 2004
- Member of Association for Public Policy Analysis and Management (APPAM), 2004-2005
- UCIS Doctoral Research Travel Awards, 2002
- Graduate Student Teaching and Research Assistantships, 2000-2005
- Teresa Heinz Scholars for Environmental Research Program, 2000
- Yale Forestry & Environmental Studies, Klemme Award, 1999

DECLARATION OF
James Ackerman

I, James Ackerman, declare as follows:

1. I am employed by the California Energy Commission as an Engineering Geologist.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on **water resources and solid waste** for the **Willow Rock Energy Storage Center** based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

   I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: June 30, 2025 Signed: 

At: Sacramento, California

CALIFORNIA ENERGY COMMISSION

JAMES
ACKERMAN

Education & Certifications

- Bachelor of Science, Geology, California State University Sacramento (1988)
- OSHA HAZWOPER and 8-hour OSHA HAZWOPER supervisor training
- Qualified SWPPP Developer (QSD) #GO6493

Overview

Mr. Ackerman has over 30 years of professional experience in the fields of energy resource exploration, geotechnical consulting, environmental consulting and construction. His Professional career began as a well-site geologist (commonly known as a mudlogger) working on natural gas exploration in the Sacramento Valley and geothermal resource exploration in the California Geysers area of Lake County, California and Kyushu, Japan. Mr. Ackerman's three years of geotechnical experience included assessing geologic hazards in the greater South San Francisco Bay Area following the Loma Prieta earthquake and slope stability study of an embankment that failed during construction of a new landfill cell.

His sixteen years of environmental consulting experience involved all aspects of implementing and managing remedial investigation and soil/groundwater remediation at military, commercial and industrial facilities. Constituents of concern investigated/remediated include total petroleum hydrocarbons (TPH), chlorinated solvents, poly-aromatic hydrocarbons (PAHs), metals, pesticides, chemical weapons degradation compounds, perchlorate and unexploded ordinance (UXO) compounds in soil and/or groundwater.

Most recent State service includes applying my professional skills at the California Geologic Energy Management Division (Cal-GEM) to assist in the implementation of well stimulation treatment regulation and the California Energy Commission (CEC) to assess the environmental impacts of proposed power plant projects during the certification process.

Experience

California Energy Commission – Engineering Geologist - 2022 to Present

To support the CEC process to certify prospective power plants, assess the potential environmental impacts with respect to water resources, solid waste, utility services, geologic hazards, and paleontological resources.

California Geologic Energy Management Division - Engineering Geologist – 2015 to 2022

As part of the Cal-GEM SB-4 Unit staff to implement well stimulation treatment (WST) regulation in California, took the technical lead in developing the form and process for oil & gas operators to disclose WST data in a manner that would facilitate creation of a reliable database. Prepared guidance documents for operator submission of the disclosure form and supporting analytical data.

Worked with technical, IT and management staff to prepare a searchable website for WST disclosure data. The Well Stimulation Disclosure Website team was recognized by the DOC with a Superior Accomplishment Award for achieving the goal of creating a searchable website prior to the January 1, 2016, deadline.

Also participated with other WST Unit staff to provide technical support during the design of the WellSTAR tracking and reporting system.

Reviewed online disclosure and analytical data forms submitted by operators into the WellSTAR system. Work with operators to resolve errors in on-line forms and uploaded documents. As part of the WST permit application evaluation, review operator's analysis of the presence of faults in the 5xADSA and the risk of fluid migration out of the well stimulation zone. Review operator provided geologic evaluations, structural contour maps and cross-sections. Evaluate queried disclosure data for quality and accuracy in support of preparing the WST Program Annual Report.

Turn-Key Construction Services, Inc - Senior Geologist – 2010 to 2014

Supplied office support for construction projects by preparing pre-construction documents including work plans, health & safety plans, quality control plans and storm water pollution prevention plans. Coordinated project logistics with field staff in remote locations. Obtained encroachment permits and provided submittals on construction projects. Assisted in tracking budgets on large construction projects. Prepared proposals for various construction and demolition projects.

While serving as Quality Control (QC) Manager on a project to restore the embankment at Success Dam for the USACE, monitored work quality with respect to project specifications and used the Quality Control System to (QCS) to track construction progress. Served as QC Manager on numerous infrastructure construction projects at both Sierra Army Depot and Fallon NAS. Served as Site Safety Officer for installation of groundwater treatment system conveyance pipeline at the PG&E Hinkley facility and the removal action at a future school site near Marysville, California.

In support of a voluntary removal action at a former manufactured gas plant (MGP) site for PG&E during 2012, monitored dust, noise and VOCs; and sampled air particulates for PAH concentration to evaluate the risk to surrounding residents. Collected confirmation soil samples to verify completion of soil remediation. Inspected BMPs and storm water discharge in accordance with the SWPPP to comply with the SWRCB Construction General Permit.

Jacobs Engineering - Project Geologist/Project Manager – 2004 to 2010

Provided technical expertise and project/task management for various DOD projects. During 2010, managed the USACE task order to implement the groundwater monitoring program at the Deseret Chemical Depot facility in Utah. This project included tasks to improve the groundwater monitoring program as more appropriate for a federal facility on the 2005 BRAC list. As part of a hydrogeologic assessment, statistical analysis was used to demonstrate arsenic and molybdenum in groundwater were naturally occurring and could be removed from the list of analytes for groundwater monitoring. Operating out of a home office coordinated a multi-disciplined team from various offices under different time zones to complete the various tasks associated with this project.

As part of the Jacobs team implementing the Long Term Groundwater Sampling Program (LTGSP) to remediate TCE from groundwater at the former Castle AFB Superfund site, managed the task of groundwater treatment plant sampling/reporting and semiannual water level measurement of 220 wells, coordinated fieldwork, managed groundwater database, prepared monthly O&M reports of groundwater treatment plants, assisted in preparing semiannual and annual reports, and attended quarterly Remedial Project Manager (RPM) meetings. As of the end of 2009, approximately 2,730 lbs. of TCE had been removed from groundwater at Castle Airport since groundwater remediation began in 1997. As an example of fate and transport analysis, correlated the sporadic increase of TCE concentration observed in one monitoring well with the periodic use of a nearby auxiliary municipal water supply well. The program was continually evaluated and reduced to minimize cost to the client. In fall 2009, coordinated staff and subcontractors to decommission 64 monitoring well sites and 17 SVE sites in optimizing soil/groundwater remediation at Castle Airport.

During the summer of 2007, managed a project to clean and inspect (8) 60K gallon JPTS fuel USTs at Beale AFB to comply with CCR Title 23 requirements.

Other project work at the Castle Airport included providing technical support on a performance-based task order to remediate and close 10 fuel release sites; conducted soil sampling to assess effectiveness of existing SVE system, installed additional multi-screened SVE wells to optimize vapor recovery, prepared monthly O&M reports monitoring remediation progress, conducted soil sampling to assess the completion of remediation, assisted in preparing closure reports. During fall 2006, coordinated and implemented closure of ten existing or former UST/AST/ OWS sites by removal, soil excavation or investigation.

Overseas work in the PAC RIM included conducting a soil/groundwater investigation of a POL facility at Kunsan AB in Korea. Responsibilities to implement this project included procuring/shipping equipment and supplies, meeting with Base staff and Korean environmental agencies regarding project implementation, conducting fieldwork, evaluating analytical results and site geology with respect to off-base migration of petroleum compounds, and preparing the soil/groundwater investigation report. Based on the results and recommendations of the investigation report, the Air Force implemented a plan to remediate petroleum compounds in groundwater beneath Korean land adjacent the base, thereby improving community relations.

In addition to supplying technical expertise and managing projects, aided the Regional Program Manager in developing DOD, State and municipal business opportunities for the Sacramento office. Attended job walks for RFPs solicited by the USACE on the SAC ERS contract. Assumed lead and supporting roles on various AFCEE, AFCESA and USACE proposal efforts.

Risk-Based Decisions, Inc. - Project Geologist – 2002 to 2003

Provided technical expertise on behalf of a firm inexperienced with field work by implementing and conducting soil/soil gas/groundwater investigations of chlorinated solvent releases at commercial properties in support of litigation. While preparing a soil/groundwater investigation report for PCE release from a dry-cleaning facility, determined that PCE was primarily affecting the top of the deeper target aquifer, based on an evaluation of previous groundwater monitoring data. This information was used in focusing subsequent groundwater investigation. Conducted random soil sampling as part of the PEA process to assess potential future school sites. Perform groundwater monitoring of a petroleum hydrocarbon plume at a retail fueling facility in the environmental sensitive region of South Lake Tahoe.

Augeas Corporation - Project Geologist/Project Manager – 2000 to 2002

Managed projects, conducted site investigations, evaluated aquifer characteristics, and implemented groundwater remediation associated with the environmental compliance program for retail fuel facilities under California State UST Cleanup Fund (USTCF) reimbursement protocols. Reviewed and approved groundwater monitoring reports prepared by staff geologist. Brief clients on project progress and aid them with reimbursement claims process. Maintained good rapport with State regulatory representatives regarding scheduling for work plan submittals, remedial investigation and progress of remediation efforts. Constructing a GAC groundwater treatment system with other team members at a retail fueling facility and obtained a NPDES permit to discharge treated water into a nearby creek.

Anderson Consulting Group - Project Geologist/Project Manager – 1999 to 2000

Managed projects and conducted site investigations of various commercial properties, industrial facilities, municipal roadways, and LUST sites. Conducted remedial investigation at an explosive manufacturing facility to determine the lateral and vertical extent of perchlorate in groundwater. Oversaw soil remediation in preparation of expansion construction at a high school. Used non-parametric statistical analysis to evaluate groundwater analytical data from a former land impoundment site to select monitoring parameters.

Terranext/ERM-West - Project Geologist/Project Manager – 1994 to 1998

Coordinated the UST removal program for Union Pacific Railroad Company (UPRR) in the California/Oregon region to comply with RCRA Subtitle I UST removal deadline of December 1998. Managed projects and conducted field work associated with UST fuel release sites and Phase II investigations at UPRR properties. Conducted remedial investigations, supervised soil remedial excavations, and administered groundwater monitoring of (7) LUST sites in support of Southern Pacific Transportation Co. involvement with the I-880 freeway replacement project.

Harding Lawson Associates - Staff Geologist– 1994

Supervised the installation of temporary well points and the collection of Hydro-Punch grab groundwater samples in support of groundwater characterization at the Hunter's Point Naval Shipyard Superfund site.

Golder Associates Inc. - Staff Geologist– 1993

Served as technical lead to monitor quality control of clay liner construction for a new cell at Kirby Canyon Landfill, Morgan Hill, California. To support the slope stability study of a failed embankment during the construction of a new cell at Altamont Landfill, assisted in logging trenches, oversaw the installation of pressure transducer piezometers and evaluated joint orientation using the DIPs software. As a technician, monitored quality control for construction of clay liner, HDPE/geotextile membranes and leachate collection system.

Harding Lawson Associates - Staff Geologist– 1991-1992

Supervised drilling crews advancing soil borings and installing monitoring wells, collected samples and logged soil cuttings to characterize soil and groundwater as part of the Fort Ord Super Fund site remedial investigation. Constituents of concern at various sites included petroleum compounds, VOCs, SVOCs, pesticides and explosives. All work was conducted under CERCLA regulation with oversight by local, state, and federal agencies.

Earth Systems Consultants - Staff Geologist– 1989-1991

Provided field technical assistance in evaluating geologic hazards for residential development or to secure FEMA funding for damaged residents following the Loma Prieta earthquake in the South Bay Area, South Santa Clara Valley and the Santa Cruz Mountains. Served as field technical lead and prepared reports for foundation and pavement design investigations.

Energylog – Well Site Geologist– 1988-1989

While drilling for either geothermal or natural gas energy resources, produced a record or "mudlog" of lithology, physical parameters, and gas concentration, versus depth drilled to aid further exploration. Performed chemical abatement of hydrogen sulfide gas produced during geothermal drilling operations when emissions exceeded regulatory thresholds. Project locations included the Geysers (Lake County), Northern Sacramento Valley and Coso Junction in California, and Kyushu, Japan.

DECLARATION OF
Jamie Miner

I, Jamie Miner, declare as follows:

1. I am employed by the California Energy Commission as a Senior Biologist.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on **Biological Resources** for the **Willow Rock Energy Storage Center** based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

   I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 7/8/2025 Signed: Jamison Miner

At: Sacramento, California

Jamison Miner

SENIOR BIOLOGIST/ENVIRONMENTAL

PROFILE: Jamison Miner has 20 years of experience with Aspen conducting CEQA/NEPA analysis, providing technical writing support, managing groups of environmental monitors, conducting various surveys for sensitive biological resources, and serving as a Lead Third-Party Environmental Compliance Monitor on numerous projects throughout southern California. Mr. Miner has extensive experience with preparing a variety of CEQA/NEPA documents, including EIR/EIS, IS/MND, EA, BE/BA, and BA reports. He is also well versed in regulatory agency permitting processes including California Department of Fish and Wildlife (CDFW) Sections 1600 and 2081, US Fish and Wildlife Service (USFWS) Sections 7 and 10, Regional Board Section 401, and US Army Corps of Engineers (USACE) Section 404. Mr. Miner's monitoring experience covers a wide range of transmission line, renewable energy, flood control, and other major infrastructure projects. Prior to his time at Aspen, Mr. Miner served as an Intern Biologist with the US Bureau of Land Management (BLM) in Wyoming and conducted academic research involving the study of small mammals in northern Thailand.

EDUCATION:

- B.S. Biology, Minors in Chemistry and Geology
- California State University, Fullerton 2006

PROFESSIONAL EXPERIENCE

WILLOW ROCK ENERGY STORAGE CENTER

California Energy Commission, 2025-present

Mr. Miner is one of the primary authors who prepared the biological resources analysis of the Staff Assessment for this 500-megawatt compressed air storage energy facility located within unincorporated Kern County, California. The overall facility would consist of four nominal 130-megawatt power turbine trains, each containing an electric motor-driven air compressor drivetrain, heat exchangers, an air turbine generator, air exhaust stacks, and ancillary equipment. Each train would share a common set of thermal storage tanks, as well as an air storage cavern. Key issues of this project include extensive analysis on potential impacts to western Joshua tree, Crotch's bumble bee, and western burrowing owl. Other important considerations include impacts to special-status plants, desert tortoise, and Mohave ground squirrel.

PRAIRIE SONG RELIABILITY PROJECT

California Energy Commission, 2025-present

Mr. Miner is one of the primary authors preparing the biological resources analysis of the Staff Assessment for this 1,150-megawatt batter energy storage system facility located in the Antelope Valley of northern Los Angeles County, California. The project includes the containerized batter energy storage system, a substation, and associated operations and maintenance buildings. The analysis focuses on potential impacts to Crotch's bumble bee, migratory birds, and other sensitive biological resources.

SODA MOUNTAIN SOLAR PROJECT

California Energy Commission, 2025-present

Mr. Miner is one of the primary authors preparing the biological resources section of the Staff Assessment for this utility-scale solar photovoltaic electrical generating and storage facility located on approximately 2,670 acres of land administered by the Bureau of Land Management in San Bernardino County, California. The main facilities of the project include the solar plant site, a substation and switchyard, and an approximately 300-megawatt

battery energy storage system. The primary issues of this project include construction and operational impacts to desert bighorn sheep. Other considerations include potential impacts to desert tortoise and western burrowing owl, among other sensitive biological resources.

COMPASS ENERGY STORAGE PROJECT

California Energy Commission, 2025-present

Mr. Miner is one of the primary authors preparing the biological resources analysis of the Staff Assessment for this 250-megawatt battery energy storage system facility located in the City of San Juan Capistrano, California. This facility would be composed of lithium-iron phosphate batteries, or similar technology batteries, inverters, medium-voltage transformers, a switchyard, a collector substation, and other associated equipment to interconnect into an existing San Diego Gas and Electric transmission line. Primary concerns of this highly controversial project include impacts to Crotch's bumble bee, southwestern pond turtle, western burrowing owl, along with special-status plants and migratory birds.

FOUNTAIN WIND PROJECT

California Energy Commission, 2025-present

Mr. Miner is serving as a technical expert and supporting author preparing the biological resources analysis of the Staff Assessment for this wind energy generation facility located on approximately 2,855 acres in unincorporated Shasta County, California. The project proposes to construct up to 48 turbines, overhead and underground collector systems, an onsite substation, fiberoptic communication lines, and an onsite switching station. The project analysis includes an evaluation of potential impacts to monarch butterfly, greater sandhill crane, and other migratory birds from turbine collisions. It also assesses potential impacts to biological resources associated with reduced fire-fighting capacity in a very remote and rugged area.

WILDFIRE RISK REDUCTION, RELIABILITY, AND ASSET PROTECTION (WRAP) PROJECT

Western Area Power Administration/Trinity Public Utilities District, 2021-present

Mr. Miner is currently providing technical writing support for this high-profile and controversial project that is intended to reduce fire risk and maintain critical electrical services in Trinity County, California. The project is located within areas administered by a variety of land managers, including the Bureau of Land Management, the US Forest Service, and the Bureau of Reclamation.

DIABLO CANYON DECOMMISSIONING PROJECT

County of San Luis Obispo, 2021-present

Mr. Miner is currently providing technical writing support for this high-profile and controversial project that includes the decommissioning (withdrawal from service and make inoperable) and dismantlement (break apart, decontaminate, and remove) the majority of the existing Diablo Canyon Power Plant in San Luis Obispo County. Mr. Miner served as the lead author of the Biological Resources section of the Draft EIR.

SCATTERGOOD ENERGY STORAGE PROJECT

County of Los Angeles Department of Water and Power, 2021-present

Mr. Miner is currently providing technical writing support for this project that includes the installation of Liquid Air Energy Systems (LAES) at two sites in the City of Los Angeles. He was the Lead Author of the Biological Resources Section in preparing the IS.

SAN ONOFRE NUCLEAR GENERATING STATION (SONGS) UNITS 2 & 3 DECOMMISSIONING PROJECT
California State Lands Commission, 2020-present

Mr. Miner is currently serving as the Lead Third-Party Environmental Compliance Monitor on behalf of the CSLC for this project that includes the decommissioning and demolition of onshore and offshore facilities and equipment at Southern California Edison's San Onofre Nuclear Generating Station located near San Clemente, California. His responsibilities include ensuring compliance with regulatory conditions across all environmental issue areas and acting as the liaison between the CSLC and project personnel.

MCCULLOUGH-VICTORVILLE LINES 2 & 3 TRANSMISSION PROJECT
County of Los Angeles Department of Water and Power, 2020-present

Mr. Miner is currently providing management support for this project that includes upgrades to an existing 165-mile transmission line between Victorville, CA and Henderson, NV. Mr. Miner served as the Project Coordinator and field contact for LADWP during preliminary geotechnical investigations. He also prepared the Final Geotechnical Monitoring Report.

LITTLEROCK DAM AND RESERVOIR RESTORATION PROJECT
Palmdale Water District/US Forest Service, 2007-2010 and 2020-present

Mr. Miner is currently serving as the assistant to the Deputy Project Manager and a Project Biologist for the sediment removal and restoration activities associated with the Littlerock Dam and Reservoir on the Angeles National Forest. Mr. Miner was a Co-Author of the Draft EIR and BA. He also was a member of a small group of Wildlife Biologists that conducted surveys for arroyo toad and nesting birds. Mr. Miner served as a Biological Monitor during early phases of construction of the project.

BARREN RIDGE RENEWABLE TRANSMISSION PROJECT LINES 1, 2, AND 3
County of Los Angeles Department of Water and Power, 2015-present

Mr. Miner is managing a team of up to 25 biological specialists and construction monitors conducting preconstruction surveys, protocol-level surveys and clearance surveys for desert tortoise, nest monitoring, and reporting in support of this multi-phased 75-mile, 230-kilovolt transmission line project that crosses the Mojave Desert and Angeles National Forest in Kern and Los Angeles Counties, California. Mr. Miner works closely with LADWP staff to support regulatory agency coordination. Some of the key issues on this project include potential impacts to western Joshua tree, Crotch's bumble bee, California red-legged frog, desert tortoise, Mohave ground squirrel, and desert tortoise, along with numerous Bureau of Land Management and US Forest Service sensitive species.

THOUSAND PALMS FLOOD CONTROL PROJECT (FORMERLY WHITEWATER RIVER FLOOD CONTROL PROJECT)
Coachella Valley Water District/US Army Corps of Engineers, 2009-present

Mr. Miner is currently providing technical expertise and writing support for this project that includes the construction of an approximately 6-mile long series of new flood control structures in Riverside County. Mr. Miner recently completed the Section 404(b)1 application report for submittal to the USACE. Prior to that, Mr. Miner was a Co-Author of the EA/MND and BA and conducted surveys for rare plants and burrowing owls.

ATHOS I & II RENEWABLE ENERGY PROJECTS
US Bureau of Land Management, 2018-2022

Mr. Miner served as the Lead Third-Party Environmental Compliance Monitor on behalf of the BLM for this project that includes the construction of approximately seven miles of new 220-kV transmission line associated with the Athos Solar Project on BLM lands in Riverside County. His responsibilities included ensuring compliance with regulatory conditions across all environmental issue areas, supervising Aspen's third-party monitoring

efforts, and acting as a liaison between the BLM and project personnel. Mr. Miner also prepared several Categorical Exclusion application packages and served as the Biological Monitor during preliminary geotechnical drilling.

ALTA-MESA WIND
Private Client, 2021

Mr. Miner provided technical writing support for this project that includes repowering an existing 27-MW wind facility in Riverside County. He prepared a Categorical Exclusion application package for submittal to the BLM.

COGSWELL RESERVOIR SEDIMENT REMOVAL PROJECT
County of Los Angeles Department of Public Works, 2021

Mr. Miner provided technical writing support for this project that includes the removal of 2.5 MCY of sediment from Cogswell Reservoir on the Angeles National Forest. He was the Lead Author of the HMMP and Water Quality Monitoring Plan and developed the Worker Environmental Awareness Program to be distributed to all project personnel.

WILBER-ELLIS COMPANY YOLO PROJECT
Yolo County Planning Division, 2021

Mr. Miner provided technical writing support for this project that included the consolidation of two existing agricultural retail facilities into a single facility in Yolo County. Mr. Miner was the Lead Author of the Biological Resources Section of the IS/MND.

EL DORADO-LUGO-MOHAVE SERIES CAPACITOR PROJECT
California Public Utilities Commission, 2020-2021

Mr. Miner served as the Lead Third-Party Environmental Compliance Monitor on behalf of the CPUC for this project that includes the construction of two new 500-kV mid-line series capacitors and associated infrastructure between the City of Hesperia and the California/Nevada border. His responsibilities included ensuring compliance with regulatory conditions across all environmental issue areas, supervising Aspen's third-party monitoring efforts, and acting as the liaison between the CPUC and project personnel.

EAST LOS ANGELES SUSTAINABLE MEDIAN STORMWATER CAPTURE PROJECT
County of Los Angeles Department of Public Works, 2020-2021

Mr. Miner coordinated and conducted nesting bird surveys for this project that included the construction of low-impact development features used to capture and treat approximately 232 acre-feet per year of stormwater runoff in the City of Los Angeles.

WEST OF DEVERS TRANSMISSION UPGRADE PROJECT
California Public Utilities Commission, 2017-2021

Mr. Miner served as a Third-Party Environmental Compliance Monitor on behalf of the CPUC for this multi-component upgrade project that includes the replacement of approximately 147-miles of 220-kV transmission line with new components, upgrades to seven substations, and modifications and installations to associated distribution and telecommunications infrastructure in western Riverside County and on lands administered by the BLM. His primary duties included conducting routine inspections for compliance across all environmental issue areas and preparing status reports for public posting by the CPUC.

BEACON PHASE II ENERGY STORAGE PROJECT
County of Los Angeles Department of Water and Power, 2020

Mr. Miner provided technical writing support for this pilot project that included the construction and use of a long-duration air liquefaction energy storage system in Kern County. Mr. Miner was the Lead Author of the Biological Resources Section of the IS/MND.

HASKELL ROAD CROSSINGS PROJECT
County of Los Angeles Department of Water and Power, 2020

Mr. Miner provided technical writing support for this project that included analyzing impacts at several road crossings in the City of Santa Clarita. Mr. Miner was the Lead Author of the Hydrologic and Biological Resources Evaluation Report.

SANTA ANA SUCKER TRANSLOCATION SITE EVALUATION
San Bernardino Valley Municipal Water District, 2020

Mr. Miner provided technical writing support for this project that included analysis of various translocation sites for Santa Ana sucker. He was the Lead Author of several Phase I and II Reports pursuant to USFWS accepted protocols for Santa Ana sucker relocation efforts in the San Bernardino National Forest.

SAN DIEGO PIPELINE PROJECT
Metropolitan Water District, 2020

Mr. Miner coordinated preconstruction surveys and biological monitoring for this project that include repairs to a MWD water pipeline in the City of Temecula. Mr. Miner also prepared the Final Monitoring Report.

230 KV ROAD MAINTENANCE PROJECT
Metropolitan Water District, 2019-2020

Mr. Miner served as the Lead Biological Monitor for this project that included the replacement of approximately 8-miles of 230 kV transmission line near Boulder City, NV. His duties included performing preconstruction surveys for sensitive biological resources, including desert tortoise, and conducting periodic inspections during construction. He also prepared the Final Monitoring Report.

COLORADO RIVER AQUEDUCT CONDUIT STRUCTURAL PROTECTION PROJECT
Metropolitan Water District, 2019-2020

Mr. Miner provided technical writing support for this project that included major repairs at 24 locations along the CRA in Riverside County. Mr. Miner was the Lead Author of the Biological Resources Section of the IS/MND.

CRA EMERGENCY REPAIRS
Metropolitan Water District, 2018-2020

Mr. Miner served as the Lead Biologist and liaison with MWD for this project that included repairs along approximately 20-miles of water pipeline in Riverside County. Mr. Miner led a small group of Biological Monitors during construction of the project that was located within occupied desert tortoise habitat. He also prepared the Final Monitoring Report.

VALLEY SOUTH SUBTRANSMISSION PROJECT
California Public Utilities Commission, 2018-2019

Mr. Miner served as a Third-Party Environmental Compliance Monitor on behalf of the CPUC for this project that included the construction of a new 12-mile 115 kV subtransmission line and upgrades to associated facilities. His primary duties included conducting routine inspections for compliance across all environmental issue areas and preparing status reports for public posting by the CPUC.

BALD EAGLE MONITORING PROJECT
Metropolitan Water District, 2018

Mr. Miner served as a Biological Monitor for this project which included the transport and installation of new chlorination tanks to MWD's Gene Facility near Parker Dam, AZ. Specifically, Mr. Miner was responsible for monitoring an active bald eagle nest and assessing potential effects and providing avoidance strategies during the transport activities.

SAN GORGONIO RIVER PIPELINE REPLACEMENT PROJECT
City of Banning, 2017-2018

Mr. Miner served as the Lead Biological Monitor for this project that included the replacement of approximately 6.5-miles of water pipeline in the City of Banning. Prior to construction, Mr. Miner performed nesting bird surveys. He also prepared the Final Monitoring Report.

VINE SUBSTATION PROJECT
California Public Utilities Commission, 2017

Mr. Miner served as a Third-Party Environmental Compliance Monitor on behalf of the CPUC for this project that included the construction of a new substation, relocation of 12 kV distribution circuits, and associated upgrades to telecommunications facilities in the City of San Diego. His primary duties included conducting routine inspections for compliance across all environmental issue areas and preparing status reports for public posting by the CPUC.

AT&T FIBER OPTIC CABLE REPLACEMENT PROJECT
US Bureau of Land Management, 2016-2017

Mr. Miner served as the Third-Party Environmental Compliance Monitor on behalf of the BLM for this project that replaced approximately 88 miles of fiber optic cable in the Mojave Desert. His responsibilities included monitoring for environmental compliance during the trenching and plowing activities associated with cable installation and direct coordination with BLM management. Mr. Miner submitted weekly reports updating BLM management on construction progress and compliance status.

TEHACHAPI RENEWABLE TRANSMISSION LINE PROJECT
California Public Utilities Commission/US Forest Service, 2007-2009 & 2013-2015

Mr. Miner served as a Third-Party Environmental Compliance Monitor on behalf of the CPUC for this project that included the new construction and upgrades of over 170 miles of 500/220/66 kV transmission lines across multiple jurisdictions in southern California. It also included a precedent in constructing approximately 3.5-miles of underground 500-kV transmission line in the City of Chino Hills. Prior to construction of the project, Mr. Miner provided technical writing support and field expertise during the CEQA/NEPA and permitting processes. Mr. Miner was the Lead Author of the USFS Riparian Conservation Area (RCA) Report that set a precedent for linear projects on USFS lands in southern California. He also was the Co-Author of the Biological Resources Section of the Draft EIR, BE/BA, BA, and MIS Report. Mr. Miner served on a small team of Wildlife Biologists that performed surveys for desert tortoise, burrowing owls, nesting birds, and riparian habitat assessments.

DESERT HARVEST SOLAR PROJECT
Private Client, 2013

Mr. Miner served as the Biological Monitor during preconstruction geotechnical studies for this proposed project that included the construction of a new 150-MW solar facility in Riverside County. Mr. Miner was responsible for providing guidance to the geotechnical crews in avoiding any impacts to desert tortoise and other sensitive biological resources.

DEVERS-PALO VERDE 2 TRANSMISSION PROJECT
California Public Utilities Commission, 2011-2013

Mr. Miner served as a third-party environmental compliance monitor on behalf of the CPUC for this project that included the construction of a new 147-mile 500 kV transmission line, two new substations, and associated facilities along the I-10 corridor in Riverside County and on BLM and NFS lands. His primary duties include conducting routine inspections for compliance across all CEQA and NEPA issue areas and preparing status reports for public posting by the CPUC. Mr. Miner also served as the lead avian biologist for the CPUC. Duties under this role included monitoring nesting bird activity and determining consistency with observations and reports submitted by SCE biologists.

LINCOLN AVENUE WATER COMPANY PROJECT
Lincoln Avenue Water Company, 2009-2013

Mr. Miner provided technical writing support in the preparation of the EA, BE, and MIS Report for this project that included the repairs to a damaged water pipeline on the Angeles National Forest. He also facilitated the process to obtain a renewal for the US Forest Service Special Use Permit and long-term permits from the water agencies by preparing an Operation and Maintenance Plan. Additionally, Mr. Miner served as a Biological Monitor during construction and as a liaison between Lincoln Avenue Water Company and the various regulatory agencies.

CABAZON COMMUNICATION TOWER NESTING BIRD MONITORING
Private Client, 2012

Mr. Miner served as the Avian Monitor during preconstruction studies for this project that included repairs to an existing telecommunications tower in the City of Cabazon.

MORGAN HILLS WIND ENERGY PROJECT
Kern County Planning Department, 2011

Mr. Miner provided technical writing support in the preparation of the EIR and HMMP for this project that included the construction of a new 230-MW wind facility in Kern County. He also served with a small team of biologists that conducted reconnaissance-level biological surveys.

DOWNS SUBSTATION EXPANSION PROJECT
California Public Utilities Commission, 2011

Mr. Miner conducted reconnaissance-level biological surveys and provided technical writing support during the preparation of the IS/MND for this project that included the expansion of the existing substation from 33/12 kV to 115/12 kV, the rerouting of an existing 115 kV subtransmission line, and the installation of a 58-mile fiber optic telecommunication line from the City of Ridgecrest.

VIRGINIA COLONY DETENTION BASIN PROJECT
Ventura County Watershed Protection District, 2011

Mr. Miner provided technical writing and GIS support for this project that included the new construction of a 200-acre detention basin in the City of Moorpark. Mr. Miner Co-Authored the Biological Resources Technical Report.

SANTA ANA RIVER MAINSTEM PROJECT
US Army Corps of Engineers, 2010-2011

Mr. Miner provided technical writing support for this project that includes multiple flood control improvements along the Santa Ana River and throughout Prado Basin in Orange, Riverside, and San Bernardino Counties. Mr. Miner was the Lead Author of the Biological Resource Technical Report for the Reach 9, Phase 2A Embankment

and the Prado Reach 9 components and the Co-Author of the EA for the Reach 9, Phase 2 Embankment and the BA and HEP Analysis for the Prado Reach 9 components of the project.

SEVEN OAKS DAM WATER CONSERVATION PROJECT
US Army Corps of Engineers, 2010-2011

Mr. Miner provided technical writing support for this project that examined the feasibility of seasonal storage for water conservation purposes and used that baseline data to perform a comprehensive study of the expanded water conservation above and beyond seasonal storage at Seven Oaks Dam in San Bernardino County. Mr. Miner Co-Authored the Biological Resources Section of the EA/MND.

SANTA PAULA RIVER SEDIMENT REMOVAL PROJECT
US Army Corps of Engineers, 2009-2011

Mr. Miner served as a Biological Monitor and technical writer for this project that included the removal of approximately 200,000 cubic yards of accumulated sediment along the Santa Paula River in the City of Santa Paula. The stretch of Santa Paula River is a known migratory pathway for a known federally endangered southern California steelhead DPS. In addition to providing biological monitoring, Mr. Miner conducted translocation of Santa Ana sucker and water quality analyses. He also prepared final Water Quality Monitoring and Smolt Out Reports.

TOPAZ SOLAR FARM
County of San Luis Obispo, 2010

Mr. Miner performed a GIS analysis to support the preparation of the EIR for this 550 MW solar facility in San Luis Obispo County. Mr. Miner's data was used to determine impacts and develop mitigation strategies for the federal- and state-listed San Joaquin kit fox.

EL CASCO SYSTEM PROJECT
California Public Utilities Commission, 2009-2010

Mr. Miner provided technical writing support for this project that included upgrades to 15-miles of an existing 115-kV transmission line, construction of a new substation, and installation of fiber optic cable. Mr. Miner was the Lead Author of the Biological Resources Section of the EIR.

CALIFORNIA VALLEY SOLAR RANCH
County of San Luis Obispo, 2009-2010

Mr. Miner provided GIS technical support for this project that included the construction of a new 250 MW solar facility in San Luis Obispo County. Mr. Miner developed data that was used to evaluate impacts and develop mitigation strategies for giant kangaroo rat and San Joaquin kit fox.

PACIFIC WIND ENERGY PROJECT
Kern County, 2009-2010

Mr. Miner provided technical writing support in the preparation of the EIR for this project that included the construction of a new 250-MW wind facility in Kern County.

CALIFORNIA RIVER PARKWAYS TRAILHEAD PROJECT
Ventura County Watershed Protection District, 2009-2010

Mr. Miner provided technical writing support for this project that included the development of a rustic parking lot and trailhead and upgrade of existing trails along the Ventura River in Ventura County. Specifically, he conducted reconnaissance-level field surveys and co-authored portions of the Biological Resources section of the IS/MND.

ALL VALLEY'S RV STORAGE BIOLOGICAL MONITORING
Private Client, 2009

Mr. Miner provided Biological Monitoring support for this project that included the construction of an approximately 10-acre new storage facility.

SAN ANTONIO CREEK GIANT REED REMOVAL PROJECT
Ventura County Watershed Protection District, 2008-2009

Mr. Miner provided technical writing support and field expertise for this project that included the removal of invasive giant reed at several locations along San Antonio Creek and its tributaries in the Ojai Valley. Mr. Miner Co-Authored the Biological Resources Section of the IS/MND and performed field studies to verify infestation areas.

ANF02 VEGETATION MANAGEMENT
US Forest Service, 2007-2009

Mr. Miner provided technical writing support and expertise for this project that included fire analysis and vegetation management at several locations on the Angeles National Forest. Mr. Miner reviewed and updated a collection BE/BAs.

MURRIETA CREEK FLOOD CONTROL PROJECT
US Army Corps of Engineers, 2007-2009

Mr. Miner provided technical expertise and guidance maintaining compliance with various water regulatory permits for this project that included the restoration of over six miles of riparian habitat in the City of Murrieta. Mr. Miner reviewed and submitted Water Quality Reports and Restoration/Revegetation Plans and provided support during all field studies, including water quality analysis and surveys for sensitive plants and wildlife.

BORDER CHECKPOINT EXPANSION PROJECT
US Army Corps of Engineers, 2008

Mr. Miner provided technical writing support for this project that included the construction and expansion of administrative office buildings and parking facilities at the San Clemente Border Checkpoint in San Diego County. Mr. Miner was a Co-Author of the BA and the Lead Author of the USACE's Habitat Evaluation Procedure (HEP) document.

MATILIJA DAM ECOSYSTEM RESTORATION PROJECT
US Army Corps of Engineers, 2008

Mr. Miner provided technical writing support and field expertise for this project that includes several components associated with the proposed removal of Matilija Dam in Ventura County. Mr. Miner was the Lead Author of the Biological Resources Technical Report for sites identified for slurry disposal.

HORSETHIEF CREEK-MOHAVE SIPHON ROAD REPAIRS PROJECT
California Department of Water Resources, 2007-2008

Mr. Miner provided technical expertise to support various regulatory permit applications for this project that included the installation of a railroad car bridge crossing near Silverwood Lake in San Bernardino County. Mr. Miner also served on a small team of Wildlife Biologists that conducted several surveys for special-status wildlife, including arroyo toad, two-striped garter snake, and western pond turtles. Further, he served as the Biological Monitor throughout construction of the project and prepared the Final Monitoring Report.

MOORPARK WASTERWATER TREATMENT PLANT STABILIZATION PROJECT

Ventura County Watershed Protection District, 2007-2008

Mr. Miner provided technical support and field expertise for this project that included stabilization repairs to an access road along the Arroyo Simi in the City of Moorpark. Mr. Miner assisted in securing water agency permits from USACE, RWQCB, and CDFG. He also identified and analyzed compensatory mitigation lands and coordinated those efforts with the applicable regulatory personnel. Mr. Miner conducted Biological Monitoring during construction of the project.

LA COLONIA & CONDOR STABILIZATION PROJECT

Ventura County Watershed Protection District, 2007-2008

Mr. Miner provided technical writing support and field expertise for this project that included major bank stabilization repairs at two locations along the Arroyo Simi in the City of Moorpark. He Co-Authored the Biological Technical Report and the HMMP and assisted in securing water agency permits and various permit amendments. Mr. Miner was also a member of a small team of Wildlife Biologists that conducted surveys for sensitive species, including least Bell's vireo, southwestern willow flycatcher, and western pond turtle.

SUNSET SUBSTATION PROJECT

City of Banning, 2007-2008

Mr. Miner provided field expertise and technical writing support for this project that included the construction of a new substation in the City of Banning. Mr. Miner served on a small team of Wildlife Biologists that performed Phase II surveys for burrowing owl. He also was a Co-Author of the Biological Resources Section of the IS and a Lead Author on several preconstruction survey reports for rare plants, burrowing owl, and other sensitive resources.

LIBERTY XXIII RENEWABLE ENERGY POWER PLANT PROJECT

City of Banning, 2007-2008

Mr. Miner provided field expertise and technical writing support for this proposed project that included the construction of a new 15-MW thermal electric power plant in the City of Banning. The plant was planned to be fueled by a mixture of sewage sludge and biomass. Mr. Miner Co-Authored the Biological Resources Section of the Draft EIR and was the Lead Author of the Burrowing Owl Report. He also was a member of a small team of Wildlife Biologists that performed Phase II surveys for burrowing owls.

SOUTH REGION ELEMENTARY SCHOOL NO. 5

Los Angeles Unified School District, 2007-2008

Mr. Miner was the Lead Author of several sections, including the Executive Summary, Introduction, Project Description and Environmental Setting, Alternatives, and Other CEQA Considerations, of the Draft EIR for this controversial project in the City of Huntington Park. Mr. Miner assessed potential impacts and evaluated alternative sites that were addressed during public scoping meetings that he attended as a representative of Aspen. Mr. Miner prepared responses to public comments for the Final EIR and prepared the CEQA Findings of Fact document.

JOINT RED FLAG EXERCISE '06

US Air Force, 2007

Mr. Miner provided technical expertise for this project that included coordination of air and land-based training on BLM lands in Lincoln County, NV. He reviewed and contributed to edits of the EA.

ADDITIONAL AWARDS, TRAINING, COURSES, AND MEMBERSHIPS

- 24-Hour HAZWOPER Certification #39085, ETAC, Anaheim, CA (2019)

- Certificate of Completion: Coachella Valley Air Pollution Control District – Dust Control Training (2017)
- Certificate of Completion: Burrowing Owl Workshop, Elkhorn Slough Training Program (2013)
- Certificate of Completion: Desert Tortoise Council Introduction to Surveying, Monitoring, and Handling Techniques Workshop (2011)
- Certificate of Completion: CNPS Vegetation Rapid Assessment Workshop (2007)
- Avian Power Line Interaction Committee Annual Conference, Sacramento, CA (2007)

DECLARATION OF
Jeanine Hinde

I, Jeanine Hinde, declare as follows:

1. I am employed by the California Energy Commission as Planner II.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on **Alternatives** for the **Willow Rock Energy Storage Center** based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

   I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 07/01/2025 Signed: Jeanine Hinde

At: Sacramento, California

JEANINE M. HINDE

Professional Experience

Planner II 2010 to Present
California Energy Commission, Sacramento, CA
Environmental Office of the Siting, Transmission, and Environmental Protection Division

Generalist skilled in research and analysis and preparing environmental assessments for siting of a variety of power plant projects. Coordinates and authors alternatives analyses for renewable energy projects, including battery storage and geothermal projects, and small power plant exemptions. Analyzes project-related impacts on land use, agricultural resources, and visual resources. Evaluates project conformance with applicable laws, ordinances, regulations, and standards. Prepared the visual resources analysis for the Huntington Beach Energy Project, a 939-MW natural gas-fired plant. Prepared the alternatives analysis for a project to amend the previously approved 500-MW Palen Solar Power Project and change the technology from one renewable solar thermal technology to another. Prepared the alternatives analysis for a proposed 500-MW solar power tower project in the eastern Mojave Desert. Prepared the land use analyses for a 159-MW geothermal power plant in Imperial County and a 174-MW electrical generating plant in Ceres.

Environmental Planner & Assistant Project Manager 2004 to 2009
EDAW-AECOM, Sacramento, CA

Coordinated preparation of environmental studies to satisfy the California Environmental Quality Act (CEQA) and the National Environmental Policy Act and related permitting and regulatory requirements. Contributed to the preparation of regulatory compliance documents for projects addressing flood protection, wastewater management, water quality, habitat restoration, and urban development. As an assistant project manager, contributed to the preparation, technical review, and distribution of a variety of environmental compliance documents for projects that included a levee repair project on the Feather and Yuba Rivers, a levee seepage project on the San Joaquin River near the Sacramento-San Joaquin Delta (Delta), a wastewater treatment plant improvement project in Atwater, and a habitat restoration project adjacent to the middle Sacramento River. As an analyst, prepared environmental impact analyses for resource topics that included land use; agricultural resources; visual/aesthetic resources; public services, utilities and service systems; hazardous materials; recreation; and geology, soils, and mineral resources. Prepared mitigation monitoring and reporting program documents and assisted with fulfilling CEQA noticing and filing requirements.

Environmental Analyst, Independent Consultant 2003 to 2004
Sackheim Consulting, Fair Oaks, CA

Researched and wrote the aesthetics analyses for the CEQA documents on related neighborhood electrical distribution projects in the Natomas and Elkhorn areas of Sacramento. Prepared a similar analysis for a project in Elk Grove. Assisted with the analyses addressing potential impacts on cultural resources and issues related to hazards and hazardous materials.

Environmental Specialist 1986 to 1997
Jones & Stokes Associates, Sacramento, CA

Evaluated impacts on land use, visual resources, and recreation for several state and federal projects, including a water supply management program in the East Bay, a project addressing long-term management of resources in the Delta and Suisun Marsh, and a military operations project at Camp Roberts. Provided technical review and coordinated preparation of report sections prepared by staff, and assisted with research and documentation of required federal, state, and local permits and approvals for inclusion in regulatory compliance plans.

Education

B.A. Geography, California State University, Chico

DECLARATION OF
Kenneth Salyphone

I, Kenneth Salyphone, declare as follows:

1. I am employed by the California Energy Commission as a Program and Project Supervisor in the Siting, Transmission and Environmental Protection Division.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on **Efficiency, Energy and Energy Resources**, **Facility Reliability**, and portions of the **Alternatives** section for the **WILLOW ROCK ENERGY STORAGE CENTER** based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

   I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: July 10, 2025 Signed: Kenneth Salyphone

At: Sacramento, California

CALIFORNIA ENERGY COMMISSION

Kenneth Salyphone

PROFESSIONAL EXPERIENCE:

Program and Project Supervisor
California Energy Commission, Sacramento CA 09/2024 – Present

Mechanical Engineer
California Energy Commission, Sacramento CA 12/2019 – 09/2024

Mechanical Design Engineer, Lead
Micron Technology, Inc., Folsom CA 12/2013 – 12/2020

EDUCATION:

Master of Science in Mechanical Engineering, CSU Sacramento, 2013
Bachelor of Science in Mechanical Engineering, CSU Sacramento, 2010

CERTIFICATION/LICENSE:

Engineer-In-Training (EIT) Certified # 149129

Experience:

- Prepare CEQA analyses of facility design code compliance, noise and vibration, power plant efficiency, generating capacity determination, and power plant reliability aspects of power generation plants and related facilities. Includes evaluating facility design; potential impacts and appropriate mitigation measures; and determining the ability of the facility to comply with applicable laws, ordinances, regulations, and standards.
- Review and evaluate the mechanical engineering and related aspects of equipment as applied to thermal power plants related facilities. Includes the evaluation of system and equipment design, performance and reliability, as well as alternatives to the proposed facility.
- Develop compliance monitoring requirements and verifications related to noise and vibration and facility design to ensure that proposed facilities are properly constructed and operated in accordance with Energy Commission certification requirements.
- Monitor construction and operation of licensed facilities to assure their conformance with licensing requirements.
- Evaluate the efficiency and reliability implications of energy generation, supply, and end use strategies as input energy policy development.
- Evaluate existing and proposed governmental laws, ordinances, regulations, standards, and policies as they pertain to power plant design.
- Evaluate new and existing technologies for jurisdictional determinations.
- Provide expert witness testimony at commission hearings.

DECLARATION OF

Kevin M. DeLano, CA P.G. #10178, M.S.

I, Kevin M. DeLano, P.G., M.S., declare as follows:

1. I am employed by the California Energy Commission as an Engineering Geologist.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on **Geology, Paleontology, and Minerals,** and **Alternatives** for the **Willow Rock Energy Storage Center** based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

   I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 7/09/2025 Signed: Kevin M. DeLano

At: Sacramento, California

Selected Experience

Engineering Geologist (since 2024)

Geo Sciences Unit, Siting, Transmission, and Environmental Planning Division, California Energy Commission

- Perform and write environmental impact assessments for the construction of new power plants and energy storage projects.
- Evaluate geologic hazards that may impact, or be impacted by, project construction and operation,
- Evaluate how project construction may impact geologic, mineral, and paleontological resources of commercial, scientific, and recreational value.
- Research and compile relevant codes, laws, ordinances, regulations, and standards.
- Write conditions of certification to mitigate potential impacts.

Engineering Geologist (2024-2015)

Instream Flow Unit, Division of Water Rights, State Water Resources Control Board, CalEPA

- Watershed science and modeling, outreach, and long-term and emergency flow policy to protect endangered fish.
- Division of Water Rights lead for Ventura River Watershed, Ventura County, CA (2024-2016)
  - Contract manager and technical lead of $2.4 million contract to develop GSFLOW and MT3D-USGS models.
  - Contributing author, and lead technical and accessibility editor, for eight (8) reports, including study plans, geologic analyses, data compilations, and calibration results. Skilled in MS Office and Adobe Acrobat.
  - Organized and evaluated hundreds of boring logs for conceptual geologic model of Upper Ojai, Upper Ventura, and Lower Ventura groundwater basins. Reviewed geologic analysis reports.
  - Managed compilation, QA/QC, and analyses of geology, hydrology, water demand, ecology, and land use datasets in ArcGIS and MS Excel. Compiled datasets and prepared maps in ArcGIS and Illustrator.
  - Executed rigorous outreach plan with seven comment periods. Formed technical advisory committee of local experts.
  - Solved technical and contract management problems while adapting to wildfire, pandemic, and litigation.
  - Lead technical reviewer and comment author of four (4) SGMA Groundwater Sustainability Plans.
  - For litigation mediation, helped write flow policy to protect endangered fish. Briefed State Water Board Chair and Members, executive office, and attorneys.
- Scott River and Shasta River Drought Emergency Regulations, Siskiyou County, CA (2024-2021)
  - Contributing author and lead technical editor for scientific digest and emergency regulation to protect endangered fish on two tributaries to the Klamath River. Wrote geology sections.
  - Designed and led implementation of groundwater local cooperative solution program.
  - Managed and organized drought voicemail and inbox hotlines. Resolved hundreds of calls.
- Other Responsibilities:
  - Acting supervisor of the Instream Flow Unit.
  - Led and trained streamflow gaging crews in South Fork Eel River and Mark West Creek watersheds.

M.S. Graduate Student and Teaching Assistant: Structural Geology and Mapping (2015-2013)

Dept. of Geological Sciences, Central Washington University (CWU)

- Published new detailed geologic mapping, structural studies, and AR^{40}/AR^{39} geochronology of the Black Mountain area, River Springs area, and Volcanic Tableland that constrained the geometry, kinematics, and rates of active faulting in the transition between the eastern CA shear zone and Mina deflection.
- Combined field investigations, ArcGIS, and Illustrator, to complete 1:12000 scale geologic mapping of Pliocene to Quaternary normal faults, igneous rocks, and alluvial deposits of the ~93km^2 Black Mountain area and 1:12000 scale lidar mapping of Quaternary normal faults exposed in the Pleistocene Bishop Tuff of the Volcanic Tableland.
- In Illustrator, drafted present-day and palinspastically restored cross-sections and calculated ~0.5 mm/yr of horizontal extension across the Black Mountain area.

- Drafted composite stratigraphic column that unified the stratigraphy (Mesozoic plutonic basement, Miocene to Pleistocene volcanic rocks) of the Black Mountain and River Springs area.
- Led two-month expedition for data collection in eastern California shear zone.
- Taught undergraduate geology and STEM courses in the field and lab.

Student Engineering Aid (2013-2012)

Office (now Division) of Mine Reclamation, CA Dept. of Conservation

- In ArcGIS, digitized and analyzed 350 mine reclamation plans. Drafted maps for inspections and reports.
- Led office-wide ArcGIS procedure and database upgrade. Trained staff on ArcGIS.

B.S. Senior Thesis: Alaskan Tectonics (2012-2011)

Dept. of Earth and Planetary Sciences, UC Davis

- Collected slickenline data for structural studies of the Denali fault.
- Fixed and rotor-wing supported fieldwork in the Alaskan wilderness.
- Taught undergraduate geology in the field and lab.

NASA Planetary Geology and Geophysics Undergraduate Intern (2010)

Laboratory for Atmospheric and Space Physics, University of Colorado, Boulder

- In ArcGIS and MS Excel, mapped and evaluated intracrater sediments bordering theorized ancient Martian ocean.

Selected Short Courses

Geotechnical Earthquake Engineering (2025)
Borehole geophysics (2020)
United Soil Classification System (2015)
Tripod mounted lidar surveying (2014)

Selected Publications

Author:

K. DeLano, J. Lee, R. Roper, A. Calvert. 2019. *Dextral, normal, and sinistral faulting across the eastern California shear zone–Mina deflection transition, California-Nevada, USA.* Geosphere; 15 (4): 1206–1239. June 2019.

K. DeLano, B. Hynek. *Intracrater Layered Deposits Support Ancient Ocean on Mars [abstract]*. In: Proceedings of the 42nd the Lunar and Planetary Science Conference; 2011 Mar 7-10; The Woodlands, TX. Abstract nr 2636.

Contributing Author, Lead Technical and Accessibility Editor:

Geosyntec Consultants and Daniel B. Stephens & Associates. 2024. *Groundwater-Surface Water Model and Model Documentation Report of the Ventura River Watershed.* Prepared for State Water Resources Control Board and Los Angeles Regional Water Quality Control Board. June 2024.

State Water Resources Control Board. 2024. *Proposed Scott River and Shasta River Watersheds Emergency Regulation: Finding of Emergency and Informative Digest.* California Environmental Protection Agency: State Water Resources Control Board: Division of Water Rights. January 2024.

Education

M.S., Geology, Central Washington University (2015) — Summa Cum Laude, GPA: 3.88

B.S., Geology, University of California, Davis (2012) — Cum Laude, GPA: 3.558, History Minor

Selected Certifications and Awards

- Professional Geologist #10178 (since 2023) – CA Board of Professional Engineers, Land Surveyors, and Geologists
- Vice President (Rank and File) for Collective Bargaining (since 2023) – River City Chapter, PECG
- Superior Accomplishment Award (2022) – State Water Resources Control Board
- Honorable Mention - Best Graduate Student Geologic Map Competition (2016) – Cordilleran Section Meeting, Geological Society of America
- Graduate Scholar of the Year (2015) – Symposium of University Research and Creative Expression – CWU
- Teaching Assistant of the Year (2013-2014) – Dept. of Geological Sciences, CWU
- Graduate Student ASLM Seed Proposal (2014) – National Center for Airborne Laser Mapping

DECLARATION OF
Laiping Ng

I, Laiping Ng, declare as follows:

1. I am employed by the California Energy Commission as an Associate Electrical Engineer.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on **Transmission System Engineering** for the **Willow Rock Energy Storage Center** based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

   I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: July 1, 2025 Signed: *Laiping Ng*

At: Sacramento, California

Laiping Ng
Associate Electrical Engineer

Education:

Master of Science: Electrical Engineering - Power
California State University, Sacramento

Bachelor of Science: Electrical Engineering - Power
California State University, Sacramento

Power Certificate – EPRI

Experience:

April 1999 – Present:

- Review and evaluate electrical transmission system sections of the application to ensure that the transmission engineering aspects of the power plant, switchyards, substations, and the related facilities comply with applicable laws, ordinances, regulations, and standards (LORS).
- Prepare written analysis, which address the issues of the adequacy of proposed projects to meet applicable LORS.
- Perform load flow studies and fault analysis.
- Coordinate with CAISO, WSCC and other regulatory agencies and coordinate with utilities companies in the review and evaluation of the power plant siting process.

May 1991 – April 1999:

- Prepared engineering bid specifications for recommended lighting and HVAC projects. Evaluated contractor bids and recommended contractors to customers. Reviewed RFPs and RFQs. Evaluated, selected, and managed engineering consultants. Administrated and coordinated contracts.
- Designed electrical systems for indoor and outdoor lighting and lighting controls. Assisted in design cooling systems and controls for school buildings and office buildings. Reviewed and checked electrical lighting designs and drawings. Analyzed designs and made recommendations for effective actions.
- Performed facility energy audits and field surveys on schools, offices, hospitals and county jail facilities to identify energy efficiency improvements and cost estimate with respect to lighting and HVAC systems. Inspected lighting and HVAC system equipment installation.
- Worked in a Nonresidential Energy Efficiency Standards development team. Prepared and updated Standards concentrating on interior building illumination and indoor and outdoor flood lighting.

DECLARATION OF
Mark R. Hamblin

I, Mark R. Hamblin, declare as follows:

1. I am employed by the California Energy Commission as an Energy Commission Specialist II.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on **Visual Resources** for the **WILLOW ROCK ENERGY STORAGE CENTER** based on my independent analysis of the Application for Certification and supplements thereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

   I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: June 30, 2025 Signed: Mark R. Hamblin

At: Sacramento, California

CALIFORNIA ENERGY COMMISSION

MARK R. HAMBLIN
Energy Commission Specialist II

Professional Summary:

With nearly 25 years of public service at the California Energy Commission, I have provided expert analysis on complex issues related to aesthetics/visual resources, land use and planning in the siting of electricity generating facilities. My work ensures compliance with federal, state, and local laws, ordinances, regulations, and standards, including the California Environmental Quality Act (CEQA) and Guidelines, California Planning, Zoning, and Development Laws, and the Warren-Alquist Act's Power Facility and Site Certification program. My experience includes preparing in-depth analyses, participating in public workshops, and delivering sworn testimony during evidentiary hearings before Commissioners.

Core Competencies:

- Aesthetics/visual resources analysis
- Land use planning, General Plan consistency, and zone conformance
- Regulatory compliance

Professional Experience:

- November 2000 to present
- Key Responsibilities and Achievements:
  - Identified, described, and analyzed complex aesthetics/visual resources, and land use and planning issues.
  - Reviewed and ensured compliance with CEQA, CEQA Guidelines, California Planning, and Zoning Laws, and Warren-Alquist Act.
  - Presented sworn testimony during evidentiary hearings.

Education:

- Master of Public Administration. California State University Bakersfield. Bakersfield, California. August 1988.
- Bachelor of Science Public Administration. California State University Sacramento. Sacramento, California. May 1984.

DECLARATION OF
Patrick Riordan

I, Patrick Riordan, declare as follows:

1. I am employed by the California Energy Commission as an Energy Commission Specialist I (Archaeologist).

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on Cultural and Tribal Cultural Resources for the Willow Rock Energy Storage Center based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

   I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 7/11/2025 Signed: Patrick Riordan

At: Sacramento, California

Patrick Riordan

Archaeologist

Help build California's 100 percent clean energy future while being mindful of our irreplaceable historical resources.

Experience

2022 -Current
Energy Commission Specialist I (Archaeologist)
California Energy Commission
Independently performs technical analyses for the most complex energy facility projects and planning studies in the area of cultural resources. Works independently as a subject matter expert to formulate and develop solutions to extremely difficult problems. Provides technical expertise evaluating the environmental effects of proposed energy facilities, policies and plans for energy development to satisfy the requirements of the Warren-Alquist Act and the California Environmental Quality Act (CEQA).

2015 - 2022
NAGPRA Program Lead ***California State Parks***
Leads departmental NAGPRA compliance activities. Conducts NAGPRA-based consultations with Native American tribal representatives to repatriate human remains and cultural items. Conducts independent research on collections to determine the history of acquisition, contents, and location of collection objects across the statewide system. Leads training sessions and provides subject matter expertise regarding human remains law and policy, tribal consultation, and the State Parks NAGPRA program.

2014 - 2015
Assoc. State Archaeologist ***Office of Historic Preservation***
Professional staff to the California State Historic Preservation Officer (SHPO), reviewing, analyzing, evaluating, and commenting on environmental documents prepared pursuant to federal and state environmental statutes, guidelines, and regulations (including Section 106 of the National Historic Preservation Act and PRC 5024) to address the impacts of projects on the historic environment.

Education

2004
B.A. Anthropology
CSU, Chico

2006
Cultural Resources Management Certificate
CSU, Chico

2015
Land Use and Environmental Planning Certificate
UC, Davis

Skills

- Regulatory knowledge
- Tribal consultation
- Critical thinking
- Communication
- Empathy

2009 - 2014

Assist. State Archaeologist ***California State Parks***

Provided technical assistance in archaeological investigations, surveys, excavations, site assessments, and other matters of cultural resource management. Assisted the Department Tribal Liaison in Native American consultation. Engaged in emergency response and planning as a Resource Advisor (READ) and reviewed Wildland Fire Management Plans. Managed departmental collections of Native American human remains.

2010

Archaeological Crew Chief ***Far Western Archaeological Group***

Supervised archaeological field crews while developing and directing data collection strategies for cultural resources testing and evaluation for a large-scale infrastructure project spanning northwestern Nevada.

2008 - 2009

Archaeological Technician ***AECOM/EDAW***

Archaeological field crew member conducting phase I, phase II, and phase III activities associated with a large levee improvement project in Sacramento County, CA. Served as primary site mapper/cartographer utilizing manual theodolite and GPS instrumentation. Participated in burial recovery, geomorphic trenching, pedestrian surveys, construction monitoring, and subsurface testing.

2007

Development Services Technician I ***City of Sacramento***

Provided information regarding planning, zoning, land use and other related processes to the public, builders, engineers, contractors, and architects at a public counter, on the telephone, and in written correspondence. Interpreted and applied City ordinances, rules and regulations related to the development process. Performed plan review on initial submittals for commercial, industrial, and residential projects for completeness and compliance with City zoning, planning codes, and regulations.

2005 - 2007

Archaeological Crew Chief ***Tremaine & Associates***

Supervised archaeological field crews conducting construction monitoring, evaluation of inadvertent discoveries, data recovery, and burial exhumation in downtown Sacramento, CA. Coordinated daily with construction contractors, Native American tribal representatives, and project engineers to assess monitoring needs and assign staff. Ensured that work assignments were carried out in a safe, timely manner according to established standards and procedures.

Contact

6641 San Joaquin Street
Sacramento, CA 95820
(530) 828-4095
patrickcriordanjr@gmail.com

DECLARATION OF
Sudath Edirisuriya

I, Sudath Edirisuriya, declare as follows:

1. I am employed by the California Energy Commission as a Senior Electrical Engineer.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on Transmission Line Safety and Nuisance for the Willow Rock Project based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

   I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 07/10/2025 Signed: Sudath Edirisuriya

At: Sacramento, California

Sudath Edirisuriya **Phone Number 916-751-8219**
1916 Ackleton Way sudath.edirisuriya@energy.ca.gov
Roseville Ca 95661

Education and Work Experience:

- Bachelor of Science in Electrical Engineering in Power - California State University, Fullerton- June 1995.
- Graduate coursework in Electrical Engineering in Power - California State University, Sacramento.
- Member of the Professional Engineers in California Government
- Vice President of the Electrical Engineering Society at California State University Fullerton.
- Evaluated System Impacts (SI) and Feasibility Studies (FS) for 30 major Renewable and Conventional power plants, totaling more than 9000 MW. These projects are primarily feed into the SCE, PG&E, and SDG&E control areas.

EXPERIENCE:

June 2017 to present: - Senior Electrical Engineer, Energy Assessments Division, California Energy Commission. Assisted in developing a methodology to integrate battery storage into the CA ISO grid using Locational Marginal Prices (LMP) and participated in NERC-conducted study group meetings to evaluate momentary cessation of Solar farm inverters due to transient instability.

November-2001 to June 2017: - Grid Planning Electrical Engineer,
System Assessment and Facilities Siting Division, California Energy Commission. Working in the Transmission System Engineering unit on licensing generation projects. Work involves evaluating generation interconnection studies (SIS and FS), their reliability, and environmental impacts on transmission systems, preparing staff assessment reports, and presenting testimony and technical expertise to the commission. Perform reliability studies, coordinating data and technical activities with utilities, California ISO, and other agencies. Conducted and performed planning studies and contingency analysis, including power flow, short-circuit, transient, and post-transient analysis, to maintain reliable operation of the power system. Understanding of regulatory and reliability guidelines, WECC and NERC planning and operation criteria, CPUC and FERC requirements Review technical analyses for WECC/CA ISO/PTO transmission systems and

provide support for regulatory filings. Participates in California ISO-conducted Planning Study Group meetings in SCE and SDG&E area

June 1998 to November 2001: - Lead Project Electrical Engineer, Design Electrical Engineering Section, Department of Transportation, California
Electrical Engineering knowledge, skills, and leadership in the design, construction, and maintenance of California state work projects involving all the public work areas. Construction management, plan checking, field engineering, contract administration, and interfacing with consultants, developers, and contractors. Preparation of project reports, cooperative agreements, and review plans for compliance with construction and design guidelines for national electrical code, standards, and ordinance. The review process included breaker relay coordination, detailed wiring diagrams, layout details, service coordination, load, conductor sizes, derated ampacity, voltage drop calculations, and harmonic and flicker determination.

June 1995 to May 1998: - Substation Electrical Engineer, City of Anaheim, California.
Performed protective relay system application, design, and setting determination in Transmission & Distribution Substation. Application of principles of selective coordination system protection and controls for Electric Utility Equipment. Application of power theory and analysis of symmetrical components. Ability to review engineering plans, specifications, estimates, and computation for Electrical Utility Projects. Electrical Engineering design practices, including application of Electro-mechanical and solid-state relays in Electrical Power Systems. Software skills in RNPDC (Fuse Coordination Program), Capacitor Bank allocation program, and GE Load Flow Program. Design projects using CAD and Excel spreadsheets including cost estimates, wiring diagrams, material specifications, and field coordination.

DECLARATION OF
Tao Jiang, Ph.D., P.E.

I, Tao Jiang, declare as follows:

1. I am employed by the California Energy Commission as an Air Resources Engineer.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on **Air Quality** for the **Willow Rock Energy Storage Center** based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

   I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 07/01/2025 Signed: Tao Jiang

At: Sacramento, California

Tao Jiang, Ph.D., P.E.

Professional Experience

Air Resources Engineer ***(Jan. 2009 – Present)***

California Energy Commission, Siting Transmission and Environmental Protection Division

Act as air quality technical lead on power plant siting projects and related linear facilities, including Abengoa Mojave Solar, Ridgecrest Solar Millennium, Almond 2 Power Plant, Pio Pico Energy Center, Huntington Beach Energy Project, Sonoran Energy Project, Pomona Repower Project and Stanton Reliability Energy Center. Also be responsible for compliance work of 26 power plants in construction and operation. Specific responsibilities include the following:

- Analyze the impacts of the construction and operation of large power generation projects and related linear facilities on air quality, Green House Gas and climate change
- Determine the conformance to applicable U.S. EPA, CARB and local air district regulations and standards
- Investigate and recommend appropriate emission mitigation measures
- Prepare air quality staff assessments and technical testimony
- Develop and monitor air quality compliance plans
- Review and evaluate U.S. EPA, CARB, and local air district air quality rules and regulations
- Collect, analyze and evaluate data for the effects of air pollutants and power plant emissions on human health, vegetation, wildlife, water resources and the environment
- Develop, recommend, and implement statewide planning and policy initiatives for the Energy Commission and Governor

Research assistant ***(Sep. 2004 – Dec. 2008)***

University of California, Riverside, Chemical & Environmental Engineering

- Investigated phase behavior of colloidal particles
- Study mediated colloidal interactions in the particle dispersions
- Build and evaluate models for gas molecules and particulate matters
- Conduct computer simulation and modeling for gas molecules and particulate matters

Education

PhD Chemical & Environmental Engineering, University of California, Riverside (August, 2008)
ME Materials Science and Engineering, Beijing University of Chemical Technology (June, 2003)
BE Materials Science and Engineering, Beijing University of Chemical Technology (June, 2000)

DECLARATION OF
William Larson

I, William Larson, declare as follows:

1. I am employed by the California Energy Commission as a Senior Environmental Planner (Archaeology).

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on **Cultural and Tribal Cultural Resources** for the **Willow Rock Energy Storage Center** based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

   I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: July 1, 2025 Signed: William Larson

At: Sacramento, California

William Larson

Senior Environmental Planner (Archaeology)
(530) 304-9019
William.larson@energy.ca.gov
715 P Street, MS#16 Sacramento, CA 95814

Experience

Senior Environmental Planner, *California Energy Commission*
June 2024 - Present

Directs and coordinates the preparation and processing of reports and documents in accordance with the California Environmental Quality Act and the Warren-Alquist Act. Serves as the technical lead on several projects simultaneously specializing in the design and implementation of archaeological monitoring programs, archaeological surveys and excavations, archival research, and CEQA and Section impact analyses. serves as the technical senior in the Cultural Resources Unit of the California Energy Commission's Siting, Transmission, and Environmental Protection Division.

Associate Environmental Planner, *California Department of Transportation (Caltrans)*
October 2013 – June 2024

As part of a project delivery team worked on projects to ensure Caltrans was complying with the appropriate environmental laws, predominately Section 106 of the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA). Participated in field reviews/surveys, excavations, evaluations, and report writing. Was responsible for task orders and review of consultant documents. Conducted consultation with Native American tribes and individuals, as well as, historical societies, the public, and other agency officials.

Staff Archaeologist/Lab Director, *Archaeological Research Center, CSU, Sacramento*
June 2000 – October 2013

Participated as crew chief and/or field director on numerous phase I, II, and III excavations and surveys throughout California. Responsible for coordinating daily laboratory tasks, including the supervision of cataloging, processing, and analysis of artifacts. Ground and flaked stone analyst for numerous collections. Authored several site summaries and contributed to numerous reports.

Field Director/Lab Director, *Scientific Resource Surveys, Inc., Temecula, CA*
June 1997 – June 2000

Participated as a field technician or supervisor on numerous Phase I, II, and III excavations, surveys, and grading monitoring. Responsible for the cataloging and curation of archaeological collections. Authored several site summaries and contributed to numerous reports.

Education

M.A. Archaeology, California State University, Sacramento 2009

B.A. Anthropology (Archaeology) University of California, Davis 1997

Minor in Native American Studies

A.A. Social Science (Anthropology), San Diego City College 1994

DECLARATION OF
Winston Potts, M.S., P.E.

I, Winston Potts, declare as follows:

1. I am employed by the California Energy Commission as an Air Resources Engineer.

2. A copy of my professional qualifications and experience is attached hereto and incorporated by reference herein.

3. I prepared the staff testimony on **Climate Change and Greenhouse Gas Emissions** for the **Willow Rock Energy Storage Center** based on my independent analysis of the Application for Certification and supplements hereto, data from reliable documents and sources, and my professional experience and knowledge.

4. It is my professional opinion that the prepared testimony is valid and accurate with respect to the issues addressed therein.

5. I am personally familiar with the facts and conclusions related in the testimony and if called as a witness could testify competently thereto.

   I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge and belief.

Dated: 07/01/2025 Signed: Winston Potts

At: Sacramento, California

Winston Potts

Winston.Potts@Energy.ca.gov

Areas of Expertise/Skills

- Regulatory Development
- Emission Controls
- Oral Presentations
- Written Reports
- Microsoft Office
- Product Certification
- Lab Testing
- Combustion Device Design

Professional Experience

California Energy Commission, Sacramento, CA - August 2022 to Present
Air Resources Engineer

- Perform analyses assessing air quality and climate change/greenhouse gas impacts of projects involving various aspects of the California electric power grid.
- Responsible for reviewing and applying regulations and regulatory programs at the federal, state and local levels to projects.
- Identify measures to mitigate air quality and climate change/greenhouse gas impacts of projects under the California Environmental Quality Act (CEQA).
- Draft sections of the Environmental Impact Report regarding projects under CEQA.

California Air Resources Board, Sacramento, CA - September 1993 to December 2016
Air Resources Engineer

- Regulatory development, implementation and enforcement - Held meetings with staff, industry and the public during regulatory development. Collected information and analyzed data in support of the regulation. In coordination with staff, wrote staff reports.
    - Automotive A/C recharging and amendment
    - Amendment to Portable Equipment Registration Program
- Developed a technical guidance document for the control of emissions from internal combustion engines. Supervised staff in collecting data regarding the effectiveness of different controls while analyzing their cost as part of an analysis. Wrote final report.
- In role as contract manager, oversaw different projects including automotive refrigerant recharging, development of a continuous emissions monitoring device, effectiveness of existing vehicle load reduction technologies.
- Lead on the testing of dry cleaning wastewater treatment equipment. Developed the test procedure and coordinated with commercial facilities and the laboratory division. Wrote a draft final report including a data analysis and recommendations.
- Contributing writer to "Noncombustion Landfill Gas Control Technologies."

Winston Potts

6509 Deaderick Court, Orangevale, CA 95662 (916) 599-5093 winstonpotts@comcast.net

Training/License/Education

- Industrial Boilers, California Air Resources Board - 2001
- Internal Combustion Engines/Electric Motors, Edison AgTac - 2000
- Ground Water Wells and Pumps, Edison AgTac - 2000
- Stationary Internal Combustion Engines, California Air Resources Board - 1998
- Stationary Gas Turbines, California Air Resources Board - 1998
- Total Quality Management, Aerojet - 1990
- **License** - Professional Mechanical Engineer, State of California - 1981
- **Master of Science Degree** - Mechanical Engineering, University of California Davis - 1978
- **Bachelor's Degree** - Aerospace and Mechanical Engineering Sciences, University of California San Diego - 1971

Awards

- Superior Accomplishment Award, California Air Resources Board - 2016
- Superior Accomplishment Award, California Air Resources Board - 2011
- Certificate of Appreciation, Aerojet - 1992
- Candidate for Technical Achievement Award, Aerojet - 1991
- Outstanding Employee, Nimbus, Inc. - 1984

Appendix A

Cumulative Scenario

Appendix A Cumulative Impacts

Preparation of the cumulative impact analysis is required under the California Environmental Quality Act (CEQA). In the CEQA Guidelines, “a cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the EIR together with other projects causing related impacts” (Cal. Code Regs., tit. 14, § 15130(a)(1)). Cumulative impacts must be addressed if the incremental effect of a project, combined with the effects of other projects, is “cumulatively considerable,” and therefore potentially significant (Cal. Code Regs., tit. 14, § 15130(a)(2)). Such incremental effects are to be “viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects” (Cal. Code Regs., tit. 14, § 15164(b)(1)). Together, these projects comprise the cumulative scenario which forms the basis of the cumulative impact analysis.

The discussion of cumulative impacts must reflect the severity of the impacts, as well as the likelihood of their occurrence, yet the discussion need not be as detailed as the discussion of environmental impacts attributable to the project alone. When the combined cumulative impact associated with the project's incremental effect and the effects of other projects is not significant, the EIR shall briefly indicate why the cumulative impact is not significant and is not discussed in further detail in the EIR. (Cal. Code Regs., tit. 14, § 15130(a)(2)).

The cumulative impact discussion is intended to be guided by the standards of practicality and reasonableness (Cal. Code Regs., tit. 14, § 15130(b)). CEQA Guidelines sections applicable to a cumulative impact analysis state the following:

- CEQA Section 15355: “Cumulative impacts” refers to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts.

  (a) The individual effects may be changes resulting from a single project or a number of separate projects.

  (b) The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.
- CEQA Guidelines Section 15130 (a)(1): As defined in Section 15355, a cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the EIR together with other projects causing related impacts. An EIR should not discuss impacts which do not result in part from the project evaluated in the EIR.
- CEQA Guidelines Section 15064(h)(4): The mere existence of significant cumulative impacts caused by other projects alone shall not constitute substantial evidence that the proposed project's incremental effects are cumulatively considerable.

Cumulative Projects Scenario

Under CEQA, there are two commonly used methodologies for establishing the cumulative impact scenario—the "list approach" and the "projections approach." The list approach uses a "list of past, present, and probable future projects producing related or cumulative impacts" (Cal. Code Regs., tit. 14, § 15130(b)(1)(A)). The projections approach uses a "summary of projections contained in an adopted local, regional or statewide plan, or related planning document, that describes or evaluates conditions contributing to the cumulative effect" (Cal. Code Regs., tit. 14, § 15130(b)(1)(B)).

This staff assessment utilizes the list approach to provide an understanding and context for analyzing the potential cumulative effects related to the proposed project. The project list supplements the cumulative scenario with information on specific projects that are proposed or under construction in the surrounding communities.

Review of the Environmental Documents and Renewable Energy webpages of the Kern County Planning and Natural Resources website provided several past, present, or probable future projects located within 6 miles of the proposed project that would potentially be constructed within one year before or after the proposed project. A list of these projects is shown in **Table A-1** along with an identification number, a brief description, distance from the project site, and status. Although **Table A-1** lists only those cumulative projects located within a six-mile radius of the proposed project site, the cumulative impacts analysis for each resource area included in this document considers a geographic area appropriate for each technical area.

The analysis of cumulative effects considers several variables including geographic (spatial) limits, time (temporal) limits, and the characteristics of the resource being evaluated. For each resource area, this staff assessment evaluates the cumulative impacts as follows:

- Defines the geographic scope of cumulative impact analysis for each discipline, based on the likely geographic extent in which proposed project impacts could combine with those of other projects.
- Evaluates the effects of the proposed project in combination with past and present (existing) projects within the geographic scope defined for each discipline.
- Evaluates the effects of the proposed project with foreseeable future projects that occur within the geographic scope defined for each discipline.

Staff's cumulative impact analysis considers environmental effects associated with those projects identified in **Table A-1** in conjunction with the impacts identified for the project. **Table A-1** provides information on cumulative projects that could combine with the effects of the proposed project. Applicable cumulative projects consist of projects that are reasonably foreseeable or currently operational and would be constructed or operated during the life of the proposed project. Cumulative projects include land development or public works projects that are planned or approved and, given their physical proximity to the project area or an overlap in the transportation

routes used during construction, could potentially contribute to the same environmental effects as the proposed project.

The detailed analysis of the cumulative impacts on individual environmental resources is provided within the respective technical sections of the environmental impact assessment.

Map Id Number	Project Name	Description	Location	Distance to Project (miles)	Status
1	Edwards Air Force Base Solar Project	Photovoltaic (PV) solar project on 4,000-acre Edwards Air Force Base (AFB) property and generation tie (gen-tie) line approximately 16 miles in length. Greater than 100 megawatts (MW) but not more than 750 MW, with the generated energy distributed to investor owned utilities, municipalities, other energy off-takers and/or Edwards AFB	Located on Edwards AFB, approximately 6 miles northeast of the community of Rosamond and 6 miles south of Mojave	2.5 miles northeast of the project site	Construction completed 2023
2	Investment Concepts Inc	Conditional Use Permit (CUP) 118 multi-unit apartment complex	County Assessor's Parcel Numbers (APN) 471-112-06	2.8 miles south of the project site	Applied
3	Dewalt Corp for Rosamond 5 properties	Construct 89-unit multifamily project	APN 473-022-23	4.1 miles south of the project site	Approved
3	Dewalt Corp	Precise development of 87 duplex structures (174 units)	APN 473-022-23	4.1 miles south of the project site	Approved
4	Investment Concepts Inc	CUP for apartment complex	APN 252-161-49	3.9 miles northwest of the project site	Approved
4	Kern County Planning Dept	Kern County Housing Element Implementation 2022, zone change to R-3 Site No.6	APN 252-161-49	3.9 miles northwest of the project site	Approved
5	Westpark LLC, Howard Field	Proposed hotel development	APN 471-022-07	1.8 miles south of the project site	Applied
6	Halterty development	Develop plan for mixed commercial, retail development	APNs 251-181-145, 251-181-152	3.0 miles south of the project site	Approved
7	BHT Developers, LLC	Auto Auction Facility	APNs 473-023-042, 473-023-059, 473-023-067, 473-023-061	4.1 miles south of the project site	Applied
8	Golden Queen Mining Company, LLC	Addendum to EIR approved for surface mining and reclamation plan	APN 429-190-69	5.5 miles north of the project site	Approved

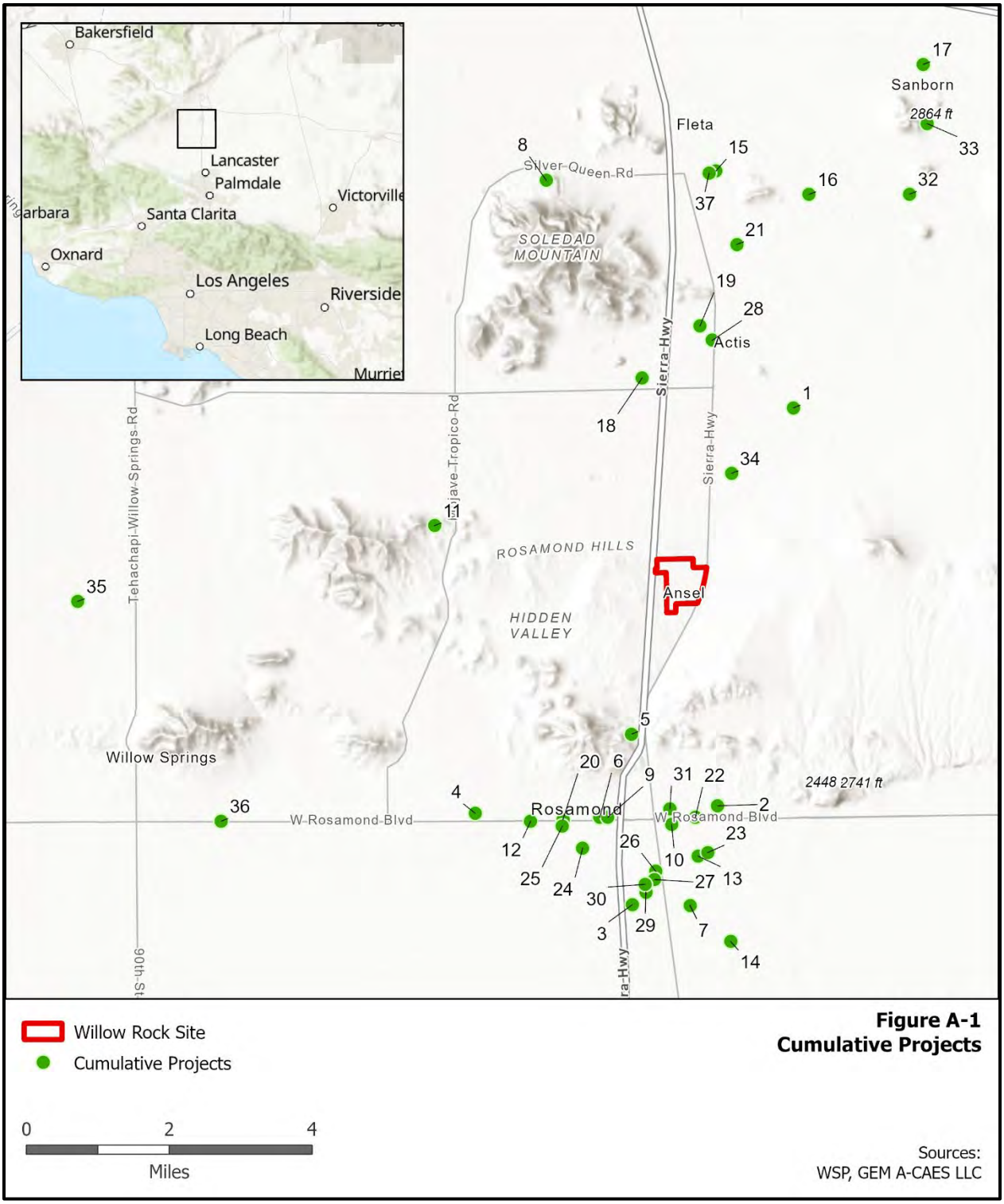
Map Id Number	Project Name	Description	Location	Distance to Project (miles)	Status
9	Interex Property advisors	Development plan for auto service station, motel, retail, and restaurants	APN 251-120-010	3 miles south of the project site	Applied
10	RE McCollum, LLC	Self-storage development plan	APN 258-090-02	3 miles south of the project site	Applied
11	GEM Hill Quarry (CalPortland Company)	Surface mining operation and development of a reclamation plan on approximately 82.2 acres, 15 MM tons of volcanic tuff GEM Hill	APNs 345-294-17, 345-032-05, 345-032-31, 345-031-02 and 345-032-02	3.1 miles west of the project	Approved
12	FH II LLC / Frontier Communities	Change zoning to allow for 120-unit single family residential development	APN 472-100-63	3.6 miles southwest of the project site	Approved
13	Garo Karakoulian	CUP for auto dismantling and recycling facility	APN 258-160-26	3.5 miles south of the project site	Applied
14	SSI Rosamond Solar, LLC	Solar array accessory to water treatment facility	APN 471-040-01	3.4 miles north of the project site	Approved
15	True North Renewable Energy	Amendments to Kern County General Plan and Willow Springs Specific Plan to designate the site as Solid Waste Disposal Facility and CUP to allow a renewable energy facility on 117 acres.	APNs 429-101-30 through 429-101-37	5.4 miles north of the project site	Approved
16	Capella Solar	Approximate 5 MW modular commercial concentrating solar power plant with a supercritical CO2 power cycle and solid media thermal, which is comprised of an approximately 117-acre field of computer-controlled heliostat mirrors focusing solar energy on receiver apertures on top of an approximate 330-foot-tall, centralized power tower, and	APNs 429-060-13 through 429-060-19	5.4 miles north of the project site	Processing

Map Id Number	Project Name	Description	Location	Distance to Project (miles)	Status
		ancillary. The project would be operated as a test facility.			
17	Enterprise Solar	Construction and operation of a solar PV facility and associated infrastructure necessary to generate 600 MWs of renewable electrical energy with up to 4,000 megawatt-hours (MWh) of energy storage capacity (approximately 1,000 MW) on approximately 2,320 acres. Infrastructure includes laydown yards, a meteorological station, and a substation. PV panels, inverters, converters, foundations, and transformers will be installed onsite.	Cross Streets: SR14 and SR58	7.6 miles northeast of the project site	Approved
18	Castellanos Truck Parking and Storage	General Plan Amendment, Zone Classification Change, Precise Development plan to allow a Truck Parking and Storage Facility	APN 430-053-08	2.5 miles north of the project site	Applied
19	Babkan Safarian & Denise Rodriguez	General Plan Amendment, Zone Classification Change, Precise Development plan to allow vehicle and cargo container storage	APN 430-141-27	3.2 miles north of the project site	Applied
20	Irvine Camillo	Precise Development Plan for commercial development	APN 472-100-15	3.2 miles southeast of the project site	Applied
21	Antonio & Jeanette Vergara	CUP for construction materials recycling facility	APN 429-010-02	4.4 miles north of the project site	Applied
22	Carl Wood	Precise Development Plan for new retail development	APNs 258-170-16, 258-170-17	2.9 miles south of the project site	Applied

Map Id Number	Project Name	Description	Location	Distance to Project (miles)	Status
23	Walter DeBoer, BRPH	Modification to Precise Development Plan for change of occupancy to manufacturing.	APN 258-160-42	3.4 miles south of the project site	Applied
24	Silvia Valdez	CUP for installation of mobile home greater than 10 years	APN 251-191-13	3.5 miles southeast of the project site	Applied
25	Aaron Rivani by Cindy Parra	Zone classification change from A-1 to R-1	APN 472-100-16	3.2 miles southeast of the project site	Applied
26	Kern County Planning Dept	Kern County Housing Element Implementation 2022, Zone change to R3 Site No, 4	APNs 258-120-12, 258-130-16, 258-150-02, 258-130-23	3.6 miles south of the project site	Approved
27	Kern County Planning Dept	Kern County Housing Element Implementation 2022, plan amendment to 5 1/2.5 and zone classification change to R3, Site No.9	APN 473-031-03	3.7 miles South of the project site	Approved
28	Kern County Planning Dept	Kern County Housing Element Implementation 2022, Zone change to R3 Site No.2	APN 430-030-10	3.1 miles north of the project site	Approved
29	Kern County Planning Dept	Kern County Housing Element Implementation 2022, Zone change to R3 Site No.7	APN 473-031-09	3.9 miles south of the project site	Approved
30	Kern County Planning Dept	Kern County Housing Element Implementation 2022, Zone change to R3 Site No.5	APN 473-031-27	3.8 miles south of the project site	Approved
31	Matthew McCormick	CUP for single family residence in C-2	APN 251-025-09	2.7 miles south of the project site	Applied
32	Sanborn Solar	Solar PV power generating facilities and associated facilities that would generate up to a combined total of 300 MW of renewable electrical energy and up to 3 GWh of energy storage capacity	Cross Streets: SR 14 and Silver Queen Road and SR 58 (Business) and Lone Butte Road	5.9 miles northeast of the project site	Approved

Map Id Number	Project Name	Description	Location	Distance to Project (miles)	Status
33	Bellefield Solar Project	Solar PV facility and energy storage system along with associated infrastructure necessary to generate up to 1,500 MW of alternating current and up to 1,500 MWh energy storage capacity	Cross Streets: Altus Avenue & State Route 58	6.9 miles northeast of the project site	Approved
34	Mojave Micro Mill	Construct and operate a micro mill facility and associated infrastructure necessary to produce rebar from scrap metal through various recycling processes. Development would include an approximate 475,800 square-foot steel mill facility with an additional 51,221 square feet of accessory buildings and structures, as well as an approximate 63-acre accessory solar array on 174 total acres of privately owned land. Outdoor storage for scrap materials and staging is proposed as part of the project.	Cross streets: Sopp Road and Sierra Highway	1.3 miles north of the project site	Completed in 2025
35	Bullhead Solar	Solar PV facility with associated infrastructure on approximately 1,343.2 acres. Preferred and optional generation-tie (gen-tie) routes to the Rosamond and Whirlwind substations, only one of which would be constructed. The project also includes laydown yards, a meteorological station, a microwave/ communication tower, and a substation.	Along Dawn Road off Sierra Hwy 14 between 105th Street West and 75th Street West, north of Favorito Avenue Dawn Road and South of Champagne Avenue.	8.1 miles west of the project	Approved

Map Id Number	Project Name	Description	Location	Distance to Project (miles)	Status
36	Gettysburg Solar/AV Apollo	Approximately 30t MW photovoltaic (PV) electric generating facility, including approximately 30 MW of energy storage capacity, on approximately 158 acres of privately-owned land in unincorporated Kern County.	Rosamond, ¼ miles east of intersection of Rosamond Blvd and 80th	6.9 miles southwest of the project site	Approved
37	Organics Energy Solar	High solids anaerobic digestion (HSAD) facility with incidental advanced composting for the management and processing of residential, commercial, and industrial organic waste and green material. The Project would provide organics processing infrastructure and organic materials diversion from regional landfills and generate renewable energy through the HSAD process	Silver Queen Road and United Street	5.4 miles north of the project site	Processing


Bakersfield
Lancaster
Palmdale
Victorville
Santa Clarita
Oxnard
Los Angeles
Riverside
Long Beach
Fleta
Sanborn
2864 ft
Silver Queen Rd
SOLEDAD MOUNTAIN
Sierra Hwy
Actis
Ansel
ROSAMOND HILLS
HIDDEN VALLEY
Tehachapi-Willow Springs Rd
Mojave-Tropico Rd
Willow Springs
Rosamond
W Rosamond Blvd
2448 2741 ft
Willow Rock Site
Cumulative Projects
0
2
4
Miles
Figure A-1
Cumulative Projects
Sources:
WSP, GEM A-CAES LLC

References

ESHD 2024i – Ellison Schneider Harris & Donlan LLP (TN 254806). Willow Rock Energy Storage Center SAFC, Volume 1, Part A, dated March 1, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=21-AFC-02

Kern 2025a – Kern County Planning and Natural Resources Department (Kern). Environmental Documents. Accessed online at: https://kernplanning.com/planning/environmental-documents/

Kern 2025b – Kern County Planning and Natural Resources Department (Kern). Renewable Energy Projects. Accessed online at: https://kernplanning.com/planning/renewable-energy/

Appendix B

Mailing List

Appendix B: Mailing List

The following is the mailing list for the Willow Rock Energy Storage Center.

Table B-1 presents the list of occupants and property owners contiguous to the project site and a list of property owners within 1,000 feet of the project site and 500 feet of project linears.

Table B-2 presents the list of agencies, including responsible and trustee agencies and the public library.

Table B-3 presents the list of intervenors and other interested parties.

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
10 HEATHRIDGE DR	SHARPSBURG	GA	30277
100 77TH ST W	ROSAMOND	CA	93560
100 CALIFORNIA ST STE 400	SAN FRANCISCO	CA	94111
10004 MACALISTER TRL	HIGHLANDS RANCH	CO	80129
1001 W IMPERIAL HWY UNIT 2411	LA HABRA	CA	90632
10103 THUNDER RAPIDS CT	LAS VEGAS	NV	89148
10124 WOODMAN AVE	MISSION HILLS	CA	91345
1025 GARRIDO CT	CAMARILLO	CA	93010
10353 FLORALITA AVE	SUNLAND	CA	91040
104 9TH AVENUE CUBAO	SPRINGFIELD	MA	01109
10430 VERNON LN	TUSTIN	CA	92782
1045 N GENESEE AVE APT 10	WEST HOLLYWOOD	CA	90046
10450 WILSHIRE BLVD	LOS ANGELES	CA	90024
1050 NOYES RD	ARROYO GRANDE	CA	93420
1052 CAMINO PRADO	CHULA VISTA	CA	91913
10535 PENROSE ST	SUN VALLEY	CA	91352
1056 FUCHSIA LN	SAN DIEGO	CA	92154
10603 PENROSE ST	SUN VALLEY	CA	91352
10625 PETIT AVE APT 102	GRANADA HILLS	CA	91344
10639 HORTON AVE	DOWNEY	CA	90241
10651 SOMMA WAY	LOS ANGELES	CA	90077
10651 SOMMA WAY	LOS ANGELES	CA	90077
10845 SLATER AVE	FOUNTAIN VALLEY	CA	92708
10965 BONJON LN	SAN DIEGO	CA	92131
11 TAMARACK PL	GREENWICH	CT	06831

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
110 E PALMDALE BLVD	PALMDALE	CA	93550
1101 71ST ST W	ROSAMOND	CA	93560
1101 71ST ST W	ROSAMOND	CA	93560
11014 COUNTY ROAD K	AUBURNDALE	WI	54412
11062 LAVENDER AVE	FOUNTAIN VLY	CA	92708
111 N HOPE ST	LOS ANGELES	CA	90012
1112 LAKEMOOR DR	SAINT PAUL	MN	55129
1112 OXFORD HILLS DR	MARYVILLE	TN	37803
1113 W AVENUE S # D	PALMDALE	CA	93551
1115 TRUXTUN AVE	BAKERSFIELD	CA	93301
1115 TRUXTUN AVE	BAKERSFIELD	CA	93301
111S W AVENUE S # D	PALMDALE	CA	93551
1125 NW COUCH ST STE 700	PORTLAND	OR	97209
11309 MOLLYKNOLL AVE	WHITTIER	CA	90604
11314 PALOMINO BND	SAN ANTONIO	TX	78254
1140 S ALFRED ST	LOS ANGELES	CA	90035
115 BLOSSOM CIR UNIT 2C	SAN MATEO	CA	94403
1155 S GRAND AVE APT 2107	LOS ANGELES	CA	90015
11643 LUANDA ST	SYLMAR	CA	91342
11661 SAN VICENTE BLVD STE 410	LOS ANGELES	CA	90049
1170 CARDIFF CIR	THOUSAND OAKS	CA	91362
11711 SHANKLIN ST	BAKERSFIELD	CA	93312
11720 EL CAMINO ROAD #250 # 250	SAN DIEGO	CA	92130
11898 LOMICA DR	SAN DIEGO	CA	92128
11950 N 104TH ST	SCOTTSDALE	AZ	85260

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
11950 SAN VICENTE BLVD STE 200	LOS ANGELES	CA	90049
12 OLD CASTLE HILL RD	NEWTOWN	CT	06470
1200 LIDA ST	PASADENA	CA	91103
12006 TALUS PL	CARLSBAD	CA	92010
1201 INDUSTRIAL ST	ROSAMOND	CA	93560
1206 CASCADE ST	SANTA ANA	CA	92703
121 HOWARD DR	OLD TAPPAN	NJ	07675
12101 OAK LEAF DR	LOS ALAMITOS	CA	90720
12222 HERBERT ST	LOS ANGELES	CA	90066
1226 E SERIVE AVE	WEST COVINA	CA	91790
1226 E SERVICE AVE	WEST COVINA	CA	91790
12281 SUNSET PARK WAY	LOS ANGELES	CA	90064
1234 S SPRUCE ST	VISALIA	CA	93292
12351 JEREMY PL	GRANADA HILLS	CA	91344
1239 PRESIDIO BLVD	PACIFIC GROVE	CA	93950
124 14TH ST	MANHATTAN BEACH	CA	90266
1240 E AVENUE S APT 105	PALMDALE	CA	93550
1242 GREYCREST PL	DIAMOND BAR	CA	91765
12548 OAK KNOLL RD APT 8	POWAY	CA	92064
1255 10TH ST UNIT 201	SANTA MONICA	CA	90401
12567 SAHARA AVE	ROSAMOND	CA	93560
1257 SEAFARER ST	VENTURA	CA	93001
12619 ATHENS WAY	LOS ANGELES	CA	90061
12639 GOSFORD RD	BAKERSFIELD	CA	93313
12671 HIGH BLUFF DR STE 150	SAN DIEGO	CA	92130

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
1269 S SYCAMORE AVE	LOS ANGELES	CA	90019
1280 PACIFIC COAST HWY SPC C17	HARBOR CITY	CA	90710
12828 RAMONA BLVD UNIT 82	BALDWIN PARK	CA	91706
12837 BOMBARDIER AVE	NORWALK	CA	90650
12851 MANCHESTER RD	SAINT LOUIS	MO	63131
130 E CAMBRIDGE DR	TUCSON	AZ	85704
13000 OCASO AVE	LA MIRADA	CA	90638
13017 LOPEZ CANYON RD	SYLMAR	CA	91342
13131 GLENOAKS BLVD	SYLMAR	CA	91342
1321 UPLAND DR # 3104	HOUSTON	TX	77043
1325 VALLEY VIEW RD APT 209	GLENDALE	CA	91202
1333 ALA AMOAMO ST	HONOLULU	HI	96819
1333 HIDALGO CIR	ROSEVILLE	CA	95747
1335 CALUMET AVE	LOS ANGELES	CA	90026
13373 TUTELO RD	APPLE VALLEY	CA	92308
13433 KAGEL CANYON RD	SYLMAR	CA	91342
135 MAIN ST	SAN FRANCISCO	CA	94105
135 MAIN ST FL 6	SAN FRANCISCO	CA	94105
1354 CHAMPAGNE CIR	ROSEVILLE	CA	95747
13609 ARDEN FOREST DR	BAKERSFIELD	CA	93314
13688 SPARREN AVE	SAN DIEGO	CA	92129
13749 STARHILL LN	LA PUENTE	CA	91746
13846 WYANDOTTE ST	VAN NUYS	CA	91405
139 BELL CANYON RD	BELL CANYON	CA	91307
14 DEL MONTE CT	SAINT HELENA	CA	94574

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
140 NEW MONTGOMERY ST # 818	SAN FRANCISCO	CA	94105
1400 DOUGLAS ST STOP 1610	OMAHA	NE	68179
14000 S BROADWAY	LOS ANGELES	CA	90061
14027 N 44TH PL	PHOENIX	AZ	85032
14140 LIVE OAK AVE STE A	BALDWIN PARK	CA	91706
1415 W ROSAMOND BLVD STE 20	ROSAMOND	CA	93560
14154 W ROSAMOND BLVD	ROSAMOND	CA	93560
14155 MAGNOLIA BLVD APT 30	SHERMAN OAKS	CA	91423
1420 E 75TH ST	LOS ANGELES	CA	90001
1421 7TH AVE	HONOLULU	HI	96816
14271 W ROSAMOND BLVD	ROSAMOND	CA	93560
14330 MINYA LN	POWAY	CA	92064
1436 257TH ST UNIT 207	HARBOR CITY	CA	90710
1437 ISLAND AVE	WILMINGTON	CA	90744
14434 SWEETGRASS PL	VICTORVILLE	CA	92394
14512 GOODWIN AVE	BAKERSFIELD	CA	93314
14528 BURBANK BLVD APT 1	SHERMAN OAKS	CA	91411
1463 CHURCH ST	VENTURA	CA	93001
14638 4TH AVE S	BURIEN	WA	98168
14638 4TH AVE S	BURIEN	WA	98168
14746 NATALIE DR	WHITTIER	CA	90604
14799 CHESTNUT ST	WESTMINSTER	CA	92683
14823 GILMORE ST APT 105E	VAN NUYS	CA	91411
15100 S NORMANDIE AVE	GARDENA	CA	90247
15105 JUNIPER PEAK RD	WEED	CA	96094

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
1519 S OGDEN DR	LOS ANGELES	CA	90019
1521 FAIRWAY DR	PASO ROBLES	CA	93446
15233 VENTURA BLVD	SHERMAN OAKS	CA	91403
15259 W ROSAMOND BLVD	ROSAMOND	CA	93560
1540 ENSLEY AVE	LOS ANGELES	CA	90024
1543 BABY DOLL RD SE	PORT ORCHARD	WA	98366
1544 EDWARDS AVE	ROSAMOND	CA	93560
15445 INNOVATION DR	SAN DIEGO	CA	92128
15480 ANTIOCH ST APT 102	PACIFIC PALISADES	CA	90272
1550 W AVE E	LANCASTER	CA	93534
15510 CARMENITA RD	SANTA FE SPRINGS	CA	90670
15514 CALLE HERMOSA	GREEN VALLEY	CA	91390
1552 NANTUCKET LN	SAN PEDRO	CA	90732
15572 WILD PLUM CIR	HUNTINGTON BEACH	CA	92647
156 DELLENBERGER AVE	AKRON	OH	44312
1563 POWELL LN	REDLANDS	CA	92374
15720 BETHPAGE TRL	CARMEL	IN	46033
15733 INDIAN FALLS AVE	LANCASTER	CA	93535
1575 PRINCETON DR	SAN JOSE	CA	95118
1580 MIRA VALLE ST	MONTEREY PARK	CA	91754
15853 MONTE ST # C107	SYLMAR	CA	91342
1600 KENT PL APT 56	ROSEVILLE	CA	95661
16053 INDEX ST	GRANADA HILLS	CA	91344
16151 VERBENA ST	BRIGHTON	CO	80602
162 PROSPECT AVE	SAUSALITO	CA	94965

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
162 PROSPECT AVE	SAUSALITO	CA	94965
1621 W AVE E # 143	LANCASTER	CA	93534
1624 N 14TH ST	FREDERICK	OK	73542
16251 BOYLE AVE	FONTANA	CA	92337
1626 PALMCROFT WAY SE	PHOENIX	AZ	85007
16271 W ROSAMOND BLVD	ROSAMOND	CA	93560
16310 ALAMO CANYON RD	CANYON COUNTRY	CA	91387
1633 LUCAS ST	SAN FERNANDO	CA	91340
16400 PACIFIC COAST HWY STE 207	HUNTINGTN BCH	CA	92649
1644 RED ROCK AVE	VENTURA	CA	93004
16503 WILDERNESS RD	POWAY	CA	92064
16503 WILDERNESS RD	POWAY	CA	92064
166 W WASHINGTON ST STE 730	CHICAGO	IL	60602
1667 E LINCOLN AVE	ORANGE	CA	92865
1667 E LINCOLN AVE	ORANGE	CA	92865
1668 BABCOCK ST STE B	COSTA MESA	CA	92627
16752 IRBY LN	HUNTINGTN BCH	CA	92647
168 S HIGHLAND AVE	LOS ANGELES	CA	90036
16868 RIDGE CLIFF DR	RIVERSIDE	CA	92503
16902 MARINABAY DR	HUNTINGTN BCH	CA	92649
16929 CHATSWORTH ST	GRANADA HILLS	CA	91344
1701 POSO FLAT RD	BAKERSFIELD	CA	93308
1708 AUTUMNMIST DR	PALMDALE	CA	93551
1710 S BALDWIN AVE	ARCADIA	CA	91007
1720 CATALINA	LAGUNA BEACH	CA	92651

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
17321 CEDAR CANYON DR	TEHACHAPI	CA	93561
17327 SUPERIOR ST	NORTHRIDGE	CA	91325
17333 DEERING AVE	CANOGA PARK	CA	91303
1740 SWEETBRIER ST	PALMDALE	CA	93550
1754 HANLEY AVE	SIMI VALLEY	CA	93065
17562 DEER VALLEY CT	RIVERSIDE	CA	92504
1770 N EUCLID AVE	UPLAND	CA	91784
17758 WREN DR	CANYON COUNTRY	CA	91387
17767 CALLE BARCELONA	ROWLAND HEIGHTS	CA	91748
18 OUTRIDER RD	ROLLING HILLS	CA	90274
18 OUTRIDER RD	ROLLING HILLS	CA	90274
18 SKYCREST	MISSION VIEJO	CA	92692
1801 W AVE E	LANCASTER	CA	93534
18107 GAULT ST	RESEDA	CA	91335
1817 E KETTERING ST	LANCASTER	CA	93535
18175 KAREN DR	TARZANA	CA	91356
1825 PELHAM AVE APT 1	LOS ANGELES	CA	90025
1829 E CAJON CIR	WEST COVINA	CA	91791
1832 FLOWER ST	BAKERSFIELD	CA	93305
1839 LOCUST ST	ROSAMOND	CA	93560
1848 E 62ND ST	LOS ANGELES	CA	90001
1848 E 62ND ST	LOS ANGELES	CA	90001
1851 RIVERSIDE DR APT 16	GLENDALE	CA	91201
18539 S AVE	YUMA	AZ	85365
1855 LOCUST ST	ROSAMOND	CA	93560

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
18564 DORAL WAY	TARZANA	CA	91356
18695 PASADERO DR	TARZANA	CA	91356
18700 WELLHAVEN ST	CANYON COUNTRY	CA	91351
18812 EDLEEN DR	TARZANA	CA	91356
1888 MAIN ST # C-181	MADISON	MS	39110
1891 RUBY CT	UPLAND	CA	91784
1897 DEHESA RD	EL CAJON	CA	92019
18971 IRONWOOD LN	SANTA ANA	CA	92705
1901 PASEO DEL MAR	PALOS VERDES ESTATES	CA	90274
1906 TOWNE CENTRE BLVD UNIT 370	ANNAPOLIS	MD	21401
1906 TOWNE CENTRE BLVD UNIT 370	ANNAPOLIS	MD	21401
1925 CENTURY PARK E STE 1130	LOS ANGELES	CA	90067
19343 NEWTHOUSE ST	SANTA CLARITA	CA	91351
1950 W ROSAMOND BLVD	ROSAMOND XX		
1968 S COAST HWY # 431	LAGUNA BEACH	CA	92651
1970 E CALIFORNIA BLVD	SAN MARINO	CA	91108
200 CREEDON CIR	ALAMEDA	CA	94502
200 W VALLEY BLVD	TEHACHAPI	CA	93561
2001 O ST	BAKERSFIELD	CA	93301
2006 OLD HIGHWAY 395	FALLBROOK	CA	92028
202 VERITAS CT	SAN RAMON	CA	94582
2030 W BASELINE RD # 82-491	PHOENIX	AZ	85041
20311 SHERMAN WAY APT 221	CANOGA PARK	CA	91306
20510 VARSITY DR	WALNUT	CA	91789
206 S HOLLY CANYON DR	RIDGECREST	CA	93555

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
2062 LOCKWOOD LN	LINCOLN	CA	95648
2072 W ROSAMOND BLVD	ROSAMOND	CA	93560
2076 W ROSAMOND BLVD	ROSAMOND	CA	93560
20891 GLEN OAKS LN	TEHACHAPI	CA	93561
20901 WOLFE PL	WOODLAND HILLS	CA	91364
2096 ARDENWOOD AVE	SIMI VALLEY	CA	93063
210 172ND ST APT 421	SUNNY ISLES BEACH	FL	33160
2101 W ROSAMOND BLVD	ROSAMOND	CA	93560
2104 BIDWELL BAR DR	PLUMAS LAKE	CA	95961
2112 W AVE E	LANCASTER	CA	93536
2113 60TH ST W	ROSAMOND	CA	93560
21200 CALHOUN CT	CALIFORNIA CITY	CA	93505
2121 WINDFLOWER DR	ROSAMOND	CA	93560
21214 MARTINEZ ST # 42	WOODLAND HILLS	CA	91364
2125 W AVE E	LANCASTER	CA	93536
21306 MARJORIE AVE	TORRANCE	CA	90503
2131 WALNUT GROVE AVE # 2	ROSEMEAD	CA	91770
2133 KRISRON RD	FORT COLLINS	CO	80525
2137 NATALIE DR	ROSAMOND	CA	93560
2137 W AVE E	LANCASTER	CA	93536
214 E AVE	PALMDALE	CA	93550
2148 NATALIE DR	ROSAMOND	CA	93560
2149 HILLCREST AVE	ROSAMOND	CA	93560
2149 NATALIE DR	ROSAMOND	CA	93560
2151 MONTANA PINE DR	HENDERSON	NV	89052

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
21515 PLACERITA CANYON RD	NEWHALL	CA	91321
21520 YORBA LINDA BLVD # G523	YORBA LINDA	CA	92887
21541 IMPALA LN	HUNTINGTON BEACH	CA	92646
21591 KANAKOA LN	HUNTINGTN BCH	CA	92646
2161 HILLCREST AVE	ROSAMOND	CA	93560
2161 NATALIE DR	ROSAMOND	CA	93560
2166 VIA ARANDANA	CAMARILLO	CA	93012
21700 OXNARD ST STE 430	WOODLAND HILLS	CA	91367
22 COLLETON RIVER DR	HENDERSON	NV	89052
22 COLLETON RIVER DR	HENDERSON	NV	89052
22 SIERRA PL	SEQUIM	WA	98382
221 N FIGUEROA ST STE 1600	LOS ANGELES	CA	90012
221 S MANHATTAN PL	LOS ANGELES	CA	90004
22127 ROUNDUP DR	WALNUT	CA	91789
22176 CAMINITO LAURELES	LAGUNA HILLS	CA	92653
2218 CROWN VALLEY LN	N LAS VEGAS	NV	89032
22394 MONTERA CT	SALINAS	CA	93908
2244 WALNUT GROVE AVE	ROSEMEAD	CA	91770
2245 N GRANDVIEW RD	ORANGE	CA	92867
2259 KELLA AVE	WHITTIER	CA	90601
22851 2ND ST	HAYWARD	CA	94541
2300 E VALLEY VIS	ROSAMOND	CA	93560
2300 PANORAMA LN	ROSAMOND	CA	93560
23004 S VAN DEENE AVE	TORRANCE	CA	90502
23037 CUERVO DR	VALENCIA	CA	91354

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
2304 RANGEVIEW DR	ROSAMOND	CA	93560
2306 GRANDVIEW TER	ROSAMOND	CA	93560
2308 MALLARD LN APT 1	BEAVERCREEK	OH	45431
2308 PANORAMA LN	ROSAMOND	CA	93560
2312 GRANDVIEW TER	ROSAMOND	CA	93560
2312 HORIZON DR	ROSAMOND	CA	93560
2312 PANORAMA LN	ROSAMOND	CA	93560
2312 RANGEVIEW DR	ROSAMOND	CA	93560
2316 E VALLEY VI	ROSAMOND	CA	93560
2316 PANORAMA LN	ROSAMOND	CA	93560
2316 RANGEVIEW DR	ROSAMOND	CA	93560
2318 GRANDVIEW TER	ROSAMOND	CA	93560
2318 HORIZON DR	ROSAMOND	CA	93560
2320 PANORAMA LN	ROSAMOND	CA	93560
2320 RANGEVIEW DR	ROSAMOND	CA	93560
2324 E VALLEY VI	ROSAMOND	CA	93560
2324 GRANDVIEW TER	ROSAMOND	CA	93560
2324 HORIZON DR	ROSAMOND	CA	93560
2324 RANGEVIEW DR	ROSAMOND	CA	93560
23242 BURBANK BLVD	WOODLAND HILLS	CA	91367
2328 RANGEVIEW DR	ROSAMOND	CA	93560
2329 TERRA BELLA LN	CAMARILLO	CA	93012
2330 E AVE E # 216	LANCASTER	CA	93535
2330 HORIZON DR	ROSAMOND	CA	93560
2332 E VALLEY VIS	ROSAMOND	CA	93560

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
2332 PANORAMA LN	ROSAMOND	CA	93560
2333 PLUMERIA LN	PALMDALE	CA	93551
2336 E VALLEY VIS	ROSAMOND	CA	93560
2336 PANORAMA LN	ROSAMOND	CA	93560
2336 RANGEVIEW DR	ROSAMOND	CA	93560
234 VALLE RIO WAY	VIRGINIA BEACH	VA	23456
2340 RANGEVIEW DR	ROSAMOND	CA	93560
2341 VALLE DR	LA HABRA HEIGHTS	CA	90631
23416 PETROLEUM AVE	TORRANCE	CA	90502
2342 HORIZON DR	ROSAMOND	CA	93560
2347 WAILEA BEACH DR	BANNING	CA	92220
23489 PARK SORRENTO	CALABASAS	CA	91302
23508 VIA CASTANET	VALENCIA	CA	91355
2353 W AVE E	LANCASTER	CA	93536
23616 CHANDELLE PL	DIAMOND BAR	CA	91765
237 SHASTA AVE	MOORPARK	CA	93021
23721 ALLIENE AVE	TORRANCE	CA	90501
23825 LANESBORO PL	VALENCIA	CA	91354
23825 LANESBORO PL	VALENCIA	CA	91354
239 PLANCHA WAY	ARROYO GRANDE	CA	93420
23975 PARK SORRENTO STE 300	CALABASAS	CA	91302
24 GREENOAKS DR	ATHERTON	CA	94027
2400 PANORAMA LN	ROSAMOND	CA	93560
24050 CANTLE CT	TEHACHAPI	CA	93561
24066 PARK CASINO	CALABASAS	CA	91302

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
2413 PINE AVE	MANHATTAN BEACH	CA	90266
2415 LENTA LN	ARCADIA	CA	91006
2416 FONTEZUELA DR	HACIENDA HTS	CA	91745
2418 MONICA LN	SANTA ANA	CA	92706
2420 THREE SPRINGS DR	WESTLAKE VILLAGE	CA	91361
24200 WALNUT ST SPC 60	TORRANCE	CA	90501
24255 HAWTHORNE BLVD STE 202	TORRANCE	CA	90505
243 S AVE # 209	LOS ANGELES	CA	90042
24441 PEACOCK ST	LAKE FOREST	CA	92630
2452 ADRIATIC AVE	LONG BEACH	CA	90810
2467 SUNSET RIDGE DR	ROSAMOND	CA	93560
2480 IRVINE BLVD APT 266	TUSTIN	CA	92782
250 E PARKCENTER BLVD	BOISE	ID	83706
2508 STARBRITE AVE	ROSAMOND	CA	93560
2516 STARBRITE AVE	ROSAMOND	CA	93560
2524 STARBRITE AVE	ROSAMOND	CA	93560
2532 STARBRITE AVE	ROSAMOND	CA	93560
2540 STARBRITE AVE	ROSAMOND	CA	93560
2545 E AVE E	LANCASTER	CA	93535
2547 RENATA CT	THOUSAND OAKS	CA	91362
2556 STARBRITE AVE	ROSAMOND	CA	93560
25612 GOLDENSPRING DR	DANA POINT	CA	92629
25643 RANCHO ADOBE RD	VALENCIA	CA	91355
2570 ELM AVE	LONG BEACH	CA	90806
2588 MORROW RIDGE PL	LAUGHLIN	NV	89029

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
25925 WEST AVE	LANCASTER	CA	93536
26 SYCAMORE SPRINGS LN	MOUNTAIN HOME	AR	72653
2600 STARBRITE AVE	ROSAMOND	CA	93560
2600 VOORHEES AVE	REDONDO BEACH	CA	90278
261 GRANADA AVE	LONG BEACH	CA	90803
2619 JURADO AVE	HACIENDA HTS	CA	91745
26202 CROSSWOOD TRAILS LN	CYPRESS	TX	77433
265 FOXEN BLUFF LN	ARROYO GRANDE	CA	93420
26532 POINSETTIA CT	LAGUNA HILLS	CA	92653
269 EDEN DR	FATE	TX	75189
270 W SANTA ANITA AVE	BURBANK	CA	91502
2700 20TH ST W	ROSAMOND	CA	93560
27029 SANTA CLARITA RD	SAUGUS	CA	91350
2707 LOS PINOS CIR	SANTA ROSA VALLEY	CA	93012
2710 GRANVILLE AVE	LOS ANGELES	CA	90064
27345 SAND CANYON RD	CANYON COUNTRY	CA	91387
27377 VIA INDUSTRIA	TEMECULA	CA	92590
27377 VIA INDUSTRIA	TEMECULA	CA	92590
2763 AUDREY LN	BISHOP	CA	93514
2801 N UNIVERSITY DR STE 306	CORAL SPRINGS	FL	33065
2807 W LUMBER ST	LANCASTER	CA	93536
28102 SPRINGVALE LN	CASTAIC	CA	91384
28154 VIA JOYCE DR	SANTA CLARITA	CA	91350
2820 ACACIA ST	ROSAMOND	CA	93560
28330 PONTEVEDRA DR	RANCHO PALOS VERDES	CA	90275

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
2842 TRAKELL ST	ROSAMOND	CA	93560
2848 TRAKELL ST	ROSAMOND	CA	93560
2851 W AVENUE L	LANCASTER	CA	93536
2865 PENNY LN	LAKESIDE	AZ	85929
2870 58TH ST W	ROSAMOND	CA	93560
2879 LAUREL ST	ROSAMOND	CA	93560
2880 ACACIA ST	ROSAMOND	CA	93560
2880 C ST	ROSAMOND	CA	93560
2880 DAVENPORT ST	ROSAMOND	CA	93560
2881 C ST	ROSAMOND	CA	93560
28842 CONEJO VIEW DR	AGOURA HILLS	CA	91301
2887 B ST	ROSAMOND	CA	93560
2889 LAUREL ST	ROSAMOND	CA	93560
289 JENN CV	DRIPPING SPRINGS	TX	78620
28916 SILVERSMITH DR	VALENCIA	CA	91354
2895 59TH ST W	ROSAMOND	CA	93560
2900 ACACIA ST	ROSAMOND	CA	93560
2900 TRAKELL ST	ROSAMOND	CA	93560
2901 DESERT ST	ROSAMOND	CA	93560
2901 LAUREL ST	ROSAMOND	CA	93560
2902 97TH ST W	ROSAMOND	CA	93560
2904 DOBSON CT	FREMONT	CA	94555
2906 TRAKELL ST	ROSAMOND	CA	93560
2911 LAUREL ST	ROSAMOND	CA	93560
2912 TRAKELL ST	ROSAMOND	CA	93560

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
2918 65TH ST W	ROSAMOND	CA	93560
2918 TRAKELL ST	ROSAMOND	CA	93560
2919 DESERT ST	ROSAMOND	CA	93560
2920 DAVENPORT ST	ROSAMOND	CA	93560
2925 JEFFERIES ST	ROSAMOND	CA	93560
2929 100TH ST W	ROSAMOND	CA	93560
2930 ACACIA ST	ROSAMOND	CA	93560
2930 TRAKELL ST	ROSAMOND	CA	93560
2931 57TH ST W	ROSAMOND	CA	93560
2931 LAUREL ST	ROSAMOND	CA	93560
2931 LAUREL ST	ROSAMOND	CA	93560
2931 LAUREL ST	ROSAMOND	CA	93560
2935 DAVENPORT ST	ROSAMOND	CA	93560
2936 DESERT ST	ROSAMOND	CA	93560
2936 TRAKELL ST	ROSAMOND	CA	93560
2940 58TH ST W	ROSAMOND	CA	93560
2940 ACACIA ST	ROSAMOND	CA	93560
2941 59TH ST W	ROSAMOND	CA	93560
2941 60TH ST W	ROSAMOND	CA	93560
2941 LAUREL ST	ROSAMOND	CA	93560
2944 65TH ST W	ROSAMOND	CA	93560
2946 130TH ST W	ROSAMOND	CA	93560
2951 127TH ST W	ROSAMOND	CA	93560
2951 59TH ST W	ROSAMOND	CA	93560
2951 B ST	ROSAMOND	CA	93560

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
2954 DESERT ST	ROSAMOND	CA	93560
2958 S BRONSON AVE	LOS ANGELES	CA	90018
2963 DESERT ST	ROSAMOND	CA	93560
2965 DESERT ST	ROSAMOND	CA	93560
2966 DESERT ST	ROSAMOND	CA	93560
2973 95TH ST W	ROSAMOND	CA	93560
2975 28TH ST W	ROSAMOND	CA	93560
2978 DIAMOND ST	ROSAMOND	CA	93560
2989 JEFFERIES ST	ROSAMOND	CA	93560
3000 GERTRUDE ST	ROSAMOND	CA	93560
3000 MELVIN ST	ROSAMOND	CA	93560
3001 MELVIN ST	ROSAMOND	CA	93560
3006 GERTRUDE ST	ROSAMOND	CA	93560
3006 MELVIN ST	ROSAMOND	CA	93560
3007 MELVIN ST	ROSAMOND	CA	93560
3012 GERTRUDE ST	ROSAMOND	CA	93560
3012 MELVIN ST	ROSAMOND	CA	93560
3012 MINOA WAY	SAN DIEGO	CA	92139
3013 GERTRUDE ST	ROSAMOND	CA	93560
3013 ILOPANGO DR	HACIENDA HTS	CA	91745
3013 MELVIN ST	ROSAMOND	CA	93560
3018 GERTRUDE ST	ROSAMOND	CA	93560
3019 GERTRUDE ST	ROSAMOND	CA	93560
3019 MELVIN ST	ROSAMOND	CA	93560
3020 DIXON ST	ROSAMOND	CA	93560

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
3024 DAWN RD	ROSAMOND	CA	93560
3024 GERTRUDE ST	ROSAMOND	CA	93560
3024 MELVIN ST	ROSAMOND	CA	93560
3025 GERTRUDE ST	ROSAMOND	CA	93560
3030 MELVIN ST	ROSAMOND	CA	93560
3030 NEARY CT	ROSAMOND	CA	93560
3030 NEARY CT	ROSAMOND	CA	93560
3031 GERTRUDE ST	ROSAMOND	CA	93560
3031 MELVIN ST	ROSAMOND	CA	93560
3033 SABRE ST	ROSAMOND	CA	93560
3036 GERTRUDE ST	ROSAMOND	CA	93560
3036 MELVIN ST	ROSAMOND	CA	93560
3037 GERTRUDE ST	ROSAMOND	CA	93560
30529 GIBRALTAR PL	CASTAIC	CA	91384
3053 RANCHO VISTA BLVD # 101	PALMDALE	CA	93551
3053 RANCHO VISTA BLVD # H101	PALMDALE	CA	93551
3053 RANCHO VISTA BLVD # H101	PALMDALE	CA	93551
3053 W SAN RAMON AVE	FRESNO	CA	93711
3065 SABRE ST	ROSAMOND	CA	93560
3066 JANINE AVE	ROSAMOND	CA	93560
3069 GALLATIN GTWY	CHICO	CA	95973
3069 GALLATIN GTWY	CHICO	CA	95973
3071 BRETT LOOP	EUGENE	OR	97404
3072 MARILYN WAY	SANTA BARBARA	CA	93105
3075 ASHBOURNE CIR	SAN RAMON	CA	94583

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
3081 SABRE ST	ROSAMOND	CA	93560
3082 GLENDOWER ST	ROSAMOND	CA	93560
3085 WERNER ST	ROSAMOND	CA	93560
30864 TIDEWATER DR	UNION CITY	CA	94587
3096 SEDONA ST	ROSAMOND	CA	93560
3097 SABRE ST	ROSAMOND	CA	93560
3100 GERTRUDE ST	ROSAMOND	CA	93560
3100 MELVIN ST	ROSAMOND	CA	93560
3100 N LEISURE WORLD BLVD APT 923	SILVER SPRING	MD	20906
3100 SEDONA ST	ROSAMOND	CA	93560
3101 GERTRUDE ST	ROSAMOND	CA	93560
3101 SHELLEY ST	ROSAMOND	CA	93560
3105 85TH ST W	ROSAMOND	CA	93560
3105 TARDITO LN	ROSAMOND	CA	93560
3106 GERTRUDE ST	ROSAMOND	CA	93560
3107 GERTRUDE ST	ROSAMOND	CA	93560
3107 TARDITO LN	ROSAMOND	CA	93560
3107 TARDITO LN	ROSAMOND	CA	93560
3112 EDWARDS AVE	ROSAMOND	CA	93560
3116 SEDONA ST	ROSAMOND	CA	93560
3117 SABRE ST	ROSAMOND	CA	93560
3118 EDWARDS AVE	ROSAMOND	CA	93560
3123 MOJAVE TROPICO RD	ROSAMOND	CA	93560
3130 EDWARDS AVE	ROSAMOND	CA	93560
314 AZALEA WAY	GREENWOOD	IN	46143

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
314 LIVE OAK RD	ROYAL OAKS	CA	95076
3142 EDWARDS AVE	ROSAMOND	CA	93560
3142 PACIFIC COAST HWY STE 200	TORRANCE	CA	90505
3149 SABRE ST	ROSAMOND	CA	93560
315 FERNCREST RD	LONGVIEW	WA	98632
3150 W FIR AVE APT 102	FRESNO	CA	93711
3156 EAGLE WAY	ROSAMOND	CA	93560
3156 VOYAGER ST	ROSAMOND	CA	93560
3157 DISCOVERY WAY	ROSAMOND	CA	93560
3157 VOYAGER ST	ROSAMOND	CA	93560
3164 DISCOVERY WAY	ROSAMOND	CA	93560
3164 VOYAGER ST	ROSAMOND	CA	93560
3165 DISCOVERY WAY	ROSAMOND	CA	93560
3165 VOYAGER ST	ROSAMOND	CA	93560
317 JOHN HENRY DR	HENDERSON	NV	89014
3172 DISCOVERY WAY	ROSAMOND	CA	93560
3173 DISCOVERY WAY	ROSAMOND	CA	93560
3173 VOYAGER ST	ROSAMOND	CA	93560
3179 35TH ST W	ROSAMOND	CA	93560
3179 35TH ST W	ROSAMOND	CA	93560
321 N 21ST ST	MONTEBELLO	CA	90640
3210 INEZ ST	LOS ANGELES	CA	90023
32108 CALLE RESACA	TEMECULA	CA	92592
3228 VOYAGER ST	ROSAMOND	CA	93560
3229 DISCOVERY WAY	ROSAMOND	CA	93560

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
3229 VOYAGER ST	ROSAMOND	CA	93560
3236 DISCOVERY WAY	ROSAMOND	CA	93560
3236 VOYAGER ST	ROSAMOND	CA	93560
3237 DISCOVERY WAY	ROSAMOND	CA	93560
3237 VOYAGER ST	ROSAMOND	CA	93560
3244 DISCOVERY WAY	ROSAMOND	CA	93560
3244 VOYAGER ST	ROSAMOND	CA	93560
3245 DISCOVERY WAY	ROSAMOND	CA	93560
3252 DISCOVERY WAY	ROSAMOND	CA	93560
3252 VOYAGER ST	ROSAMOND	CA	93560
326 WESTMINSTER DR	HOUSTON	TX	77024
3260 DISCOVERY WAY	ROSAMOND	CA	93560
3260 VOYAGER ST	ROSAMOND	CA	93560
3268 DISCOVERY WAY	ROSAMOND	CA	93560
3269 DISCOVERY WAY	ROSAMOND	CA	93560
3271 EMERALD ST	ROSAMOND	CA	93560
3271 ORANGE AVE	SIGNAL HILL	CA	90755
3276 DISCOVERY WAY	ROSAMOND	CA	93560
3276 VOYAGER ST	ROSAMOND	CA	93560
3278 SLATE ST	ROSAMOND	CA	93560
3279 EMERALD ST	ROSAMOND	CA	93560
3279 SLATE ST	ROSAMOND	CA	93560
3284 DISCOVERY WAY	ROSAMOND	CA	93560
3285 DISCOVERY WAY	ROSAMOND	CA	93560
3286 MICA CT	ROSAMOND	CA	93560

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
3286 SLATE ST	ROSAMOND	CA	93560
3287 EMERALD ST	ROSAMOND	CA	93560
3287 MICA CT	ROSAMOND	CA	93560
3287 SLATE ST	ROSAMOND	CA	93560
3292 DISCOVERY WAY	ROSAMOND	CA	93560
3293 DISCOVERY WAY	ROSAMOND	CA	93560
3300 15TH ST W	ROSAMOND	CA	93560
3300 DISCOVERY WAY	ROSAMOND	CA	93560
3300 JAHON CT	ROSAMOND	CA	93560
3300 MARLENE CT	ROSAMOND	CA	93560
3301 DISCOVERY WAY	ROSAMOND	CA	93560
3301 JAHON CT	ROSAMOND	CA	93560
3301 MARLENE CT	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 1	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 11	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 12	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 13	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 14	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 15	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 17	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 17	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 18	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 19	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 20	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 21	ROSAMOND	CA	93560

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
3303 SIERRA HWY SPC 22	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 23	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 24	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 25	VALYERMO	CA	93563
3303 SIERRA HWY SPC 26	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 27	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 28	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 29	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 3	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 30	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 31	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 32	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 33	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 34	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 35	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 36	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 37	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 38	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 39	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 4	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 40	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 41	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 42	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 43	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 44	ROSAMOND	CA	93560

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
3303 SIERRA HWY SPC 45	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 46	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 47	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 48	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 5	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 50	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 51	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 54	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 55	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 57	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 58	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 59	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 60	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 61	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 62	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 64	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 65	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 66	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 67	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 68	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 69	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 70	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 71	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 73	ROSAMOND	CA	93560
3303 SIERRA HWY SPC 74	ROSAMOND	CA	93560

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
3303 SIERRA HWY SPC 9	ROSAMOND	CA	93560
3305 E 68TH ST	LONG BEACH	CA	90805
3307 JAHON CT	ROSAMOND	CA	93560
3307 LARGA AVE	LOS ANGELES	CA	90039
3307 MARLENE CT	ROSAMOND	CA	93560
3308 DISCOVERY WAY	ROSAMOND	CA	93560
331 W GLENDON WAY APT A	SAN GABRIEL	CA	91776
3312 JAHON CT	ROSAMOND	CA	93560
3313 JAHON CT	ROSAMOND	CA	93560
3313 MARLENE CT	ROSAMOND	CA	93560
3318 JAHON CT	ROSAMOND	CA	93560
3318 MARLENE CT	ROSAMOND	CA	93560
3319 HAVEN ST	ROSAMOND	CA	93560
3319 MARLENE CT	ROSAMOND	CA	93560
3324 TROPICO RD	ROSAMOND	CA	93560
3325 BRABHAM AVE	ROSAMOND	CA	93560
3325 JAHON CT	ROSAMOND	CA	93560
3325 MARLENE CT	ROSAMOND	CA	93560
333 N GRIFFITH PARK DR	BURBANK	CA	91506
3330 MARLENE CT	ROSAMOND	CA	93560
3331 HAVEN ST	ROSAMOND	CA	93560
3331 JAHON CT	ROSAMOND	CA	93560
3331 MARLENE CT	SAN JOAQUIN	CA	93660
3333 MORTARA CIR	PLACERVILLE	CA	95667
3336 MARLENE CT	ROSAMOND	CA	93560

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
3337 MARLENE CT	ROSAMOND	CA	93560
33410 WINDING WAY	WILDOMAR	CA	92595
3342 JAHON CT	ROSAMOND	CA	93560
3342 MARLENE CT	ROSAMOND	CA	93560
3343 HAVEN ST	ROSAMOND	CA	93560
3343 MARLENE CT	ROSAMOND	CA	93560
335 S NEW AVE APT D	MONTEREY PARK	CA	91755
335 SUFFOLK DR	GRAND PRAIRIE	TX	75052
3355 HAVEN ST	ROSAMOND	CA	93560
3359 JAGUAR CT	ROSAMOND	CA	93560
3360 LEOPARD CT	ROSAMOND	CA	93560
3362 PUMA AVE	ROSAMOND	CA	93560
3363 JAGUAR CT	ROSAMOND	CA	93560
3363 PUMA AVE	ROSAMOND	CA	93560
3364 LEOPARD CT	ROSAMOND	CA	93560
3366 PUMA AVE	ROSAMOND	CA	93560
3367 PUMA AVE	ROSAMOND	CA	93560
3379 HAVEN ST	ROSAMOND	CA	93560
33902 DESERT RD	ACTON	CA	93510
3391 HAVEN ST	ROSAMOND	CA	93560
33932 GRANADA DR	DANA POINT	CA	92629
3400 DACITE AVE	ROSAMOND	CA	93560
3400 RIDGEFORD DR	WESTLAKE VLG	CA	91361
3405 JAGUAR CT	ROSAMOND	CA	93560
3406 LEOPARD CT	ROSAMOND	CA	93560

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
3406 PUMA AVE	ROSAMOND	CA	93560
3407 PUMA AVE	ROSAMOND	CA	93560
3408 LEOPARD CT	ROSAMOND	CA	93560
3409 JAGUAR CT	ROSAMOND	CA	93560
3410 HAVEN ST	ROSAMOND	CA	93560
3410 PUMA AVE	ROSAMOND	CA	93560
3411 PUMA AVE	ROSAMOND	CA	93560
3412 JAGUAR CT	ROSAMOND	CA	93560
3412 LEOPARD CT	ROSAMOND	CA	93560
3413 JAGUAR CT	ROSAMOND	CA	93560
3414 PUMA AVE	ROSAMOND	CA	93560
3415 PUMA AVE	ROSAMOND	CA	93560
3416 JAGUAR CT	ROSAMOND	CA	93560
3416 LEOPARD CT	ROSAMOND	CA	93560
3417 JAGUAR CT	ROSAMOND	CA	93560
3418 PUMA AVE	ROSAMOND	CA	93560
3419 PUMA AVE	ROSAMOND	CA	93560
3420 JAGUAR CT	ROSAMOND	CA	93560
3420 LEOPARD CT	ROSAMOND	CA	93560
3421 JAGUAR CT	ROSAMOND	CA	93560
3422 PUMA AVE	ROSAMOND	CA	93560
3423 PUMA AVE	ROSAMOND	CA	93560
3424 60TH ST W	ROSAMOND	CA	93560
3424 HAVEN ST	ROSAMOND	CA	93560
3424 HOLIDAY AVE	ROSAMOND	CA	93560

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
3424 JAGUAR CT	ROSAMOND	CA	93560
3424 LEOPARD CT	ROSAMOND	CA	93560
3425 DAKOTA ST	ROSAMOND	CA	93560
3425 JAGUAR CT	ROSAMOND	CA	93560
3426 PUMA AVE	ROSAMOND	CA	93560
3426 WINDSPUN DR	HUNTINGTON BEACH	CA	92649
3427 PUMA AVE	ROSAMOND	CA	93560
3428 JAGUAR CT	ROSAMOND	CA	93560
3428 LEOPARD CT	ROSAMOND	CA	93560
3429 JAGUAR CT	ROSAMOND	CA	93560
3430 PUMA AVE	ROSAMOND	CA	93560
3431 PUMA AVE	ROSAMOND	CA	93560
3432 JAGUAR CT	ROSAMOND	CA	93560
3432 LEOPARD CT	ROSAMOND	CA	93560
3433 JAGUAR CT	ROSAMOND	CA	93560
3434 PUMA AVE	ROSAMOND	CA	93560
3435 HAVEN ST	ROSAMOND	CA	93560
3435 PUMA AVE	ROSAMOND	CA	93560
3436 JAGUAR CT	ROSAMOND	CA	93560
3436 LEOPARD CT	ROSAMOND	CA	93560
3437 JAGUAR CT	ROSAMOND	CA	93560
3438 AVOCADO HILL WAY	HACIENDA HTS	CA	91745
3438 PUMA AVE	ROSAMOND	CA	93560
3439 PUMA AVE	ROSAMOND	CA	93560
3440 JAGUAR CT	ROSAMOND	CA	93560

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
3440 LEOPARD CT	ROSAMOND	CA	93560
3441 JAGUAR CT	ROSAMOND	CA	93560
3442 PUMA AVE	ROSAMOND	CA	93560
3443 PUMA AVE	ROSAMOND	CA	93560
3447 HAVEN ST	ROSAMOND	CA	93560
3448 HAVEN ST	ROSAMOND	CA	93560
3460 DAWN RD	ROSAMOND	CA	93560
3471 HAVEN ST	ROSAMOND	CA	93560
3484 HAVEN ST	ROSAMOND	CA	93560
3484 ROXBURY ST	ROSAMOND	CA	93560
34929 ALMA LOU LN	POTEAU	OK	74953
3500 75TH ST W	ROSAMOND	CA	93560
3500 75TH ST W	ROSAMOND	CA	93560
3500 HAVEN ST	ROSAMOND	CA	93560
3500 SAN JACINTO AVE	ROSAMOND	CA	93560
3501 SAN JACINTO AVE	ROSAMOND	CA	93560
3506 SAN JACINTO AVE	ROSAMOND	CA	93560
3512 HAVEN ST	ROSAMOND	CA	93560
3513 SAN JACINTO AVE	ROSAMOND	CA	93560
3518 SAN JACINTO AVE	ROSAMOND	CA	93560
3524 HAVEN ST	ROSAMOND	CA	93560
3524 SAN JACINTO AVE	ROSAMOND	CA	93560
3525 HAVEN ST	ROSAMOND	CA	93560
3536 SAN JACINTO AVE	ROSAMOND	CA	93560
3537 HAVEN ST	ROSAMOND	CA	93560

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
3537 SAN JACINTO AVE	ROSAMOND	CA	93560
3542 SAN JACINTO AVE	ROSAMOND	CA	93560
3549 HAVEN ST	ROSAMOND	CA	93560
3557 BIG DALTON AVE APT 16	BALDWIN PARK	CA	91706
3573 20TH ST W	ROSAMOND	CA	93560
3575 SIERRA HWY	ROSAMOND	CA	93560
3575 SIERRA HWY	ROSAMOND	CA	93560
3593 OLIVE AVE	LONG BEACH	CA	90807
3600 SAN JACINTO AVE	ROSAMOND	CA	93560
3604 CAMINO VIS	LANCASTER	CA	93536
3604 LONE TREE LN	ROSAMOND	CA	93560
3609 DAWN RD	ROSAMOND	CA	93560
3609 MOJAVE TROPICO RD	ROSAMOND	CA	93560
361 COUNTY ROAD 279	NIOTA	TN	37826
3612 LONE TREE LN	ROSAMOND	CA	93560
3612 SAN JACINTO AVE	ROSAMOND	CA	93560
3613 SAN JACINTO AVE	ROSAMOND	CA	93560
3618 SAN JACINTO AVE	ROSAMOND	CA	93560
3619 SAN JACINTO AVE	ROSAMOND	CA	93560
3630 SAN JACINTO AVE	ROSAMOND	CA	93560
3631 SAN JACINTO AVE	ROSAMOND	CA	93560
36345 RAMONA RD	PALMDALE	CA	93550
3637 SAN JACINTO AVE	ROSAMOND	CA	93560
3642 SAN JACINTO AVE	ROSAMOND	CA	93560
3643 SAN JACINTO AVE	ROSAMOND	CA	93560

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
3681 SIERRA HWY	ROSAMOND	CA	93560
3685 S NORTON AVE	LOS ANGELES	CA	90018
3700 SAN JACINTO AVE	ROSAMOND	CA	93560
3706 SAN JACINTO AVE	ROSAMOND	CA	93560
3711 SIERRA HWY	ROSAMOND	CA	93560
3712 SAN JACINTO AVE	ROSAMOND	CA	93560
3718 60TH ST W	ROSAMOND	CA	93560
3718 SAN JACINTO AVE	ROSAMOND	CA	93560
3719 SAN JACINTO AVE	ROSAMOND	CA	93560
3745 ARFON WAY	RIVERSIDE	CA	92501
3769 SIERRA HWY	ROSAMOND	CA	93560
37714 17TH ST E	PALMDALE	CA	93550
3779 SIERRA HWY	ROSAMOND	CA	93560
3779 SIERRA HWY	ROSAMOND	CA	93560
3805 PACIFIC COAST HWY # 400	TORRANCE	CA	90505
3805 W 80TH ST	SIOUX FALLS	SD	57108
381 W PALM DR	ARCADIA	CA	91007
3839 COUNTRY CLUB DR NW	OLYMPIA	WA	98502
3840 TEXOMA DR	LAKE HAVASU CITY	AZ	86404
3843 20TH ST W	ROSAMOND	CA	93560
385 DUNGENESS MDWS	SEQUIM	WA	98382
38583 JACKLIN AVE	PALMDALE	CA	93550
38944 FOXHOIM DRIVE	PALMDALE	CA	93551
3920 GRAND AVE UNIT 700	DES MOINES	IA	50312
3920 GRAND AVE UNIT 700	DES MOINES	IA	50312

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
39745 HOOK ST	PALMDALE	CA	93551
39937 90TH ST W	LEONA VALLEY	CA	93551
4 TRAFALGAR	NEWPORT BEACH	CA	92660
400 E RINCON ST STE 105	CORONA	CA	92879
4000 AERO WAY	ROSAMOND	CA	93560
4001 AERO WAY	ROSAMOND	CA	93560
4001 CITATION WAY	ROSAMOND	CA	93560
4016 AERO WAY	ROSAMOND	CA	93560
4016 CITATION WAY	ROSAMOND	CA	93560
4017 AERO WAY	ROSAMOND	CA	93560
4017 CITATION WAY	ROSAMOND	CA	93560
4032 AERO WAY	ROSAMOND	CA	93560
4033 AERO WAY	ROSAMOND	CA	93560
4033 CITATION WAY	ROSAMOND	CA	93560
4048 AERO WAY	ROSAMOND	CA	93560
4048 CITATION WAY	ROSAMOND	CA	93560
40481 ANDORRA CT	FREMONT	CA	94539
4049 AERO WAY	ROSAMOND	CA	93560
4049 CITATION WAY	ROSAMOND	CA	93560
4064 AERO WAY	ROSAMOND	CA	93560
4065 AERO WAY	ROSAMOND	CA	93560
4065 CITATION WAY	ROSAMOND	CA	93560
4080 AERO WAY	ROSAMOND	CA	93560
4081 AERO WAY	ROSAMOND	CA	93560
4081 CITATION WAY	ROSAMOND	CA	93560

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
4083 FREESIA DR	OAKLEY	CA	94561
409 HOWLAND DR	DEXTER	MO	63841
4096 CITATION WAY	ROSAMOND	CA	93560
410 E PICO BLVD	LOS ANGELES	CA	90015
41006 34TH ST W	PALMDALE	CA	93551
41034 RIDGEGATE LN	PALMDALE	CA	93551
41034 RIDGEGATE LN	PALMDALE	CA	93551
411 FAIRWAY DR	BAKERSFIELD	CA	93309
41114 OAKVIEW LN	PALMDALE	CA	93551
41114 OAKVIEW LN	PALMDALE	CA	93551
412 N MACNEIL ST	SAN FERNANDO	CA	91340
4120 30TH ST STE 202	SAN DIEGO	CA	92104
4123 SUGAR MAPLE DR	DANVILLE	CA	94506
4132 RAPID LIGHTNING RD	SANDPOINT	ID	83864
4147 JADE CT	LANCASTER	CA	93536
41522 NONPAREIL DR	PALMDALE	CA	93551
4153 OAKCLIFF DR	MOORPARK	CA	93021
416 SUNRIDGE ST	PLAYA DEL REY	CA	90293
41770 12TH ST W	PALMDALE	CA	93551
41855 BAJA CT	PALMDALE	CA	93551
41862 ROAD 128	OROSI	CA	93647
4200 W 87TH PL	HOMETOWN	IL	60456
4208 ROSEDALE HWY # 3021	BAKERSFIELD	CA	93308
4209 W ROSAMOND BLVD SPC 100	ROSAMOND	CA	93560
4209 W ROSAMOND BLVD SPC 101	ROSAMOND	CA	93560

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
4209 W ROSAMOND BLVD SPC 102	ROSAMOND	CA	93560
4209 W ROSAMOND BLVD SPC 103	ROSAMOND	CA	93560
4209 W ROSAMOND BLVD SPC 104	ROSAMOND	CA	93560
4209 W ROSAMOND BLVD SPC 105	ROSAMOND	CA	93560
4209 W ROSAMOND BLVD SPC 106	ROSAMOND	CA	93560
4209 W ROSAMOND BLVD SPC 107	ROSAMOND	CA	93560
4209 W ROSAMOND BLVD SPC 108	ROSAMOND	CA	93560
4209 W ROSAMOND BLVD SPC 109	ROSAMOND	CA	93560
4209 W ROSAMOND BLVD SPC 110	ROSAMOND	CA	93560
4209 W ROSAMOND BLVD SPC 111	ROSAMOND	CA	93560
4209 W ROSAMOND BLVD SPC 113	ROSAMOND	CA	93560
4209 W ROSAMOND BLVD SPC 114	ROSAMOND	CA	93560
4209 W ROSAMOND BLVD SPC 115	ROSAMOND	CA	93560
4209 W ROSAMOND BLVD SPC 116	ROSAMOND	CA	93560
4209 W ROSAMOND BLVD SPC 117	ROSAMOND	CA	93560
4209 W ROSAMOND BLVD SPC 118	ROSAMOND	CA	93560
4209 W ROSAMOND BLVD SPC 119	ROSAMOND	CA	93560
4209 W ROSAMOND BLVD SPC 120	ROSAMOND	CA	93560
4209 W ROSAMOND BLVD SPC 121	ROSAMOND	CA	93560
4209 W ROSAMOND BLVD SPC 122	ROSAMOND	CA	93560
4209 W ROSAMOND BLVD SPC 123	ROSAMOND	CA	93560
4209 W ROSAMOND BLVD SPC 124	ROSAMOND	CA	93560
4209 W ROSAMOND BLVD SPC 126	ROSAMOND	CA	93560
4209 W ROSAMOND BLVD SPC 127	ROSAMOND	CA	93560
4209 W ROSAMOND BLVD SPC 128	ROSAMOND	CA	93560

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
4209 W ROSAMOND BLVD SPC 129	ROSAMOND	CA	93560
4209 W ROSAMOND BLVD SPC 130	ROSAMOND	CA	93560
4209 W ROSAMOND BLVD SPC 131	ROSAMOND	CA	93560
4209 W ROSAMOND BLVD SPC 132	ROSAMOND	CA	93560
4209 W ROSAMOND BLVD SPC 133	ROSAMOND	CA	93560
4209 W ROSAMOND BLVD SPC 46	ROSAMOND	CA	93560
4209 W ROSAMOND BLVD SPC 82	ROSAMOND	CA	93560
4209 W ROSAMOND BLVD SPC 84	ROSAMOND	CA	93560
4209 W ROSAMOND BLVD SPC 85	ROSAMOND	CA	93560
4209 W ROSAMOND BLVD SPC 86	ROSAMOND	CA	93560
4209 W ROSAMOND BLVD SPC 88	ROSAMOND	CA	93560
4209 W ROSAMOND BLVD SPC 91	ROSAMOND	CA	93560
4209 W ROSAMOND BLVD SPC 92	ROSAMOND	CA	93560
4209 W ROSAMOND BLVD SPC 93	ROSAMOND	CA	93560
4209 W ROSAMOND BLVD SPC 94	ROSAMOND	CA	93560
4209 W ROSAMOND BLVD SPC 97	ROSAMOND	CA	93560
4209 W ROSAMOND BLVD SPC 98	ROSAMOND	CA	93560
4209 W ROSAMOND BLVD SPC 99	ROSAMOND	CA	93560
421 JEFFERSON ST	BAKERSFIELD	CA	93305
4210 RIVERWALK PKWY # 210	RIVERSIDE	CA	92505
42112 RINGSTEM AVE APT E	LANCASTER	CA	93536
42263 50TH STREET WEST #127 # 127	MODESTO	CA	95356
42302 ENCANTO WAY	LANCASTER	CA	93536
42306 10TH ST W # B	LANCASTER	CA	93534
425 SHEEP CAMP DR	DAYTON	NV	89403

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
42547 45TH ST W	QUARTZ HILL	CA	93536
42547 6TH ST E STE 105	LANCASTER	CA	93535
4262 TASSELWOOD LN	HOUSTON	TX	77014
43 TAVELLA PL	FOOTHILL RANCH	CA	92610
4308 GLEN MEADOWS DR	ALLEN	TX	75002
4317 RENO PALM CT	NORTH LAS VEGAS	NV	89032
43220 ECHARD AVE	LANCASTER	CA	93536
43301 DIVISION ST STE 105A	LANCASTER	CA	93535
43432 33RD ST W	LANCASTER	CA	93536
43454 30TH ST W APT 223	LANCASTER	CA	93536
43546 11TH # E	RIDGECREST	CA	93555
4355 PHELAN RD	PHELAN	CA	92371
4360 SAN JUAN CT	ROSAMOND	CA	93560
4361 SONORA CT	ROSAMOND	CA	93560
4361 W AVENUE N	PALMDALE	CA	93551
43658 CAREFREE CT	LANCASTER	CA	93535
4370 SAN JUAN CT	ROSAMOND	CA	93560
4370 SONORA CT	ROSAMOND	CA	93560
4371 SONORA CT	ROSAMOND	CA	93560
43715 HARDWOOD AVE	LANCASTER	CA	93534
43721 LIVELY AVE	LANCASTER	CA	93536
43759 15TH ST W	LANCASTER	CA	93534
4380 KNOX AVE	ROSAMOND	CA	93560
4380 SAN JUAN CT	ROSAMOND	CA	93560
4380 SONORA CT	ROSAMOND	CA	93560

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
4381 SONORA CT	ROSAMOND	CA	93560
43850 20TH ST E SPC 251	LANCASTER	CA	93535
4390 SAN JUAN CT	ROSAMOND	CA	93560
4390 SONORA CT	ROSAMOND	CA	93560
4391 SONORA CT	ROSAMOND	CA	93560
43923 SIERRA HWY	LANCASTER	CA	93534
43947 KIRKLAND AVE	LANCASTER	CA	93535
4400 SAN JUAN CT	ROSAMOND	CA	93560
4400 SONORA CT	ROSAMOND	CA	93560
4401 SONORA CT	ROSAMOND	CA	93560
44022 FENNER AVE	LANCASTER	CA	93536
44041 47TH ST W	LANCASTER	CA	93536
4417 W ROSAMOND BLVD APT 4	ROSAMOND	CA	93560
44200 31ST ST W	LANCASTER	CA	93536
4433 LEE CIR	ROSEMEAD	CA	91770
44520 15TH ST E UNIT 9	LANCASTER	CA	93535
44535 LEATHERWOOD AVE	LANCASTER	CA	93534
4468 GLINES AVE	SANTA MARIA	CA	93455
447 W AVENUE 44	LOS ANGELES	CA	90065
4500 W ROSAMOND BLVD # 32	ROSAMOND	CA	93560
4500 W ROSAMOND BLVD SPC 11A	ROSAMOND	CA	93560
4500 W ROSAMOND BLVD SPC 13A	ROSAMOND	CA	93560
4500 W ROSAMOND BLVD SPC 14A	ROSAMOND	CA	93560
4500 W ROSAMOND BLVD SPC 18A	ROSAMOND	CA	93560
4500 W ROSAMOND BLVD SPC 2	ROSAMOND	CA	93560

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
4500 W ROSAMOND BLVD SPC 20A	ROSAMOND	CA	93560
4500 W ROSAMOND BLVD SPC 22	ROSAMOND	CA	93560
4500 W ROSAMOND BLVD SPC 27	ROSAMOND	CA	93560
4500 W ROSAMOND BLVD SPC 28A	ROSAMOND	CA	93560
4500 W ROSAMOND BLVD SPC 29A	ROSAMOND	CA	93560
4500 W ROSAMOND BLVD SPC 2A	ROSAMOND	CA	93560
4500 W ROSAMOND BLVD SPC 30	ROSAMOND	CA	93560
4500 W ROSAMOND BLVD SPC 31A	ROSAMOND	CA	93560
4500 W ROSAMOND BLVD SPC 4A	ROSAMOND	CA	93560
4500 W ROSAMOND BLVD SPC 6A	ROSAMOND	CA	93560
4500 W ROSAMOND BLVD SPC 7A	ROSAMOND	CA	93560
4500 W ROSAMOND BLVD SPC 8	ROSAMOND	CA	93560
4500 W ROSAMOND BLVD SPC 9	ROSAMOND	CA	93560
4500 W ROSAMOND BLVD SPC 9A	ROSAMOND	CA	93560
450010 W ROSAMOND BLVD # 8A	ROSAMOND	CA	93560
4503 WINDY GORGE DR	KINGWOOD	TX	77345
4508 VALDEZ PL	TARZANA	CA	91356
4536 LAKESHORE DR	SANTA CLARA	CA	95054
4537 W AVENUE L14	LANCASTER	CA	93536
4553 TEMMA CT	CALABASAS	CA	91302
4568 W ROSAMOND BLVD UNIT 11	ROSAMOND	CA	93560
4568 W ROSAMOND BLVD UNIT 23	ROSAMOND	CA	93560
4568 W ROSAMOND BLVD UNIT 32	ROSAMOND	CA	93560
4568 W ROSAMOND BLVD UNIT 5	ROSAMOND	CA	93560
4574 W HILLTOP DR	KANKAKEE	IL	60901

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
4603 HURFORD TER	ENCINO	CA	91436
466 FOOTHILL BLVD # 317	LA CANADA FLINTRIDGE	CA	91011
4669 65TH ST W	ROSAMOND	CA	93560
468 N CAMDEN DR	BEVERLY HILLS	CA	90210
468 N CAMDEN DR	BEVERLY HILLS	CA	90210
4680 PENINSULA POINT DR	SEASIDE	CA	93955
47052 5TH ST W	LANCASTER	CA	93534
4712 E TERRACE AVE	FRESNO	CA	93703
4728 W AVENUE N	LANCASTER	CA	93536
4733 ASHDALE ST	SANTA BARBARA	CA	93110
4735 W AVENUE N # L-2	LANCASTER	CA	93536
4766 45TH ST W	ROSAMOND	CA	93560
4800 50TH ST W	ROSAMOND	CA	93560
48050 91ST ST W	LANCASTER	CA	93536
482 MAALO ST	KAHULUI	HI	96732
4820 W TRACE CREEK RD	WAVERLY	TN	37185
4822 W AVENUE N	LANCASTER	CA	93536
4848 50TH ST W	ROSAMOND	CA	93560
4875 SWEETSER RD	ROSAMOND	CA	93560
4900 N SCOTTSDALE RD STE 5000	SCOTTSDALE	AZ	85251
4924 BALBOA BLVD # 389	ENCINO	CA	91316
4930 W 129TH ST	HAWTHORNE	CA	90250
4935 W 21ST ST	LOS ANGELES	CA	90016
4971 JENKINS PL	DUBLIN	CA	94568
5007 MUIRWOOD DR	PLEASANTON	CA	94588

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
5020 W 133RD ST	HAWTHORNE	CA	90250
5026 TIERRA ABIERTA DR	BAKERSFIELD	CA	93307
5048 61ST ST W	ROSAMOND	CA	93560
5049 60TH ST W	ROSAMOND	CA	93560
505 N CAROLINA AVE	MAIDEN	NC	28650
5073 MEADOWSWEET DR	PALMDALE	CA	93551
5076 62ND ST W	ROSAMOND	CA	93560
5081 60TH ST W	ROSAMOND	CA	93560
5088 CHIMINEAS AVE	TARZANA	CA	91356
5093 61ST ST W	ROSAMOND	CA	93560
5104 62ND ST W	ROSAMOND	CA	93560
5107 62ND ST W	ROSAMOND	CA	93560
5109 60TH ST W	ROSAMOND	CA	93560
5110 61ST ST W	ROSAMOND	CA	93560
5114 E CRESCENT DR	ANAHEIM	CA	92807
5118 BARELA AVE	TEMPLE CITY	CA	91780
512 AVENUE F	REDONDO BEACH	CA	90277
514 E NEWGROVE ST	LANCASTER	CA	93535
515 N SHELTON ST	BURBANK	CA	91506
519 N ALHAMBRA AVE APT C	MONTEREY PARK	CA	91755
5196 LUPINE ST	YORBA LINDA	CA	92886
5200 KANAN RD STE 225	AGOURA HILLS	CA	91301
521 TURQUOISE DR	HERCULES	CA	94547
5219 W AVE	LANCASTER	CA	93536
522 S NEVADA ST	RIDGECREST	CA	93555

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
525 T ALONZO ST STA CRUZ	MANILLA PHIPPINES		
5250 W 190TH ST	TORRANCE	CA	90503
526 N BONNIE BRAE ST	LOS ANGELES	CA	90026
527 F AVE	CORONADO	CA	92118
530 COMMERCE AVE STE B	PALMDALE	CA	93551
530 E AVENUE 39	LOS ANGELES	CA	90031
5300 E LOS ANGELES AVE	SIMI VALLEY	CA	93063
5320 TRUMAN RD	ROSAMOND	CA	93560
5332 COBALT AVE	ROSAMOND	CA	93560
5335 W ROSAMOND BLVD SPC 13	ROSAMOND	CA	93560
5335 W ROSAMOND BLVD SPC 14B	ROSAMOND	CA	93560
5335 W ROSAMOND BLVD SPC 15	ROSAMOND	CA	93560
5335 W ROSAMOND BLVD SPC 27	ROSAMOND	CA	93560
5335 W ROSAMOND BLVD SPC 37	ROSAMOND	CA	93560
5335 W ROSAMOND BLVD SPC 49	ROSAMOND	CA	93560
5335 W ROSAMOND BLVD SPC 50	ROSAMOND	CA	93560
5335 W ROSAMOND BLVD SPC 53	ROSAMOND	CA	93560
5335 W ROSAMOND BLVD SPC 9	ROSAMOND	CA	93560
5340 COBALT AVE	ROSAMOND	CA	93560
5341 COBALT AVE	ROSAMOND	CA	93560
5350 HALIFAX RD	TEMPLE CITY	CA	91780
539 N MARTEL AVE	LOS ANGELES	CA	90036
5400 COBALT AVE	ROSAMOND	CA	93560
5401 COBALT AVE	ROSAMOND	CA	93560
5408 COBALT AVE	ROSAMOND	CA	93560

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
5416 COBALT AVE	ROSAMOND	CA	93560
5424 COBALT AVE	ROSAMOND	CA	93560
5426 TRUMAN RD	ROSAMOND	CA	93560
5432 COBALT AVE	ROSAMOND	CA	93560
5440 COBALT AVE	ROSAMOND	CA	93560
5448 COBALT AVE	ROSAMOND	CA	93560
54551 INVERNESS WAY	LA QUINTA	CA	92253
5483 BURNING TREE DR	LA CANADA	CA	91011
5511 W ROSAMOND BLVD	ROSAMOND	CA	93560
5512 MOJAVE TROPICO RD	ROSAMOND	CA	93560
555 LAURIE LN APT D2	THOUSAND OAKS	CA	91360
555 N EL CAMINO REAL # A380	SAN CLEMENTE	CA	92672
5554 W ROSAMOND BLVD	ROSAMOND	CA	93560
560 W MAIN ST # C257	ALHAMBRA	CA	91801
563 PASEO BURGA	CHULA VISTA	CA	91910
5636 W ROSAMOND BLVD	ROSAMOND	CA	93560
56594 PROSPER JUNCTION RD	BANDON	OR	97411
5675 W ROSAMOND BLVD	ROSAMOND	CA	93560
568 18TH AVE	SAN FRANCISCO	CA	94121
570 DELAWARE AVE	BUFFALO	NY	14202
5711 GOBI AVE	NEWMAN	CA	95360
574 N 3RD ST	BISHOP	CA	93514
5760 W AVE E	LANCASTER	CA	93536
5784 FELSITE AVE	ROSAMOND	CA	93560
582 STARLIGHT CREST DR	LA CANADA FLT	CA	91011

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
5849 HOMESTEAD DR	MOJAVE	CA	93501
5852 FELSITE AVE	ROSAMOND	CA	93560
5852 FELSITE AVE	ROSAMOND	CA	93560
5884 BACKUS RD	MOJAVE	CA	93501
589 FIRESTONE RD	MCALESTER	OK	74501
5926 PORTSMOUTH ST	CHINO	CA	91710
5937 ALESSANDRO AVE	TEMPLE CITY	CA	91780
59681 WOODLAND TER	SAINT HELENS	OR	97051
600 S BEACH BLVD APT 53	ANAHEIM	CA	92804
6015 SCRIPPS ST	SAN DIEGO	CA	92122
6015 W AVE E	LANCASTER	CA	93536
6021 FELSITE AVE	ROSAMOND	CA	93560
605 N ALAMO ST APT 1	ANAHEIM	CA	92801
605 QUEENSRIDGE CT	LAS VEGAS	NV	89145
6057 SWEETSER RD	ROSAMOND	CA	93560
6075 E NUGGET PATCH TRL	PRESCOTT	AZ	86303
608 JIM DR	SAN JOSE	CA	95133
6080 STARDUST AVE	ROSAMOND	CA	93560
6091 DEVONSHIRE DR	PALMDALE	CA	93551
6100 S GRAMERCY PL	LOS ANGELES	CA	90047
6100 STARDUST AVE	ROSAMOND	CA	93560
6107 SWEETSER RD	ROSAMOND	CA	93560
6107 W 75TH PL	LOS ANGELES	CA	90045
612 BUENA VISTA AVE APT H	ALAMEDA	CA	94501
614 W MORGAN ST	RIALTO	CA	92376

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
6142 W AVE E	LANCASTER	CA	93536
6145 SWEETSER RD	ROSAMOND	CA	93560
61478 DESERT AIR RD	JOSHUA TREE	CA	92252
6169 SWEETSER RD	ROSAMOND	CA	93560
6170 STARDUST AVE	ROSAMOND	CA	93560
6180 VILLA FLORA	BONSALL	CA	92003
6251 AZALEA DR	LANCASTER	CA	93536
6253 SUNSHINE AVE	LANCASTER	CA	93536
6254 ROADRUNNER AVE	ROSAMOND	CA	93560
6271 SWEETSER RD	ROSAMOND	CA	93560
6277 ESCALLONIA DR	NEWARK	CA	94560
630 OCEAN VIEW AVE	ENCINITAS	CA	92024
6301 SWEETSER RD	ROSAMOND	CA	93560
6340 LAKE WORTH BLVD # 103	FORT WORTH	TX	76135
6359 SWEETSER RD	ROSAMOND	CA	93560
6380 WILSHIRE BLVD STE 1610	LOS ANGELES	CA	90048
640 S HILL ST STE 354	LOS ANGELES	CA	90014
6409 SWEETSER RD	ROSAMOND	CA	93560
6411 RINGO CIR	HUNTINGTN BCH	CA	92647
6423 W ROSAMOND BLVD	ROSAMOND	CA	93560
6429 S 1865 E	SALT LAKE CTY	UT	84121
6439 WHITAKER AVE	VAN NUYS	CA	91406
6440 SARD ST	RANCHO CUCAMONGA	CA	91701
6464 ROADRUNNER AVE	ROSAMOND	CA	93560
6465 SWEETSER RD	ROSAMOND	CA	93560

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
6510 E SPRING ST	LONG BEACH	CA	90815
6519 ROUND MOUNTAIN RD	BAKERSFIELD	CA	93308
6534 CONSTELLATION AVE	ROSAMOND	CA	93560
654 SHAVANO ST	CRESTED BUTTE	CO	81224
6558 LONETREE BLVD	ROCKLIN	CA	95765
6562 BIANCA AVE	LAKE BALBOA	CA	91406
6590 CONSTELLATION AVE	ROSAMOND	CA	93560
6608 MURIETTA AVE	VAN NUYS	CA	91405
6688 N CENTRAL EXPY STE 500	DALLAS	TX	75206
67 IRVING PL FL 9	NEW YORK	NY	10003
6713 LYNCH AVE	RIVERBANK	CA	95367
6824 MELROSE AVE	LOS ANGELES	CA	90038
6858 CONTES ST	PALMDALE	CA	93552
700 FRONT ST UNIT 1505	SAN DIEGO	CA	92101
700 N WILLOW AVE	COMPTON	CA	90221
701 PARKCENTER DR	SANTA ANA	CA	92705
710 SKIMMER DR	PATTERSON	CA	95363
7136 EAGLE RIDGE DR	GILROY	CA	95020
716 PAMELA KAY LN	WHITTIER	CA	90601
7257 PAINTER AVE	WHITTIER	CA	90602
7303 DE SOTO AVE	CANOGA PARK	CA	91303
731 W BAGNALL ST	GLENDORA	CA	91740
7412 SUGAR MAPLE DR	IRVING	TX	75063
7417 ORION AVE	VAN NUYS	CA	91406
744 LINCOLN AVE # A	ALAMEDA	CA	94501

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
7450 PAINTED MURAL AVE	LAS VEGAS	NV	89179
748 ARBOLADO DR	FULLERTON	CA	92835
7500 WHITE OAK AVE	VAN NUYS	CA	91406
7501 SAN EMIDIO CT	LAMONT	CA	93241
751 AMY WAY	MANTECA	CA	95337
7516 W AVE E # 11	QUARTZ HILL	CA	93536
754 COSTA RICA AVE	SAN MATEO	CA	94402
760 N WORKMAN ST	SAN FERNANDO	CA	91340
7602 BIRCH ST	ROSAMOND	CA	93560
7613 PACK SADDLE CT	BAKERSFIELD	CA	93309
7655 W KAREN LEE LN	PEORIA	AZ	85382
76815 IROQUOIS DR	INDIAN WELLS	CA	92210
7720 GLENGARRY AVE	WHITTIER	CA	90606
7720 W QUINCY DR	LAKEWOOD	CO	80235
7773 ELDER AVE	ROSAMOND	CA	93560
7814 42ND ST W	MOJAVE	CA	93501
7865 NOEL ST	ROSAMOND	CA	93560
787 MEDITERRANEAN LN	REDWOOD CITY	CA	94065
7871 CAMDEN CIR	LA PALMA	CA	90623
7909 DENIVELLE RD	SUNLAND	CA	91040
7936 W 80TH ST	PLAYA DEL REY	CA	90293
8045 W AVENUE E	LANCASTER	CA	93536
805 WOODACRES RD	SANTA MONICA	CA	90402
8051 CONGRESS AVE	BOCA RATON	FL	33487
8281 SE 132ND LN	SUMMERFIELD	FL	34491

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
829 E PALMDALE BLVD # 47	PALMDALE	CA	93550
835 E HIGHWAY 193 # 117	LAYTON	UT	84041
8376 RIMRIDGE LN	SAN DIEGO	CA	92126
8400 E PRENTICE AVE STE 900	GREENWOOD VILLAGE	CO	80111
8460 VIBURNUM AVE	CALIFORNIA CITY	CA	93505
8481 DONAKER ST	SAN DIEGO	CA	92129
8512 WILLOW AVE	CALIFORNIA CITY	CA	93505
8543 W ROSAMOND BLVD	ROSAMOND	CA	93560
8550 CASTLELYONS CT	ELK GROVE	CA	95624
8555 AQUARIUS DR	SAN DIEGO	CA	92126
8599 LOCUST DR	BUENA PARK	CA	90620
860 STREAMVIEW ST	WALNUT	CA	91789
8601 EATOUGH AVE	WEST HILLS	CA	91304
8737 KITTYHAWK AVE	LOS ANGELES	CA	90045
8738 W ROSAMOND BLVD	ROSAMOND	CA	93560
8738 W ROSAMOND BLVD	ROSAMOND	CA	93560
8751 CERRITO CANYON CT	LAS VEGAS	NV	89148
8756 SVL BOX	VICTORVILLE	CA	92395
880 BEACON LITE RD LOT 9	MONUMENT	CO	80132
8800 N GAINEY CENTER DR STE 255	SCOTTSDALE	AZ	85258
8851 20TH ST W	MOJAVE	CA	93501
8851 RUTHELEN ST	LOS ANGELES	CA	90047
8862 SATTERFIELD DR	HUNTINGTN BCH	CA	92646
89 CARRICK CIR	HAYWARD	CA	94542
9 MONACO	NEWPORT BEACH	CA	92660

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
900 CALLE SIMPATICO	GLENDALE	CA	91208
900 E SATURNINO RD APT 135	PALM SPRINGS	CA	92262
901 W COLUMBUS ST	BAKERSFIELD	CA	93301
908 5TH ST UNIT 102	SANTA MONICA	CA	90403
908 N BEVERLY DR	BEVERLY HILLS	CA	90210
908 TERRACE 49	LOS ANGELES	CA	90042
909 TAHONA DR	WAHPETON	ND	58075
91 KAILEOLEA DR # 3C5	EWA BEACH	HI	96706
910 ESTATE CT	WALNUT	CA	91789
913 LIBRARY ST	SAN FERNANDO	CA	91340
9131 GAINFORD ST	DOWNEY	CA	90240
9136 W SCOTLAND AVE	PEORIA	AZ	85345
915 WESTCHESTER PL	LOS ANGELES	CA	90019
916 W BURBANK BLVD # 106	BURBANK	CA	91506
920 IROLO ST APT 3	LOS ANGELES	CA	90006
9217 STAMPS AVE	DOWNEY	CA	90240
925 VIA AMADEO	SAN DIMAS	CA	91773
9354 W ROSAMOND BLVD	ROSAMOND	CA	93560
938 MELROSE ST	NATIONAL CITY	CA	91950
941 CALLE CANTA	GLENDALE	CA	91208
9500 LAUREL CANYON BLVD	ARLETA	CA	91331
9512 HOLLISTER ST	VENTURA	CA	93004
9533 WILMINGTON AVE	LOS ANGELES	CA	90002
9580 W ROSAMOND BLVD # 3	ROSAMOND	CA	93560
9601 DEER VALLEY RD	BRENTWOOD	CA	94513

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
9610 E AVENUE S	LITTLEROCK	CA	93543
963 W AVE E	LANCASTER	CA	93534
9650 W ROSAMOND BLVD	ROSAMOND	CA	93560
9668 W ROSAMOND BLVD	ROSAMOND	CA	93560
97 MARBELLA	SAN CLEMENTE	CA	92673
9705 E S-14 AVE	LITTLEROCK	CA	93543
9714 W ROSAMOND BLVD	ROSAMOND	CA	93560
9734 E AVENUE S	LITTLEROCK	CA	93543
9740 WALNUT CT	RANCHO CUCAMONGA	CA	91730
980 W OLIVER ST	SAN PEDRO	CA	90731
9837 BROCKWAY ST	LENEXA	KS	66220
9871 SAHARA AVE	ROSAMOND	CA	93560
9875 CRESTBROOK ST	BELLFLOWER	CA	90706
G03-2ND WALNUT GROVE AVE FL 2131	ROSEMEAD	CA	91770
PO BOX 1025	ROSAMOND	CA	93560
PO BOX 1027	LAKE HUGHES	CA	93532
PO BOX 1059	ROSAMOND	CA	93560
PO BOX 108	ROSAMOND	CA	93560
PO BOX 1080	ROSAMOND	CA	93560
PO BOX 1083	ROSAMOND	CA	93560
PO BOX 1086	ROSAMOND	CA	93560
PO BOX 10926	BAKERSFIELD	CA	93389
PO BOX 1107	ROSAMOND	CA	93560
PO BOX 1117	MOJAVE	CA	93502
PO BOX 1132	ROSAMOND	CA	93560

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
PO BOX 1133	ROSAMOND	CA	93560
PO BOX 1162	ROSAMOND	CA	93560
PO BOX 1162	ROSAMOND	CA	93560
PO BOX 1173	ROSAMOND	CA	93560
PO BOX 1178	TEMECULA	CA	92593
PO BOX 1207	ROSAMOND	CA	93560
PO BOX 1208	WHITEFISH	MT	59937
PO BOX 1307	ROSAMOND	CA	93560
PO BOX 1344	DEL VALLE	TX	78617
PO BOX 1436	ROSAMOND	CA	93560
PO BOX 1467	ROSAMOND	CA	93560
PO BOX 1468	ROSAMOND	CA	93560
PO BOX 1510	LA MIRADA	CA	90637
PO BOX 155	ROSAMOND	CA	93560
PO BOX 1552	ROSAMOND	CA	93560
PO BOX 156	BONITA	CA	91908
PO BOX 1562	ROSAMOND	CA	93560
PO BOX 157	ROSAMOND	CA	93560
PO BOX 1574	ROSAMOND	CA	93560
PO BOX 1579	ROSAMOND	CA	93560
PO BOX 1579	ROSAMOND	CA	93560
PO BOX 1579	ROSAMOND	CA	93560
PO BOX 1596	LANCASTER	CA	93539
PO BOX 1628	ROSAMOND	CA	93560
PO BOX 16296	ENCINO	CA	91416

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
PO BOX 1664	ROSAMOND	CA	93560
PO BOX 1666	ROSAMOND	CA	93560
PO BOX 167	ROSAMOND	CA	93560
PO BOX 1693	ROSAMOND	CA	93560
PO BOX 1784	ROSAMOND	CA	93560
PO BOX 1790	ROSAMOND	CA	93560
PO BOX 1790	ROSAMOND	CA	93560
PO BOX 180	ROSAMOND	CA	93560
PO BOX 1806	ROSAMOND	CA	93560
PO BOX 1816	ROSAMOND	CA	93560
PO BOX 1841	ROSAMOND	CA	93560
PO BOX 1848	ROSAMOND	CA	93560
PO BOX 1874	ROSAMOND	CA	93560
PO BOX 1877	ROSAMOND	CA	93560
PO BOX 1878	ROSAMOND	CA	93560
PO BOX 19124	LOS ANGELES	CA	90019
PO BOX 1925	ROSAMOND	CA	93560
PO BOX 1954	ROSAMOND	CA	93560
PO BOX 1973	ROSAMOND	CA	93560
PO BOX 1975	ROSAMOND	CA	93560
PO BOX 1976	ROSAMOND	CA	93560
PO BOX 1999	ROSAMOND	CA	93560
PO BOX 2	ROSAMOND	CA	93560
PO BOX 2021	ROSAMOND	CA	93560
PO BOX 2060	ROSAMOND	CA	93560

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
PO BOX 2104	PALMDALE	CA	93550
PO BOX 2119	ROSAMOND	CA	93560
PO BOX 2198	MEMPHIS	TN	38101
PO BOX 2210	ROSAMOND	CA	93560
PO BOX 2262	ROSAMOND	CA	93560
PO BOX 2302	CARMEL	CA	93921
PO BOX 2302	CARMEL	CA	93921
PO BOX 2302	CARMEL	CA	93921
PO BOX 230785	ENCINITAS	CA	92023
PO BOX 2324	ROSAMOND	CA	93560
PO BOX 2372	LANCASTER	CA	93539
PO BOX 241	ROSAMOND	CA	93560
PO BOX 2411	LA HABRA	CA	90632
PO BOX 2414	ROSAMOND	CA	93560
PO BOX 2417	ROSAMOND	CA	93560
PO BOX 2423	ROSAMOND	CA	93560
PO BOX 2425	ROSAMOND	CA	93560
PO BOX 24449	LOS ANGELES	CA	90024
PO BOX 2477	ROSAMOND	CA	93560
PO BOX 2497	LANCASTER	CA	93539
PO BOX 2505	ROSAMOND	CA	93560
PO BOX 252	ROSAMOND	CA	93560
PO BOX 2600	ROSAMOND	CA	93560
PO BOX 2614	ROSAMOND	CA	93560
PO BOX 277	LOVELOCK	NV	89419

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
PO BOX 289	CLINTON	WA	98236
PO BOX 2937	KALISPELL	MT	59903
PO BOX 3036	LAKE CITY	FL	32056
PO BOX 311	ROSAMOND	CA	93560
PO BOX 31159	SANTA BARBARA	CA	93130
PO BOX 3176	LANCASTER	CA	93586
PO BOX 3271	LANCASTER	CA	93586
PO BOX 330116	PACOIMA	CA	91333
PO BOX 3342	CHATSWORTH	CA	91313
PO BOX 335	MOJAVE	CA	93502
PO BOX 344	ROSAMOND	CA	93560
PO BOX 3631	WESTLAKE VLG	CA	91359
PO BOX 370	ROSAMOND	CA	93560
PO BOX 371883	RESEDA	CA	91337
PO BOX 37996	CHARLOTTE	NC	28237
PO BOX 398	ROSAMOND	CA	93560
PO BOX 41	JEFFERSON	OR	97352
PO BOX 444	ROSAMOND	CA	93560
PO BOX 4534	LANCASTER	CA	93539
PO BOX 462	ROSAMOND	CA	93560
PO BOX 477	ROSAMOND	CA	93560
PO BOX 4892	LANCASTER	CA	93539
PO BOX 4892	LANCASTER	CA	93539
PO BOX 5101	LAGUNA BEACH	CA	92652
PO BOX 51111	LOS ANGELES	CA	90051

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
PO BOX 5284	CHATSWORTH	CA	91313
PO BOX 5284	CHATSWORTH	CA	91313
PO BOX 55	ROSAMOND	CA	93560
PO BOX 564	ROSAMOND	CA	93560
PO BOX 56867	SHERMAN OAKS	CA	91413
PO BOX 57	ROSAMOND	CA	93560
PO BOX 572	ROSAMOND	CA	93560
PO BOX 572604	TARZANA	CA	91357
PO BOX 573	ROSAMOND	CA	93560
PO BOX 5778	SANTA MONICA	CA	90409
PO BOX 593	ROSAMOND	CA	93560
PO BOX 605	LANCASTER	CA	93584
PO BOX 610	ACTON	CA	93510
PO BOX 642821	LOS ANGELES	CA	90064
PO BOX 654	CYPRESS	CA	90630
PO BOX 657	DES MOINES	IA	50306
PO BOX 661	ROSAMOND	CA	93560
PO BOX 67	ROSAMOND	CA	93560
PO BOX 687	LA MADERA	NM	87539
PO BOX 689	MOJAVE	CA	93502
PO BOX 745	ROSAMOND	CA	93560
PO BOX 748	LEONA VALLEY	CA	93551
PO BOX 749	TEHACHAPI	CA	93581
PO BOX 7728	BROOKINGS	OR	97415
PO BOX 7895	RIVERSIDE	CA	92513

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
PO BOX 800	ARROYO GRANDE	CA	93421
PO BOX 8010	LANCASTER	CA	93539
PO BOX 803	ROSAMOND	CA	93560
PO BOX 804	ROSAMOND	CA	93560
PO BOX 8062	LANCASTER	CA	93539
PO BOX 812	ROSAMOND	CA	93560
PO BOX 82515	BAKERSFIELD	CA	93380
PO BOX 836	ROSAMOND	CA	93560
PO BOX 848	YUCCA	AZ	86438
PO BOX 86	TOKELAND	WA	98590
PO BOX 867	ELEELE	HI	96705
PO BOX 8783	LANCASTER	CA	93539
PO BOX 89	CORRALES	NM	87048
PO BOX 901269	PALMDALE	CA	93590
PO BOX 9256	RANCHO SANTA FE	CA	92067
PO BOX 926	ROSAMOND	CA	93560
PO BOX 935	RANCHO MIRAGE	CA	92270
PO BOX 940128	SIMI VALLEY	CA	93094
PO BOX 940936	SIMI VALLEY	CA	93094
PO BOX 943	ROSAMOND	CA	93560
PO BOX 944	BLUE JAY	CA	92317
PO BOX 9537	LANCASTER	CA	93539
PO BOX 969	ROSAMOND	CA	93560
PO BOX 973	ROSAMOND	CA	93560
PO BOX 994	ROSAMOND	CA	93560

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
PO BOX H	ROSAMOND	CA	93560
PO BOX HH	MONTEREY	CA	93942
RR 1 BOX 1340	CEMENT	OK	73017
ST RT 1 # 295	ROSAMOND	CA	93560
1115 TRUXTUN AVE	BAKERSFIELD	CA	93301
12805 CRYSTAL COVE AVENUE	BAKERSFIELD	CA	93311
10310 ROSAMOND BLVD	ROSAMOND	CA	93560
11650 W ROSAMOND BLVD	ROSAMOND	CA	93560
11936 W ROSAMOND BLVD	ROSAMOND	CA	93560
12492 W ROSAMOND BLVD	WILLOW SPRINGS	CA	93560
13901 W ROSAMOND BLVD	WILLOW SPRINGS	CA	93560
13956 W ROSAMOND BLVD	ROSAMOND	CA	93560
1645 TROPICO RD	ROSAMOND	CA	93560
2080 W ROSAMOND BLVD	ROSAMOND	CA	93560
2500 STARBRITE AVE	ROSAMOND	CA	93560
2511 W ROSAMOND BLVD	ROSAMOND	CA	93560
2535 W ROSAMOND BLVD	ROSAMOND	CA	93560
2540 W ROSAMOND BLVD	ROSAMOND	CA	93560
2547 W ROSAMOND BLVD	ROSAMOND	CA	93560
2550 W ROSAMOND BLVD	ROSAMOND	CA	93560
2674 W ROSAMOND BLVD	ROSAMOND	CA	93560
2842 W ROSAMOND BLVD	ROSAMOND	CA	93560
2925 W ROSAMOND BLVD	ROSAMOND	CA	93560
2938 W ROSAMOND BLVD	ROSAMOND	CA	93560
2950 ACACIA ST	ROSAMOND	CA	93560

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
2968 SIERRA HWY	ROSAMOND	CA	93560
2969 B ST	ROSAMOND	CA	93560
3000 SIERRA HWY	ROSAMOND	CA	93560
3022 100TH ST W	ROSAMOND	CA	93560
3030 SIERRA HWY	ROSAMOND	CA	93560
3033 25TH ST W	ROSAMOND	CA	93560
3052 SIERRA HWY	ROSAMOND	CA	93560
3064 75TH ST W	ROSAMOND	CA	93560
3075 SIERRA HWY	ROSAMOND	CA	93560
3100 SIERRA HWY	ROSAMOND	CA	93560
3131 SIERRA HWY	ROSAMOND	CA	93560
3201 MOJAVE TROPICO RD	ROSAMOND	CA	93560
3207 W ROSAMOND BLVD	ROSAMOND	CA	93560
3237 DAWN RD	ROSAMOND	CA	93560
3271 MICA CT	ROSAMOND	CA	93560
3279 MICA CT	ROSAMOND	CA	93560
3303 SIERRA HWY	ROSAMOND	CA	93560
3377 SIERRA HWY	ROSAMOND	CA	93560
3400 JAGUAR CT	ROSAMOND	CA	93560
3459 HAVEN ST	ROSAMOND	CA	93560
3459 SIERRA HWY	ROSAMOND	CA	93560
3478 TROPICO RD	ROSAMOND	CA	93560
3483 HAVEN ST	ROSAMOND	CA	93560
3546 W ROSAMOND BLVD	ROSAMOND	CA	93560
3561 HAVEN ST	ROSAMOND	CA	93560

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
3601 SIERRA HWY	ROSAMOND	CA	93560
3611 SIERRA HWY	ROSAMOND	CA	93560
3641 DAWN RD	ROSAMOND	CA	93560
3698 20TH ST W	ROSAMOND	CA	93560
3733 MOJAVE TROPICO RD	ROSAMOND	CA	93560
3747 20TH ST W	ROSAMOND	CA	93560
3759 MOJAVE TROPICO RD	ROSAMOND	CA	93560
3775 SIERRA HWY	ROSAMOND	CA	93560
40TH ST W	ROSAMOND	CA	93560
4212 W ROSAMOND BLVD	ROSAMOND	CA	93560
4317 W ROSAMOND BLVD	ROSAMOND	CA	93560
4500 W ROSAMOND BLVD	ROSAMOND	CA	93560
4500 W ROSAMOND BLVD SPC 10A	ROSAMOND	CA	93560
4500 W ROSAMOND BLVD SPC 12A	ROSAMOND	CA	93560
4500 W ROSAMOND BLVD SPC 15A	ROSAMOND	CA	93560
4500 W ROSAMOND BLVD SPC 16A	ROSAMOND	CA	93560
4500 W ROSAMOND BLVD SPC 17A	ROSAMOND	CA	93560
4500 W ROSAMOND BLVD SPC 19A	ROSAMOND	CA	93560
4500 W ROSAMOND BLVD SPC 1A	ROSAMOND	CA	93560
4500 W ROSAMOND BLVD SPC 20	ROSAMOND	CA	93560
4500 W ROSAMOND BLVD SPC 21A	ROSAMOND	CA	93560
4500 W ROSAMOND BLVD SPC 22A	ROSAMOND	CA	93560
4500 W ROSAMOND BLVD SPC 23A	ROSAMOND	CA	93560
4500 W ROSAMOND BLVD SPC 24	ROSAMOND	CA	93560
4500 W ROSAMOND BLVD SPC 27A	ROSAMOND	CA	93560

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
4500 W ROSAMOND BLVD SPC 28	ROSAMOND	CA	93560
4500 W ROSAMOND BLVD SPC 28A	ROSAMOND	CA	93560
4500 W ROSAMOND BLVD SPC 30A	ROSAMOND	CA	93560
4500 W ROSAMOND BLVD SPC 3A	ROSAMOND	CA	93560
4500 W ROSAMOND BLVD SPC 5	ROSAMOND	CA	93560
4533 65TH ST W	ROSAMOND	CA	93560
4568 W ROSAMOND BLVD	ROSAMOND	CA	93560
4589 65TH ST W	ROSAMOND	CA	93560
4968 W ROSAMOND BLVD	ROSAMOND	CA	93560
5200 MOJAVE TROPICO RD	ROSAMOND	CA	93560
5335 W ROSAMOND BLVD	ROSAMOND	CA	93560
5335 W ROSAMOND BLVD	ROSAMOND	CA	93560
5335 W ROSAMOND BLVD SPC 10	ROSAMOND	CA	93560
5335 W ROSAMOND BLVD SPC 12	ROSAMOND	CA	93560
5335 W ROSAMOND BLVD SPC 13	ROSAMOND	CA	93560
5335 W ROSAMOND BLVD SPC 14	ROSAMOND	CA	93560
5335 W ROSAMOND BLVD SPC 20	ROSAMOND	CA	93560
5335 W ROSAMOND BLVD SPC 21	ROSAMOND	CA	93560
5335 W ROSAMOND BLVD SPC 22	ROSAMOND	CA	93560
5335 W ROSAMOND BLVD SPC 27	ROSAMOND	CA	93560
5335 W ROSAMOND BLVD SPC 3	ROSAMOND	CA	93560
5335 W ROSAMOND BLVD SPC 35	ROSAMOND	CA	93560
5335 W ROSAMOND BLVD SPC 37	ROSAMOND	CA	93560
5335 W ROSAMOND BLVD SPC 38	ROSAMOND	CA	93560
5335 W ROSAMOND BLVD SPC 42	ROSAMOND	CA	93560

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
5335 W ROSAMOND BLVD SPC 48	ROSAMOND	CA	93560
5335 W ROSAMOND BLVD SPC 49	ROSAMOND	CA	93560
5335 W ROSAMOND BLVD SPC 5	ROSAMOND	CA	93560
5335 W ROSAMOND BLVD SPC 50	ROSAMOND	CA	93560
5335 W ROSAMOND BLVD SPC 53	ROSAMOND	CA	93560
5335 W ROSAMOND BLVD SPC 6	ROSAMOND	CA	93560
5335 W ROSAMOND BLVD SPC 7	ROSAMOND	CA	93560
5335 W ROSAMOND BLVD SPC 8	ROSAMOND	CA	93560
5335 W ROSAMOND BLVD SPC 9	ROSAMOND	CA	93560
5512 MOJAVE TROPICO RD	ROSAMOND	CA	93560
5521 RHYOLITE AVE	ROSAMOND	CA	93560
5570 W ROSAMOND BLVD	ROSAMOND	CA	93560
5615 W ROSAMOND BLVD	ROSAMOND	CA	93560
5616 W ROSAMOND BLVD	ROSAMOND	CA	93560
5767 W ROSAMOND BLVD	ROSAMOND	CA	93560
5834 W ROSAMOND BLVD	ROSAMOND	CA	93560
6037 W ROSAMOND BLVD	ROSAMOND	CA	93560
6205 SWEETSER RD	ROSAMOND	CA	93560
6241 SWEETSER RD	ROSAMOND	CA	93560
6359 SWEETSER RD	ROSAMOND	CA	93560
6465 SWEETSER RD	ROSAMOND	CA	93560
6523 W ROSAMOND BLVD	ROSAMOND	CA	93560
7347 W ROSAMOND BLVD	ROSAMOND	CA	93560
7805 W ROSAMOND BLVD	ROSAMOND	CA	93560
7901 ROSAMOND BLVD	ROSAMOND	CA	93560

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

Address	City	State	Zip
8297 W ROSAMOND BLVD	ROSAMOND	CA	93560
8847 W ROSAMOND BLVD	ROSAMOND	CA	93560
9009 W ROSAMOND BLVD	ROSAMOND	CA	93560

TABLE B-2 AGENCIES

Name	Title	Agency	Address	City	State	Zip
BRIAN CROFT	SUPERVISOR	U.S. FISH AND WILDLIFE SERVICE, PACIFIC SOUTHWEST REGION	777 E. TAHQUITZ CANYON WAY, SUITE 208	PALM SPRINGS	CA	92262
DAVID YOUNG	SENIOR SPECIALIST, PROPERTY APPRAISER	STATE BOARD OF EQUALIZATION	3321 POWER INN ROAD SUITE 210	SACRAMENTO	CA	95826
DEBORAH JORDAN	ACTING REGIONAL ADMINISTRATOR	U.S. ENVIRONMENTAL PROTECTION AGENCY REGION 9	75 HAWTHORNE ST.	SAN FRANCISCO	CA	94105
EFREN GOMEZ	DISTRICT MANAGER	CAL/OSHA, REGION 4, BAKERSFIELD DISTRICT OFFICE	7718 MEANY AVE.	BAKERSFIELD	CA	93308
GLEN STEPHENS	AIR POLLUTION CONTROL OFFICER	EASTERN KERN AIR POLLUTION CONTROL DISTRICT	2700 M STREET, SUITE 302	BAKERSFIELD	CA	93301
JOHN M. CAHOON	COLLECTIONS MANAGER, HISTORY (SEAVER CENTER FOR WESTERN HISTORY RESEARCH)	NATURAL HISTORY MUSEUM OF LOS ANGELES COUNTY	900 EXPOSITION BLVD.	LOS ANGELES	CA	90007
JULIANNE POLANCO	SHPO	CALIFORNIA OFFICE OF HISTORIC PRESERVATION	1725 23RD STREET, SUITE #100	SACRAMENTO	CA	95816
JULIE VANCE	REGIONAL MANAGER	CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE, CENTRAL REGION (REGION 4)	1234 E. SHAW AVENUE	FRESNO	CA	93710
LA WEEDA WARD	PERMITS SECTION	U.S. ENVIRONMENTAL PROTECTION AGENCY REGION 9	75 HAWTHORNE ST.	SAN FRANCISCO	CA	94105
LEANNE HARGUS	ASSOCIATE SUPERINTENDENT	SOUTHERN KERN UNIFIED SCHOOL DISTRICT	2601 ROSAMOND BLVD.	ROSAMOND	CA	93560

TABLE B-2 AGENCIES

Name	Title	Agency	Address	City	State	Zip
LINYING LI		CALIFORNIA AIR RESOURCES BOARD	1001 I STREET, 19TH FLOOR	SACRAMENTO	CA	95814
LORELEI H. OVIATT	DIRECTOR	KERN COUNTY PLANNING AND NATURAL RESOURCES DEPARTMENT	2700 M STREET. SUITE 100	BAKERSFIELD	CA	93301
MARTHA SANDY	BRANCH CHIEF	CALIFORNIA OFFICE OF ENVIRONMENTAL HEALTH HAZARD ASSESSMENT	1001 I STREET 19TH FLOOR	SACRAMENTO	CA	95814
MIKE TOLLSTRUP	CHIEF, PROJECT ASSESSMENT BRANCH	CALIFORNIA AIR RESOURCES BOARD	1001 I STREET 6TH FLOOR	SACRAMENTO	CA	95814
SHARON K. TAPIA	DSOD DIVISION CHIEF	DIVISION OF SAFETY OF DAMS	PO BOX 942836	SACRAMENTO	CA	94236-001
SIMON BAKER	DIRECTOR, ENERGY DIVISION	CALIFORNIA PUBLIC UTILITIES COMMISSION	505 VAN NESS AVENUE	SAN FRANCISCO	CA	94102
		NATIVE AMERICAN HERITAGE COMMISSION	1550 HARBOR BLVD, SUITE #100	WEST SACRAMENTO	CA	95691
JAN ZIMMERMAN	SUPERVISING ENGINEER ING GEOLOGIST	LAHONTAN REGIONAL WATER QUALITY CONTROL BOARD	15095 AMARGOSA RD, BUILDING 2, SUITE 210	VICTORVILLE	CA	92394
		STATE WATER RESOURCES CONTROL BOARD	1001 I STREET	SACRAMENTO	CA	95814
	TRANSPORTATION PERMITS ISSUANCE BRANCH	CALTRANS	1823 14TH STREET	SACRAMENTO	CA	95814
	HAZARDOUS MATERIAL LICENSING	CALIFORNIA HIGHWAY PATROL	P.O. BOX 942898	SACRAMENTO	CA	942898-0001
	TRANSPORTATION PERMITTING DESK	LOS ANGELES COUNTY DEPARTMENT OF PUBLIC WORKS	900 SOUTH FREMONT AVENUE, 8TH FLOOR	ALHAMBRA	CA	91803
	CALIFORNIA DIVISION OFFICE	FEDERAL MOTOR CARRIER SAFETY ADMINISTRATION	501 I STREET SUITE 9-300	SACRAMENTO	CA	95814
		ANTELOPE VALLEY WATERMASTER	6500 WEST AVENUE N	PALMDALE	CA	93551
	CAISO LEGAL DEPARTMENT	CALIFORNIA INDEPENDENT SYSTEM OPERATOR	250 OUTCROPPING WAY	FOLSOM	CA	95630

TABLE B-2 AGENCIES

Name	Title	Agency	Address	City	State	Zip
		ROSAMOND LIBRARY	3611 W ROSAMOND BLVD	ROSAMOND	CA	93560
		CEC - ENERGY LIBRARY	715 P STREET MS-10	SACRAMENTO	CA	95814-5504
	GOV PUBLICATIONS	FRESNO COUNTY FREE LIBRARY	2420 MARIPOSA ST	FRESNO	CA	93721-2204
		HUMBOLDT COUNTY MAIN LIBRARY	1313 3RD STREET	EUREKA	CA	95501-0553
	SERIALS DIVISION	LOS ANGELES PUBLIC LIBRARY	630 W 5TH ST	LOS ANGELES	CA	90071-2002
	SCIENCE & INDUSTRY DIV	SAN DIEGO PUBLIC LIBRARY	330 PARK BLVD	SAN DIEGO	CA	92101-6478
	GOVERNMENT INFORMATION CENTER	SAN FRANCISCO PUBLIC LIBRARY	100 LARKIN ST	SAN FRANCISCO	CA	94102-4733
	GOV PUBS	STANLEY MOSK LIBRARY & COURTS BLDG	914 CAPITOL MALL 3RD FLR	SACRAMENTO	CA	95814

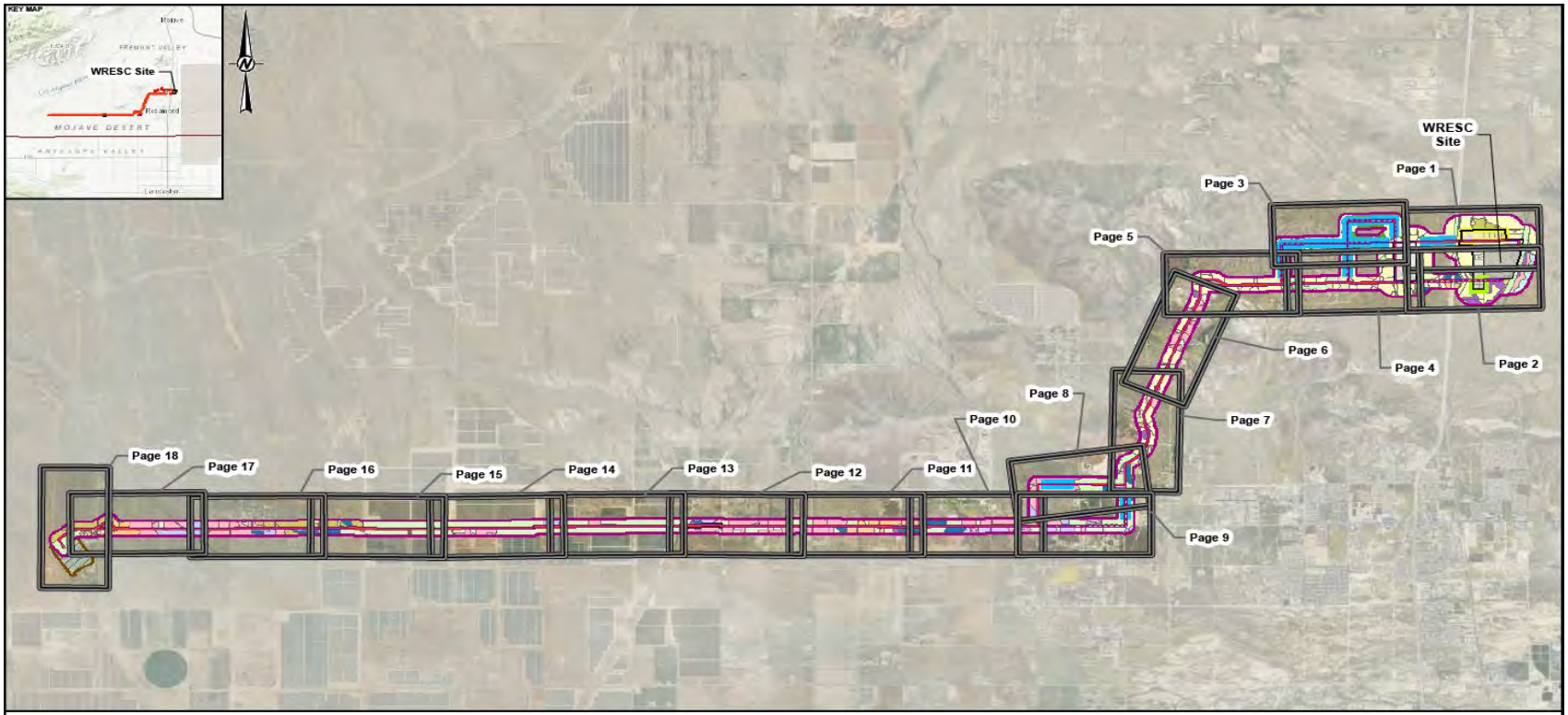
TABLE B-3 INTERVENORS AND INTERESTED PARTIES

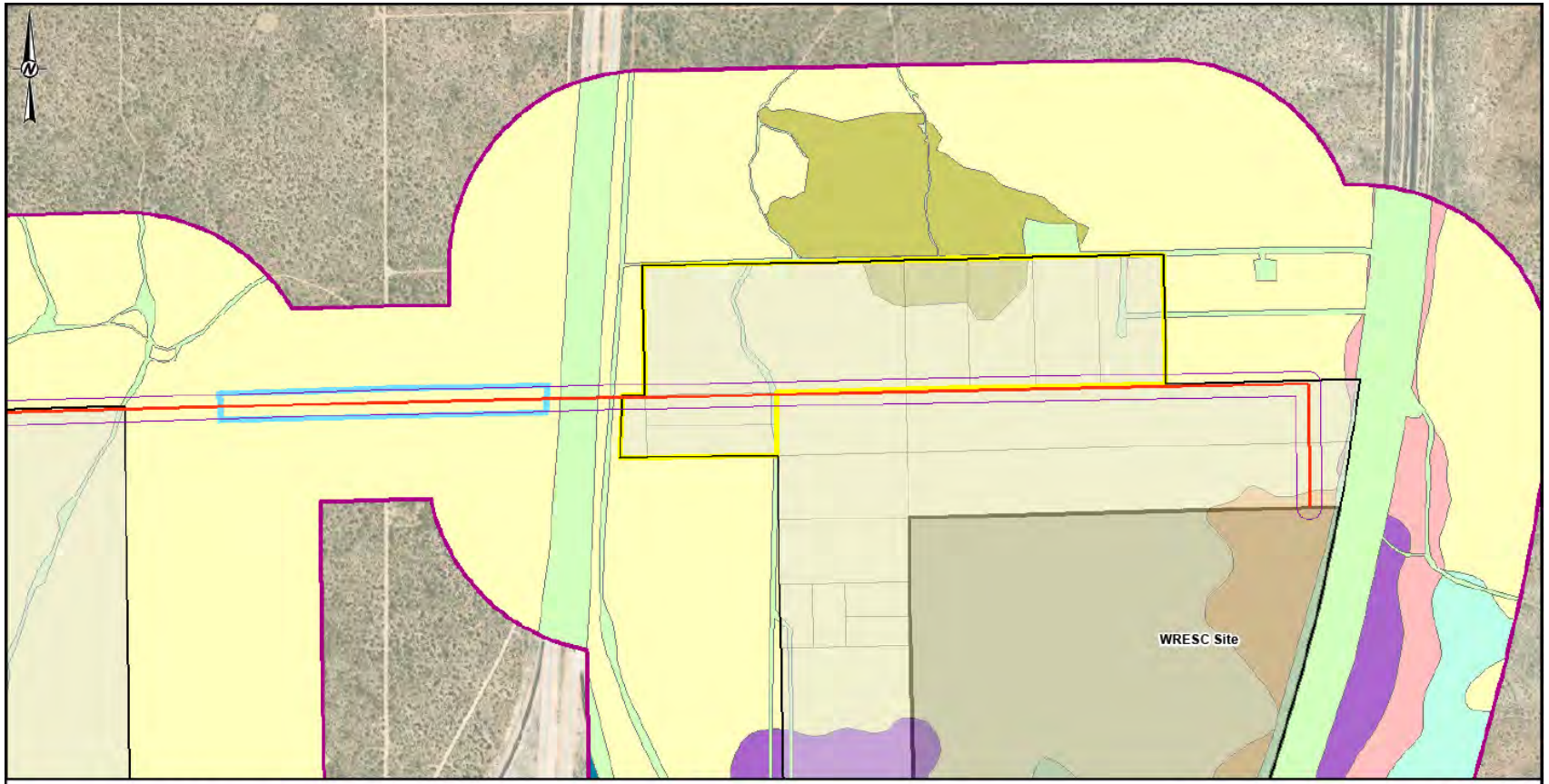
First Name	Last Name	Organization	Address	City	State	Zip
RICHARD	FRANCO	ADAMS BROADWELL JOSEPH & CARDOZO ATTORNEYS FOR INTERVENOR, CALIFORNIA UNIONS FOR RELIABLE ENERGY	601 GATEWAY BOULEVARD SUITE 1000	SOUTH SAN FRANCISCO	CA	94080
ZEYNEP	GRAVES	ATTORNEYS FOR INTERVENOR, CENTER FOR BIOLOGICAL DIVERSITY	2100 FRANKLIN ST. SUITE 375	OAKLAND	CA	94612
LISA	BELENKY	ATTORNEYS FOR INTERVENOR, CENTER FOR BIOLOGICAL DIVERSITY	2100 FRANKLIN ST. SUITE 375	OAKLAND	CA	94612

Appendix C

Natural Vegetation Communities

Appendix C Natural Vegetation Communities





Study Area (500 ft on Either Side of Transmission Line and 1,000 ft Around Project Parcels)

Proposed Transmission Line
- Preferred Route, Aboveground
- Project ROW

Project Components
- WRESC Site
- Other Project Parcels
- Project Boundary

2024 Project Areas
- Gen-Tie Route Options
- P2 North

Vegetation Class
- Allscale scrub (ASSC)
- Cheesebush Scrub (CHBS)
- Creosote bush - white bursage scrub (CBWS)
- Creosote bush scrub (CBS)
- Disturbed/Developed (DH-DEV)
- Needleleaf rabbitbrush scrub (NRS)
- Rubber rabbitbrush scrub (RRS)
- White Bursage Scrub (WBS)

0 500 1,000
1:6,000 FEET

Figure 2
Appendix

Source: Attachment DR46-1

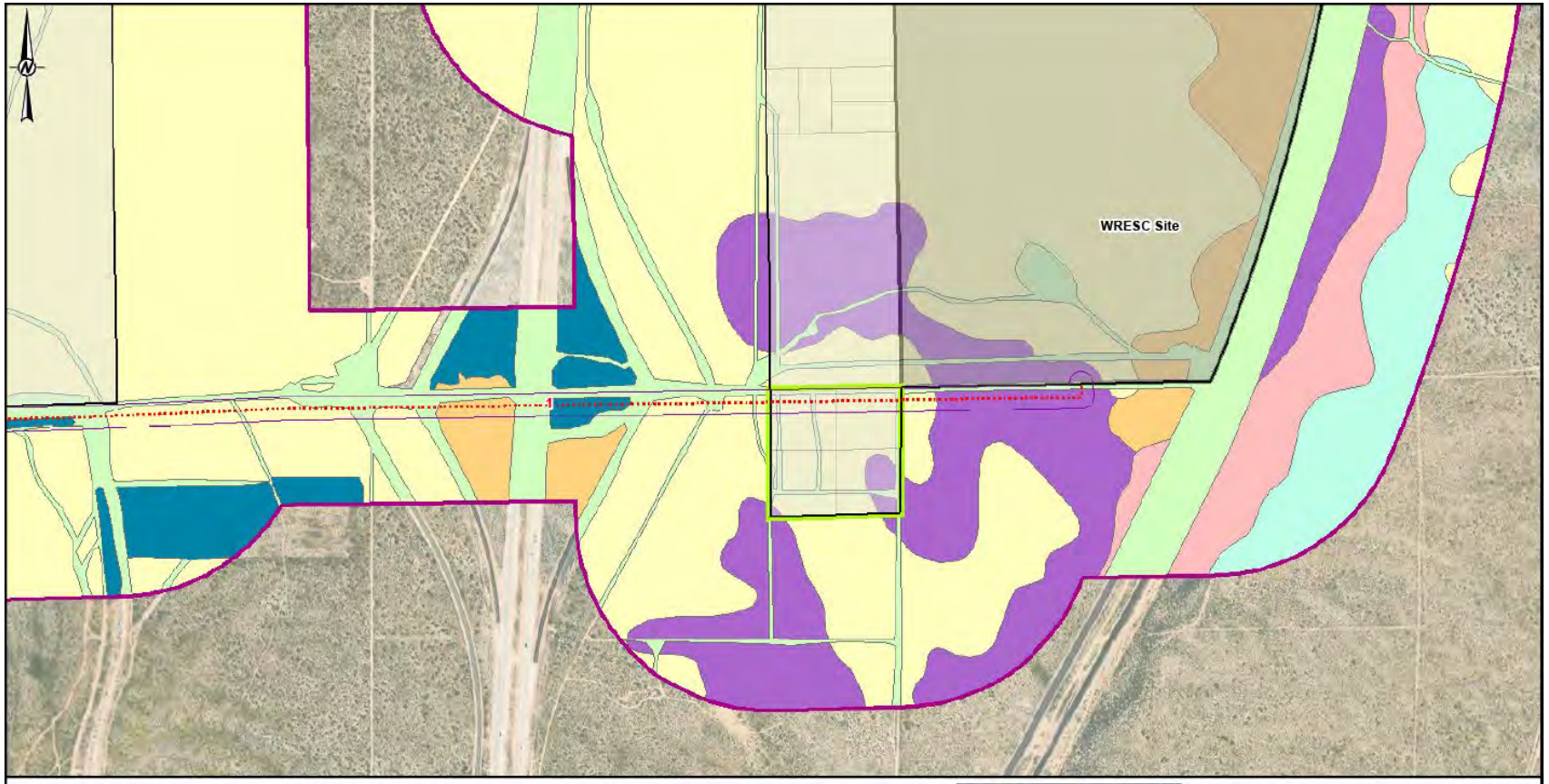


Figure 3
Appendix

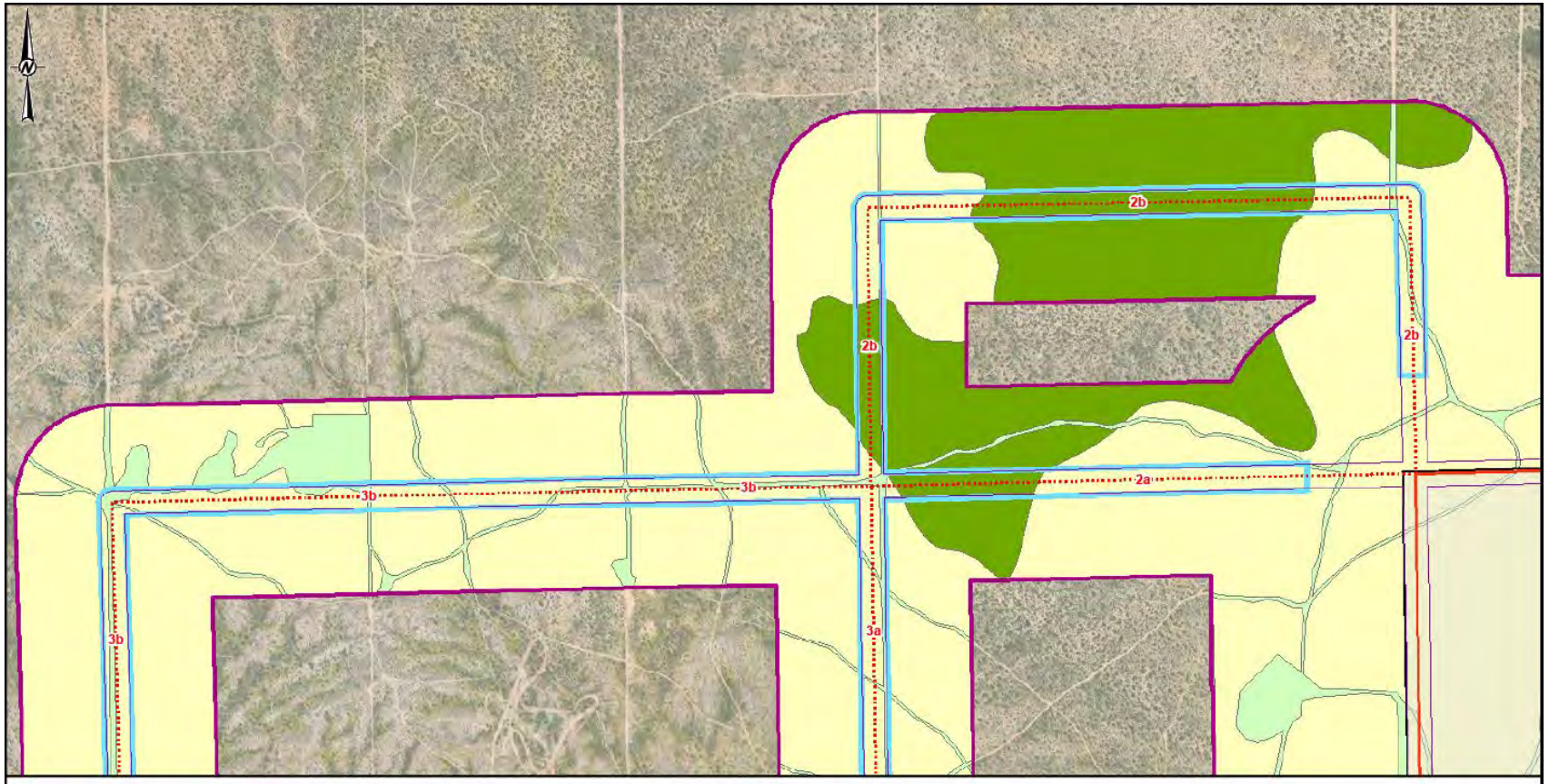


Figure 4
Appendix

Source: Attachment DR46-1

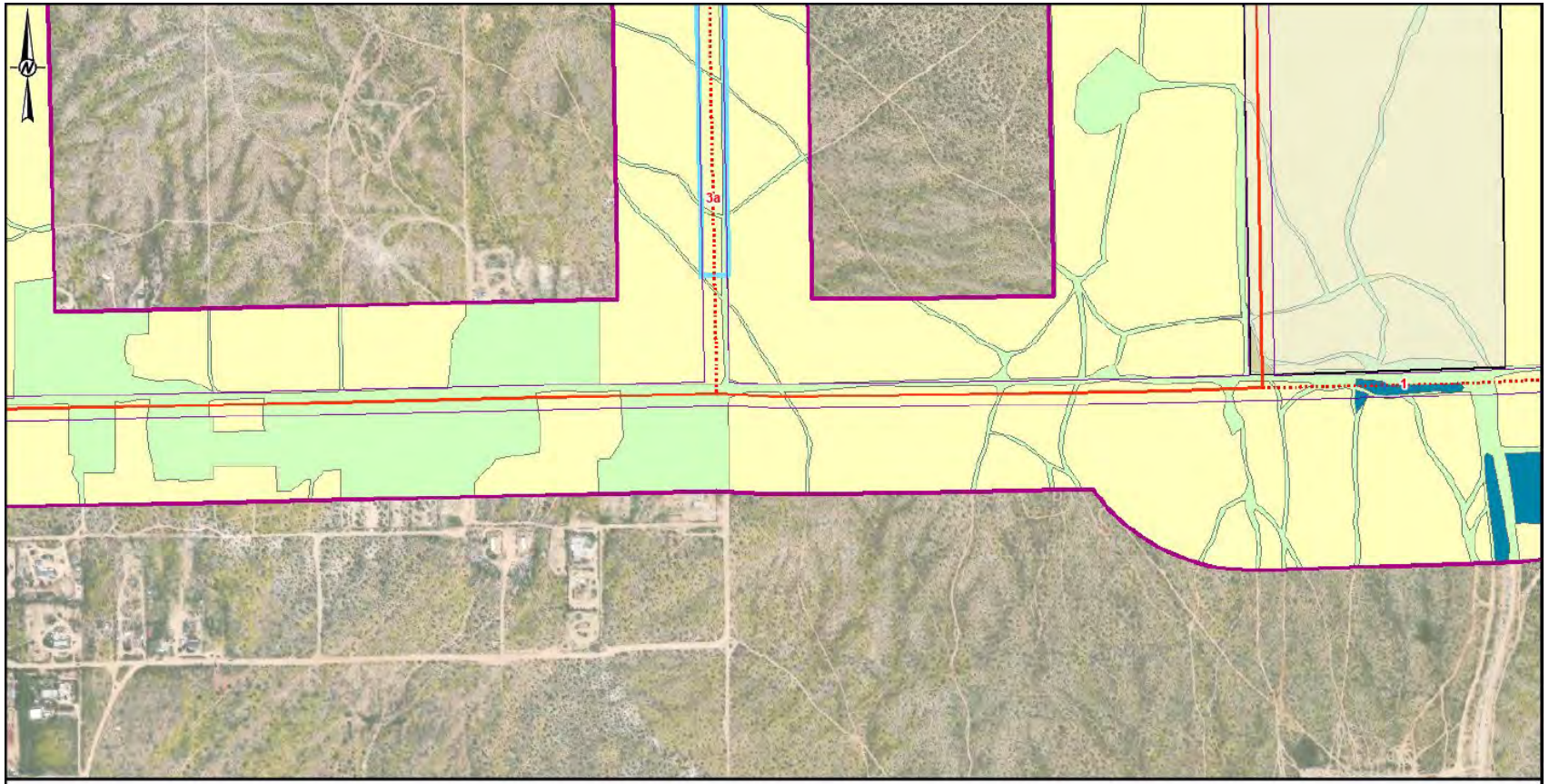


Figure 5
Appendix

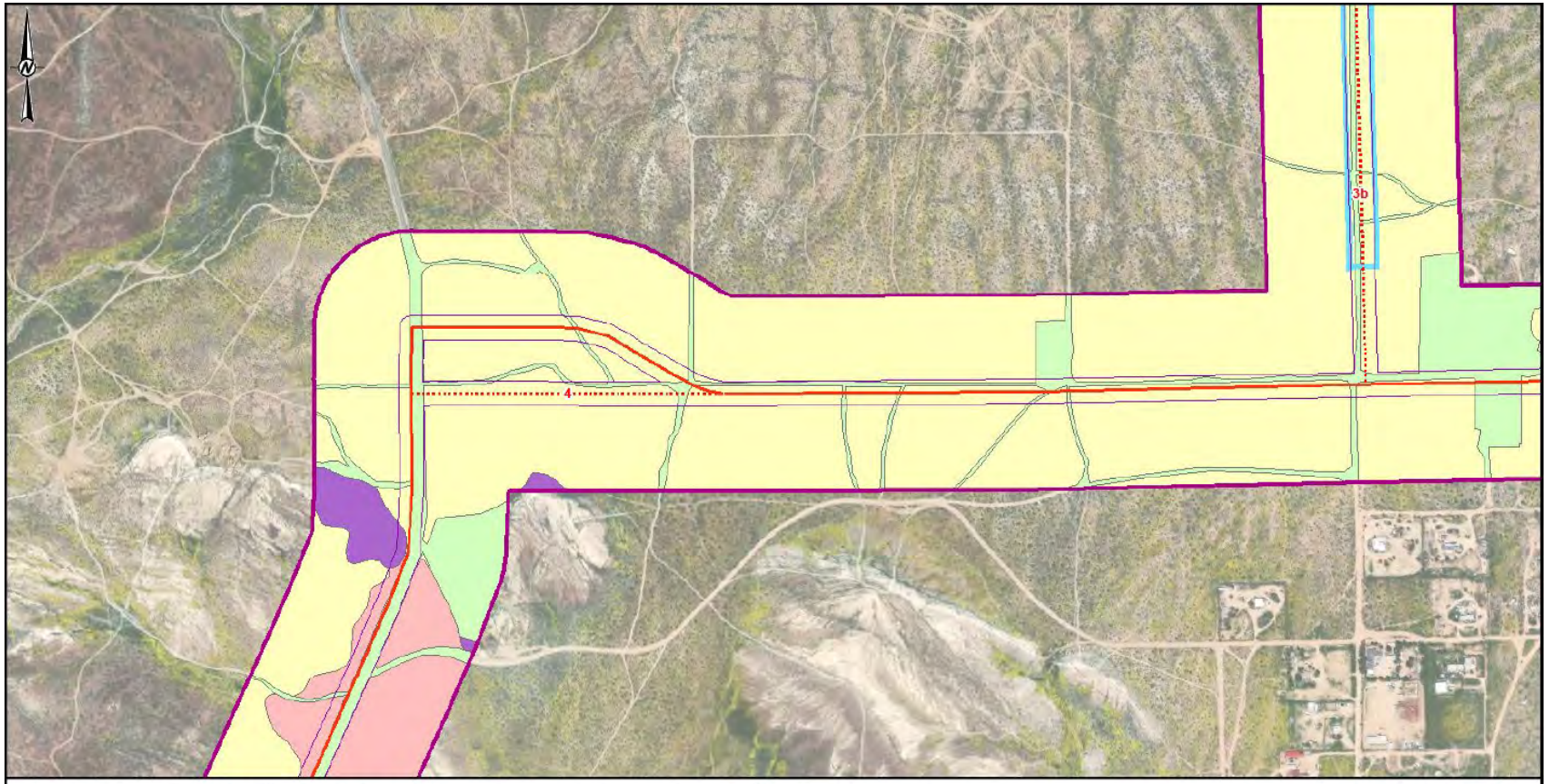
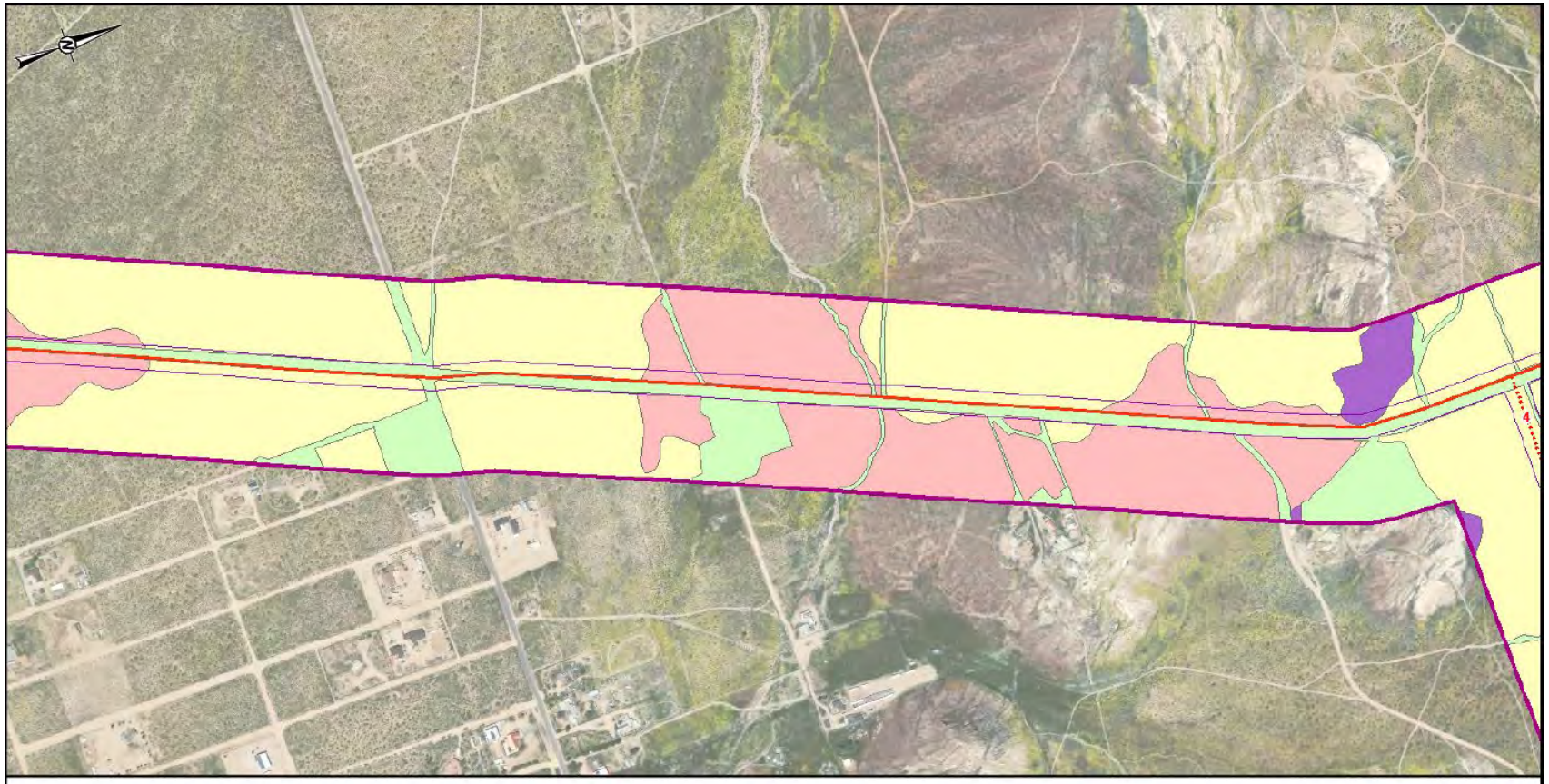


Figure 6
Appendix



Study Area (500 ft on Either Side of Transmission Line and 1,000 ft Around Project Parcels)

Proposed Transmission Line

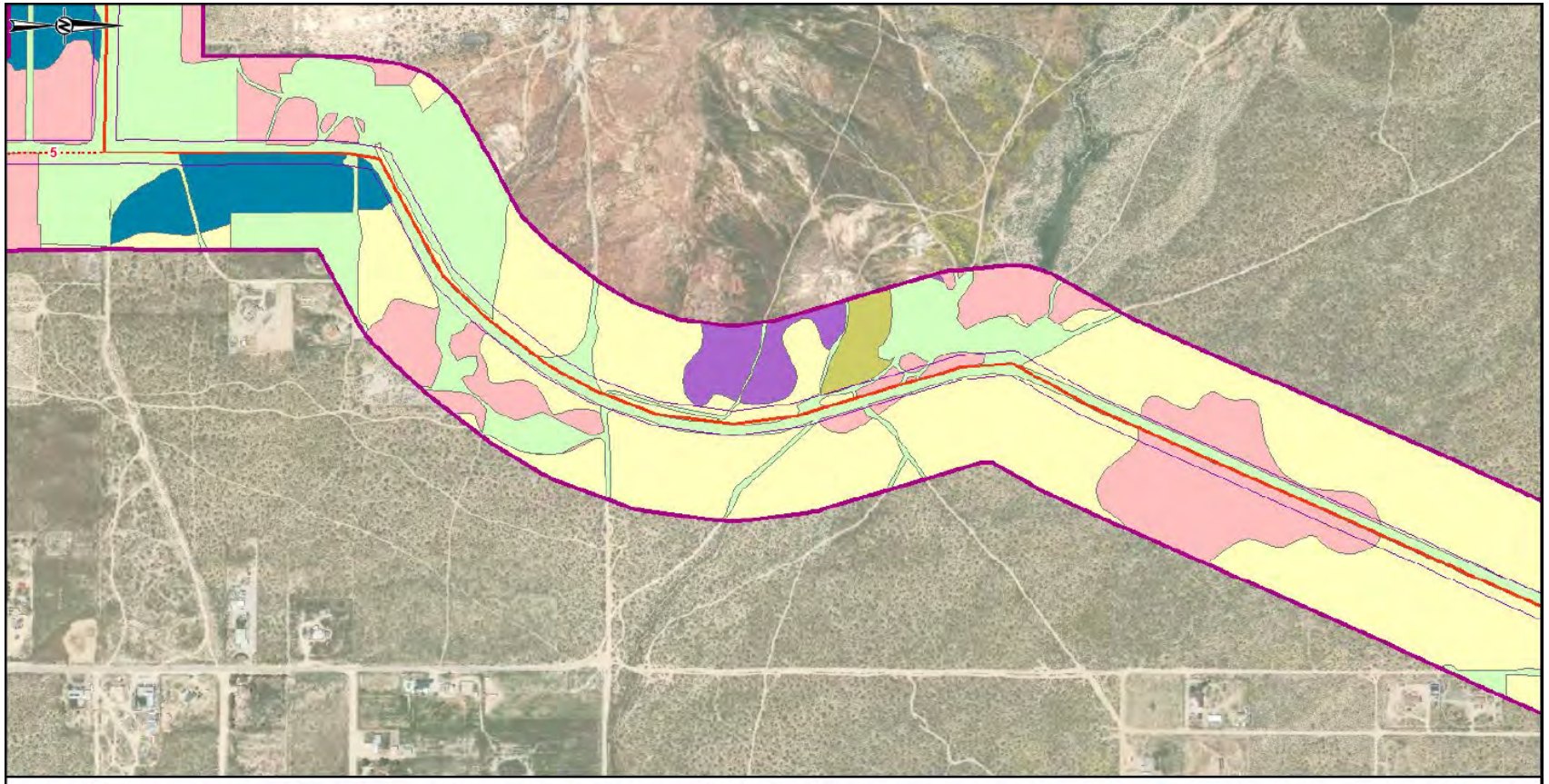
- Preferred Route, Aboveground
- Route Options 1-6, Aboveground
- Project ROW

Vegetation Class

- Allscale scrub (ASSC)
- Creosote bush - white bursage scrub (CBWS)
- Disturbed/Developed (DH-DEV)
- White Bursage Scrub (WBS)

Figure 7
Appendix

Source: Attachment DR46-1



Study Area (500 ft on Either Side of Transmission Line and 1,000 ft Around Project Parcels)

White Bursage Scrub (WBS)

Proposed Transmission Line

Preferred Route, Aboveground

Route Options 1-6, Aboveground

Project ROW

Vegetation Class

Allscale scrub (ASSC)

Creosote bush - white bursage scrub (CBWS)

Creosote bush scrub (CBS)

Disturbed/Developed (DH-DEV)

Rubber rabbitbrush scrub (RRS)

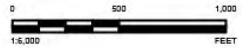


Figure 8
Appendix

Source: Attachment DR46-1

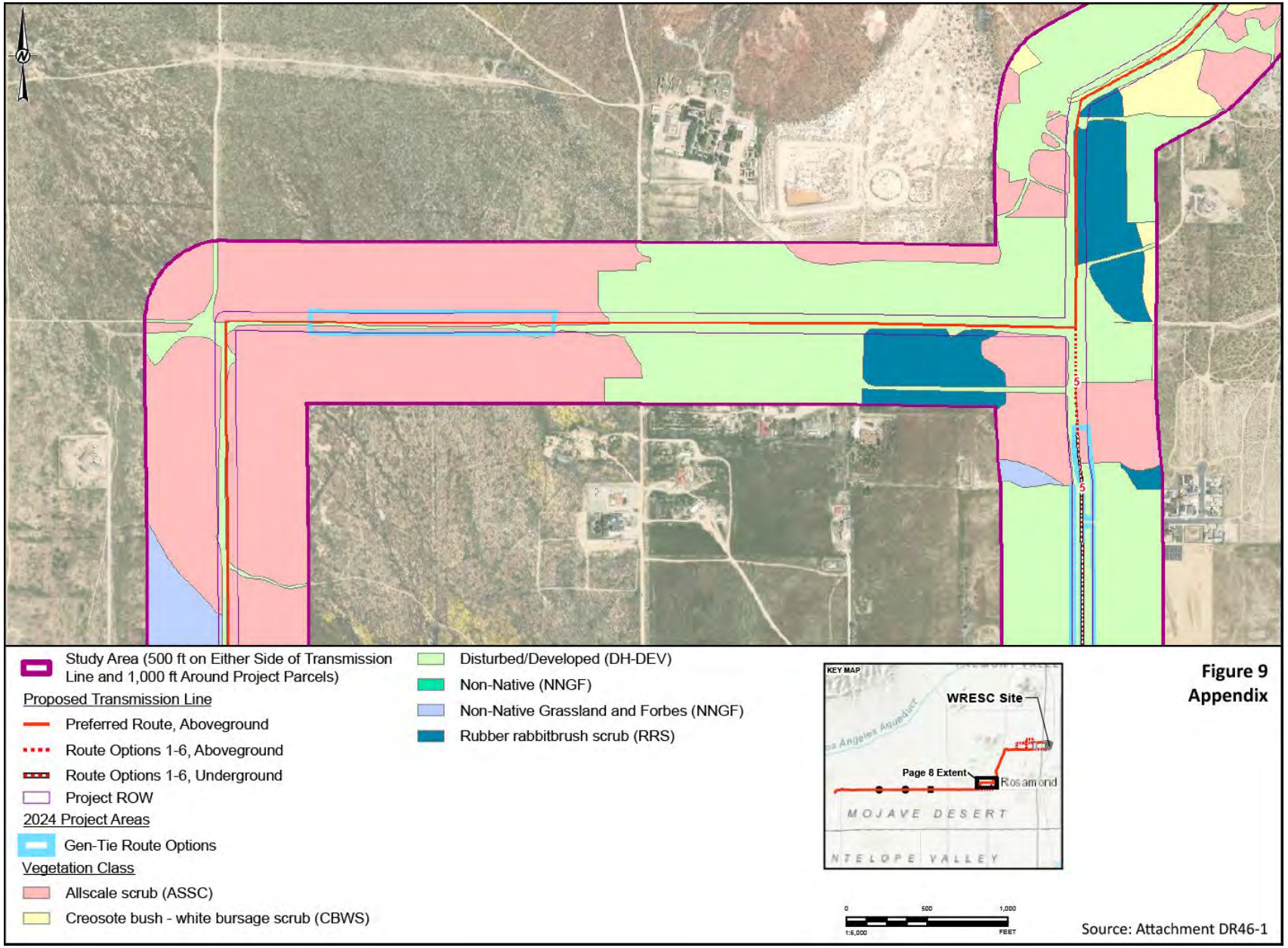


Figure 9
Appendix

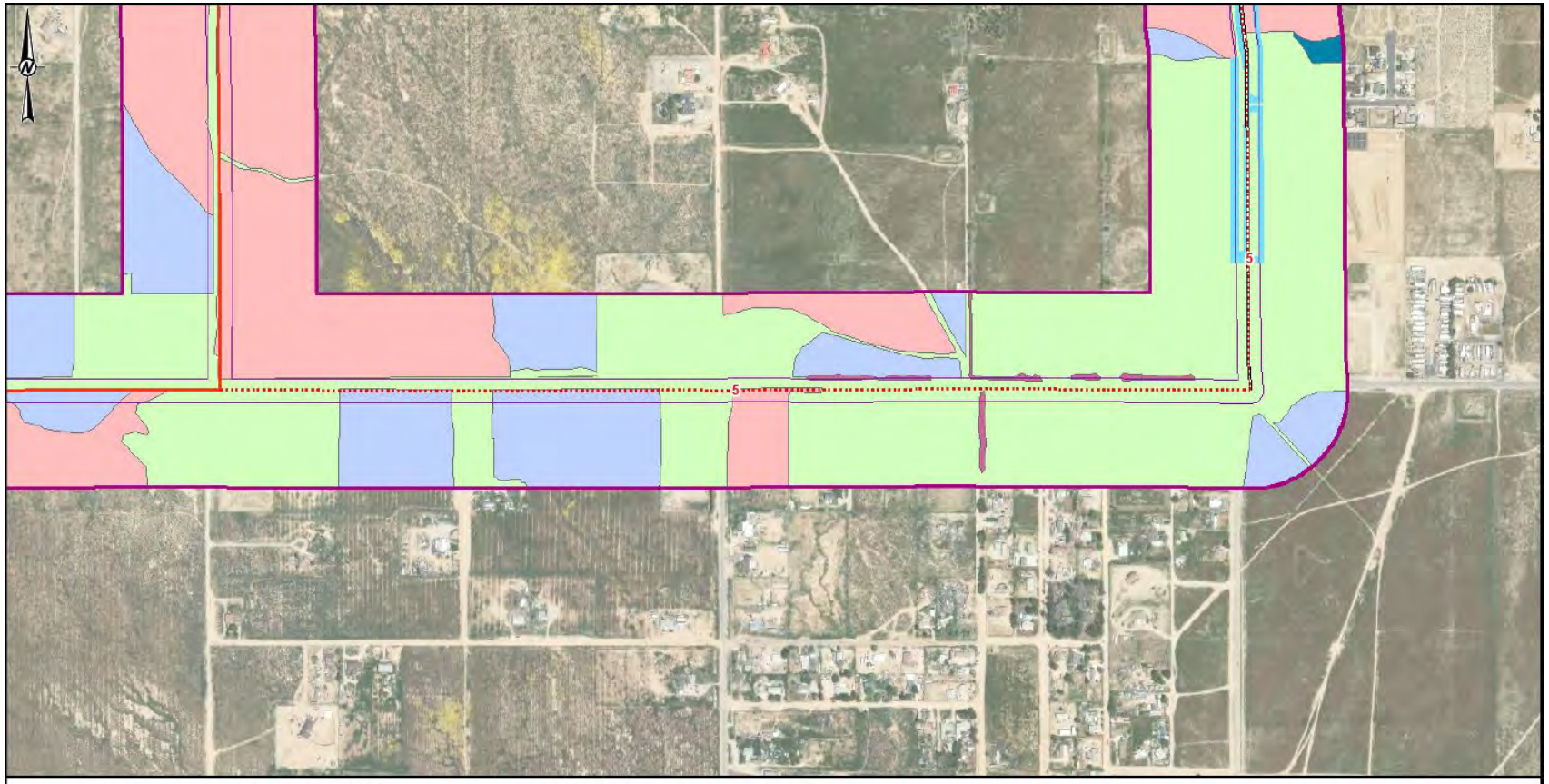


Figure 10
Appendix

Source: Attachment DR46-1

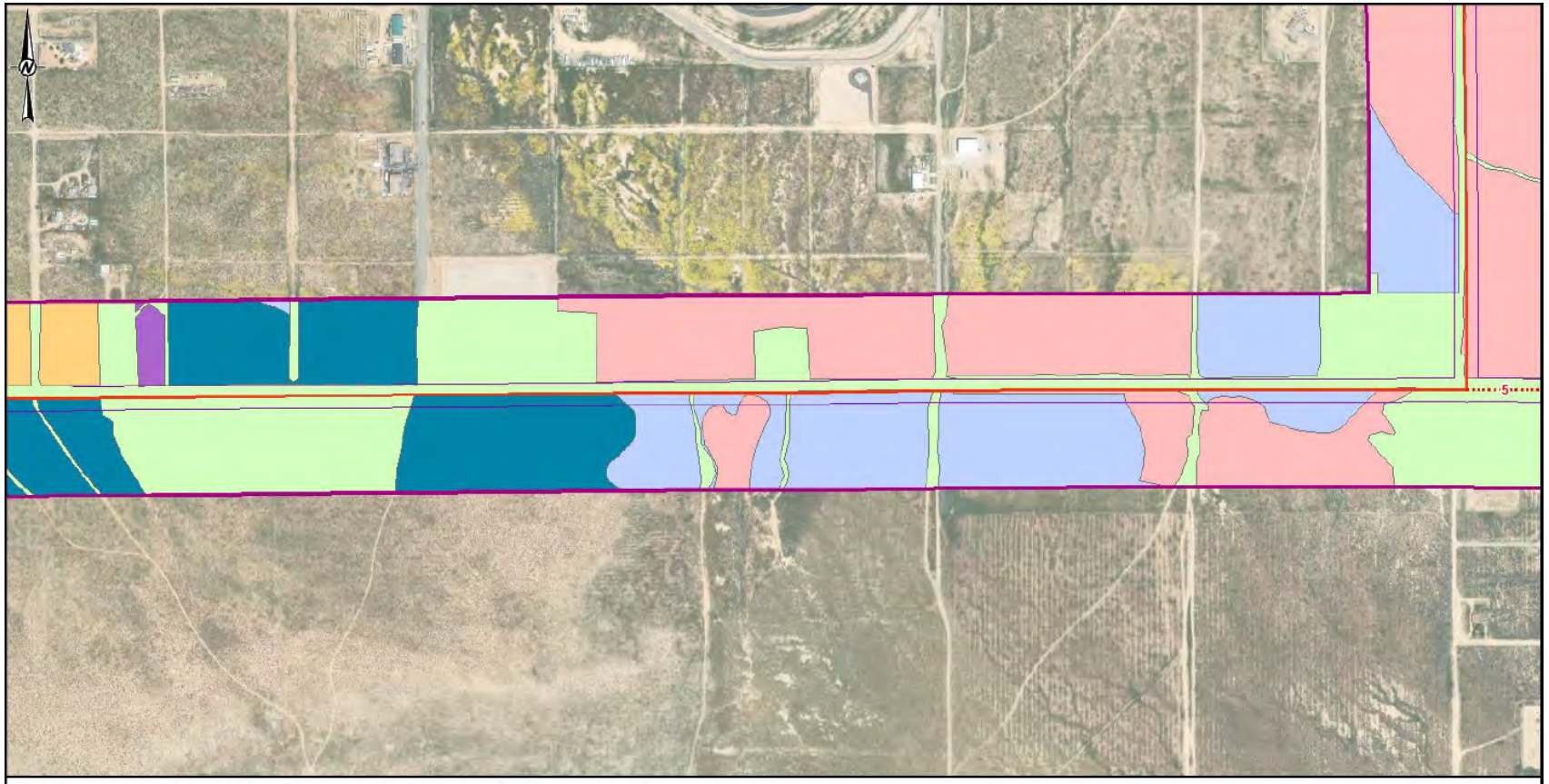


Figure 11
Appendix

Source: Attachment DR46-1

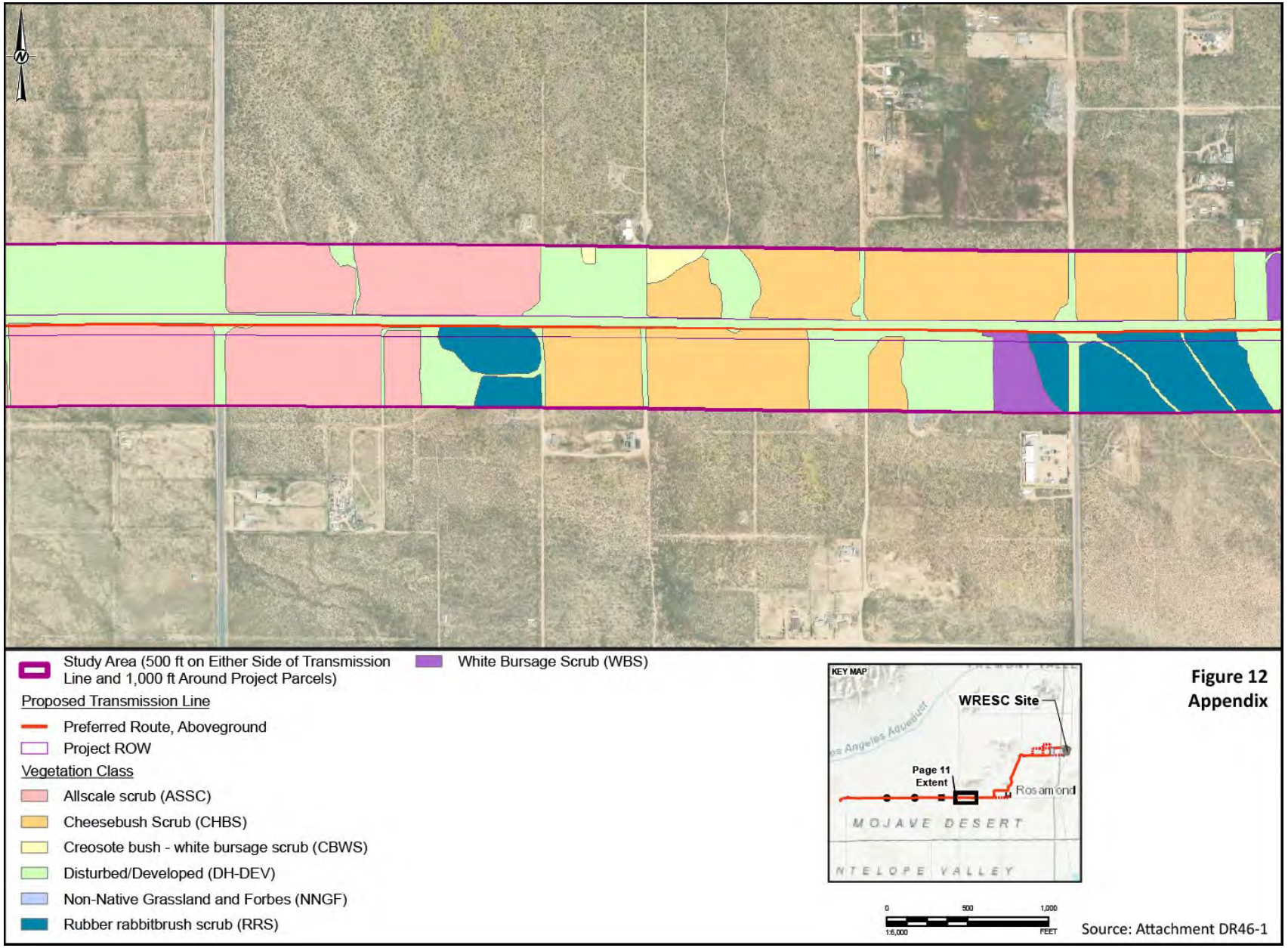
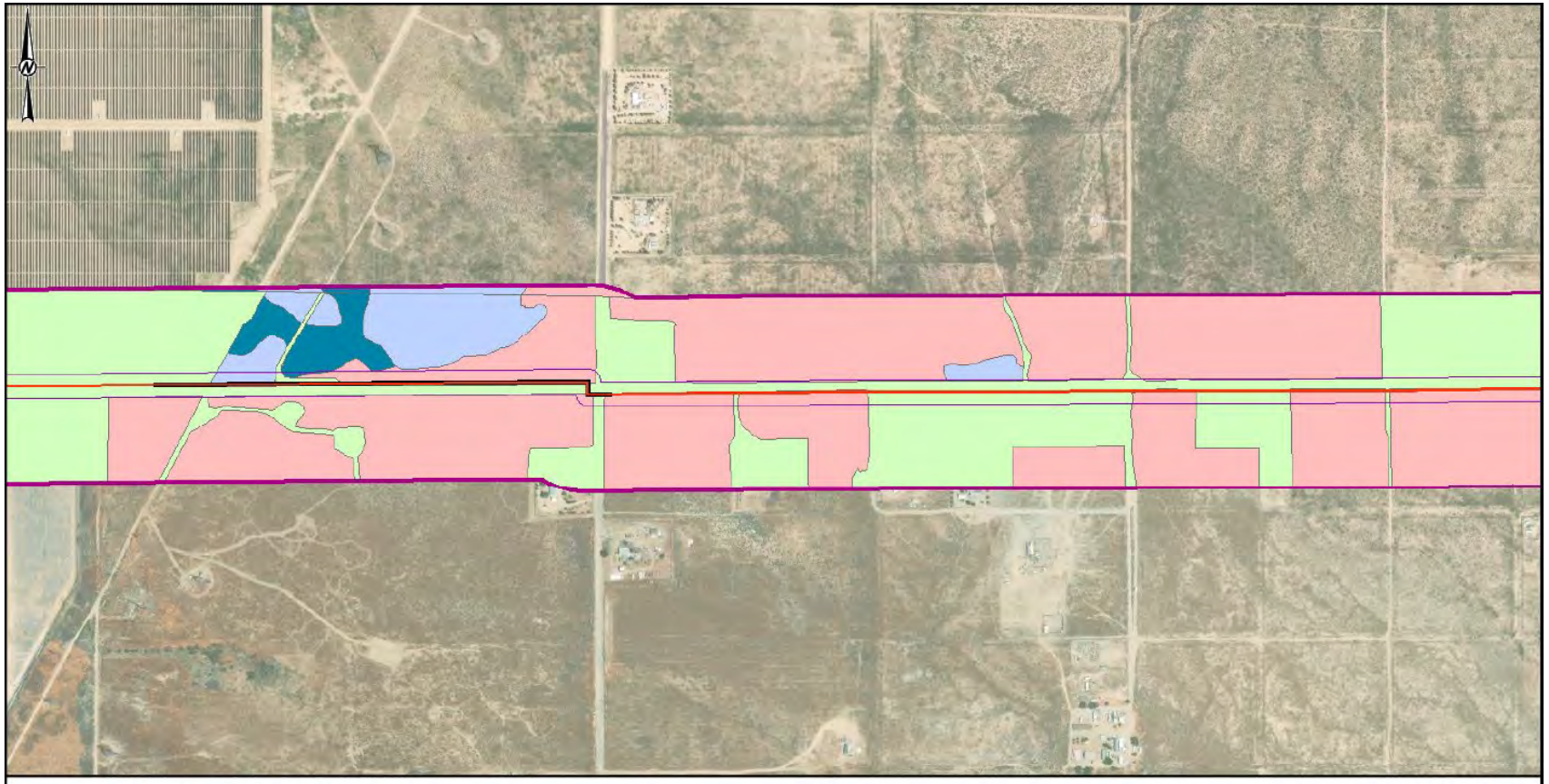


Figure 12
Appendix



Study Area (500 ft on Either Side of Transmission Line and 1,000 ft Around Project Parcels)

Proposed Transmission Line

- Preferred Route, Aboveground
- Preferred Route, Underground
- Project ROW

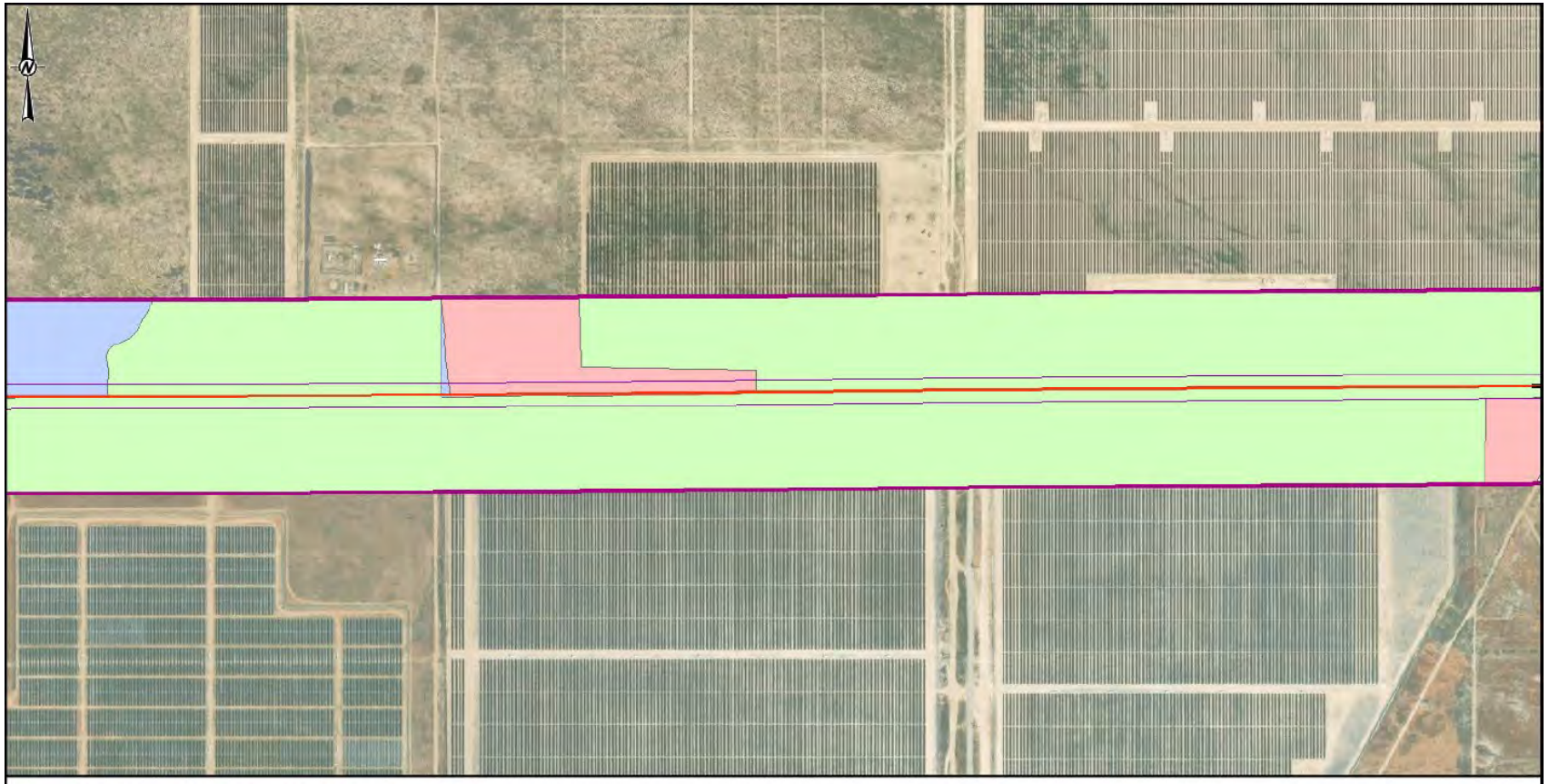
Vegetation Class

- Allscale scrub (ASSC)
- Disturbed/Developed (DH-DEV)
- Non-Native Grassland and Forbes (NNGF)
- Rubber rabbitbrush scrub (RRS)

0 500 1,000
1:6,000 FEET

Figure 13
Appendix

Source: Attachment DR46-1



Study Area (500 ft on Either Side of Transmission Line and 1,000 ft Around Project Parcels)

Proposed Transmission Line

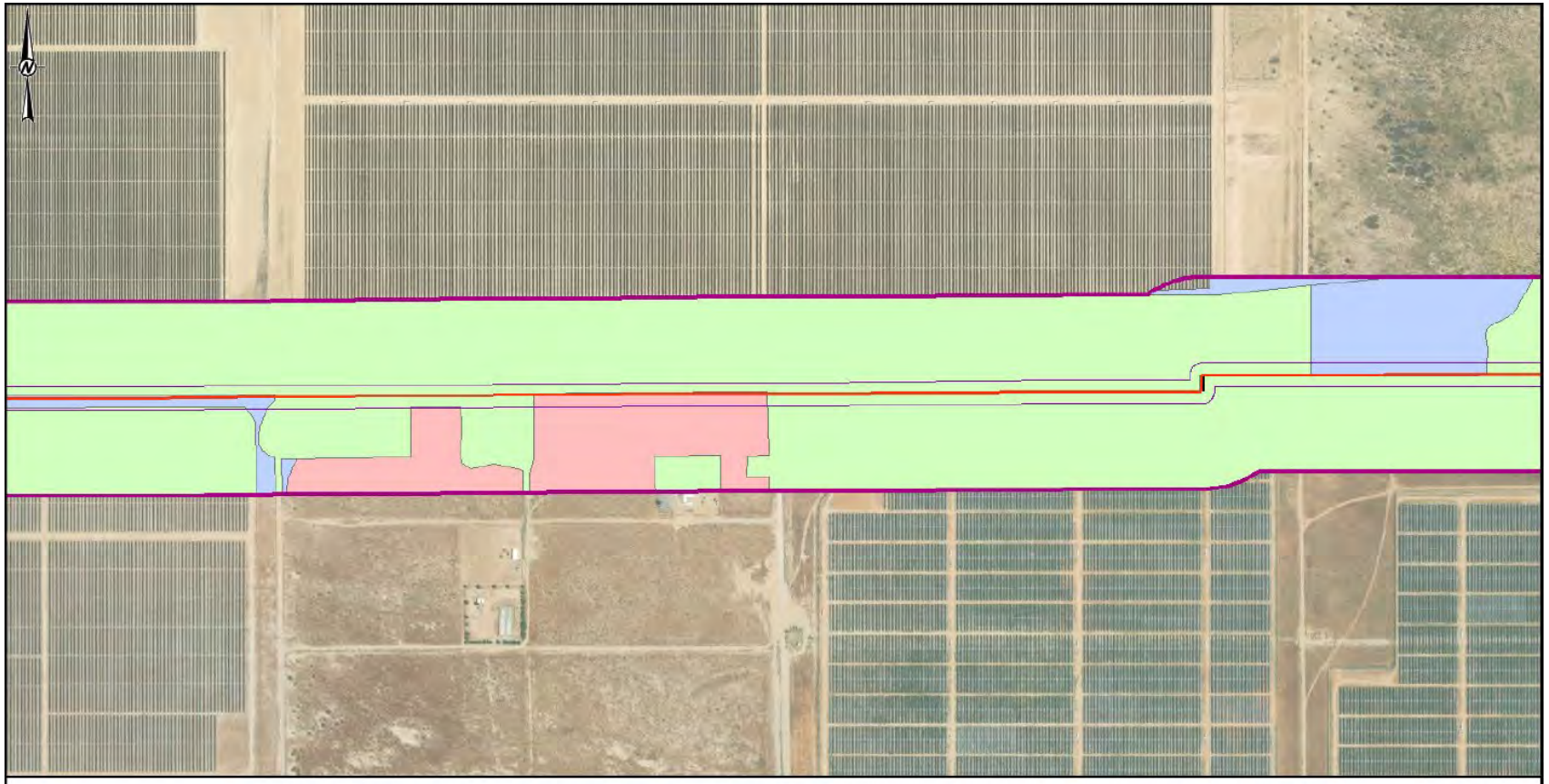
- Preferred Route, Aboveground
- Preferred Route, Underground
- Project ROW

Vegetation Class

- Allscale scrub (ASSC)
- Disturbed/Developed (DH-DEV)
- Non-Native Grassland and Forbes (NNGF)
- Rubber rabbitbrush scrub (RRS)

Figure 14
Appendix

Source: Attachment DR46-1



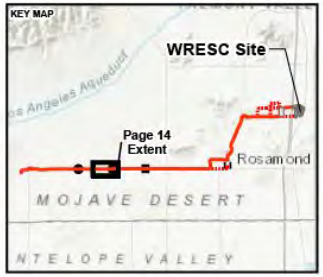
Study Area (500 ft on Either Side of Transmission Line and 1,000 ft Around Project Parcels)

Proposed Transmission Line

- Preferred Route, Aboveground
- Preferred Route, Underground
- Project ROW

Vegetation Class

- Allscale scrub (ASSC)
- Disturbed/Developed (DH-DEV)
- Non-Native Grassland and Forbes (NNGF)



0 500 1,000
1:6,000 FEET

Figure 15
Appendix

Source: Attachment DR46-1

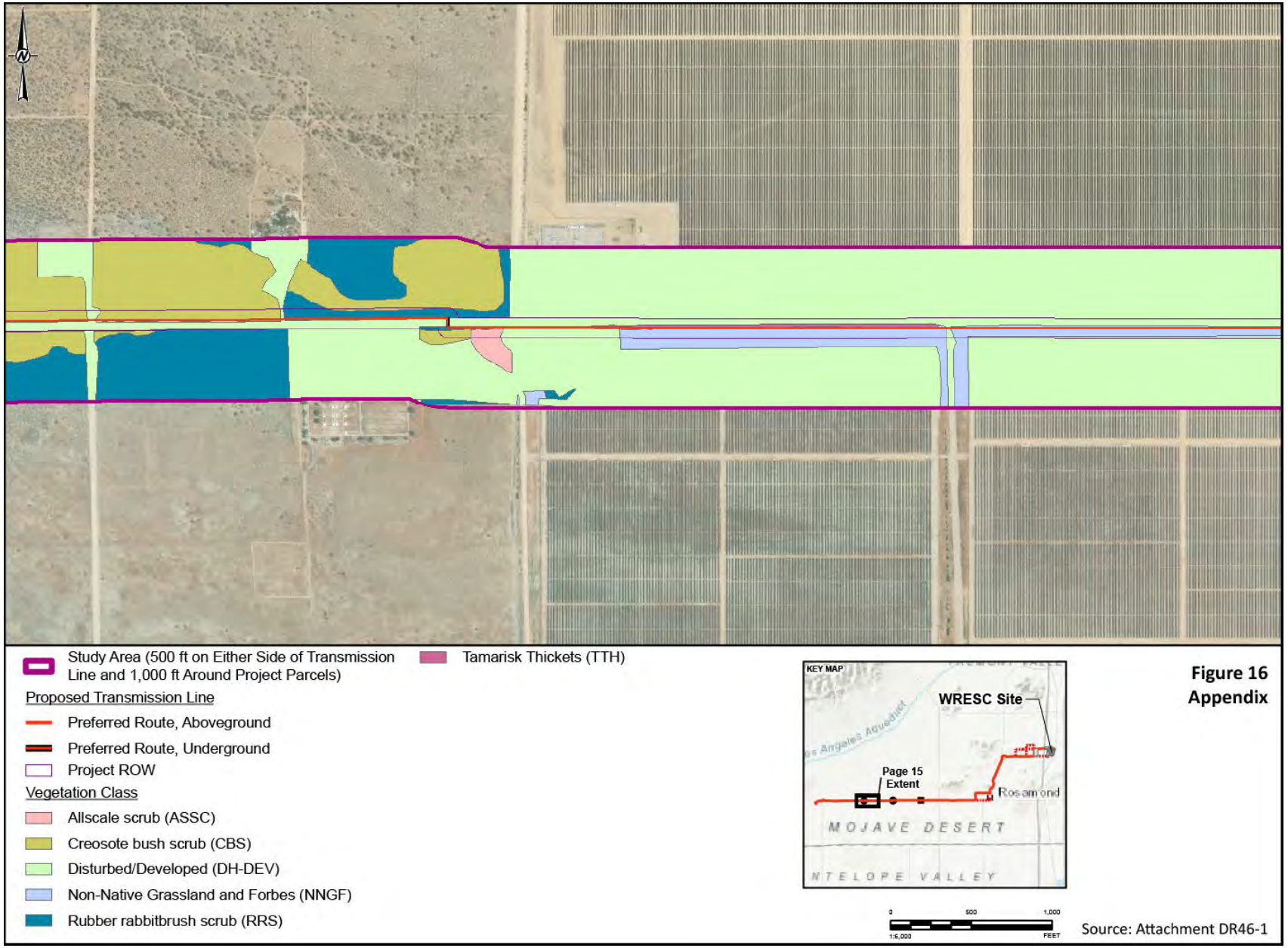
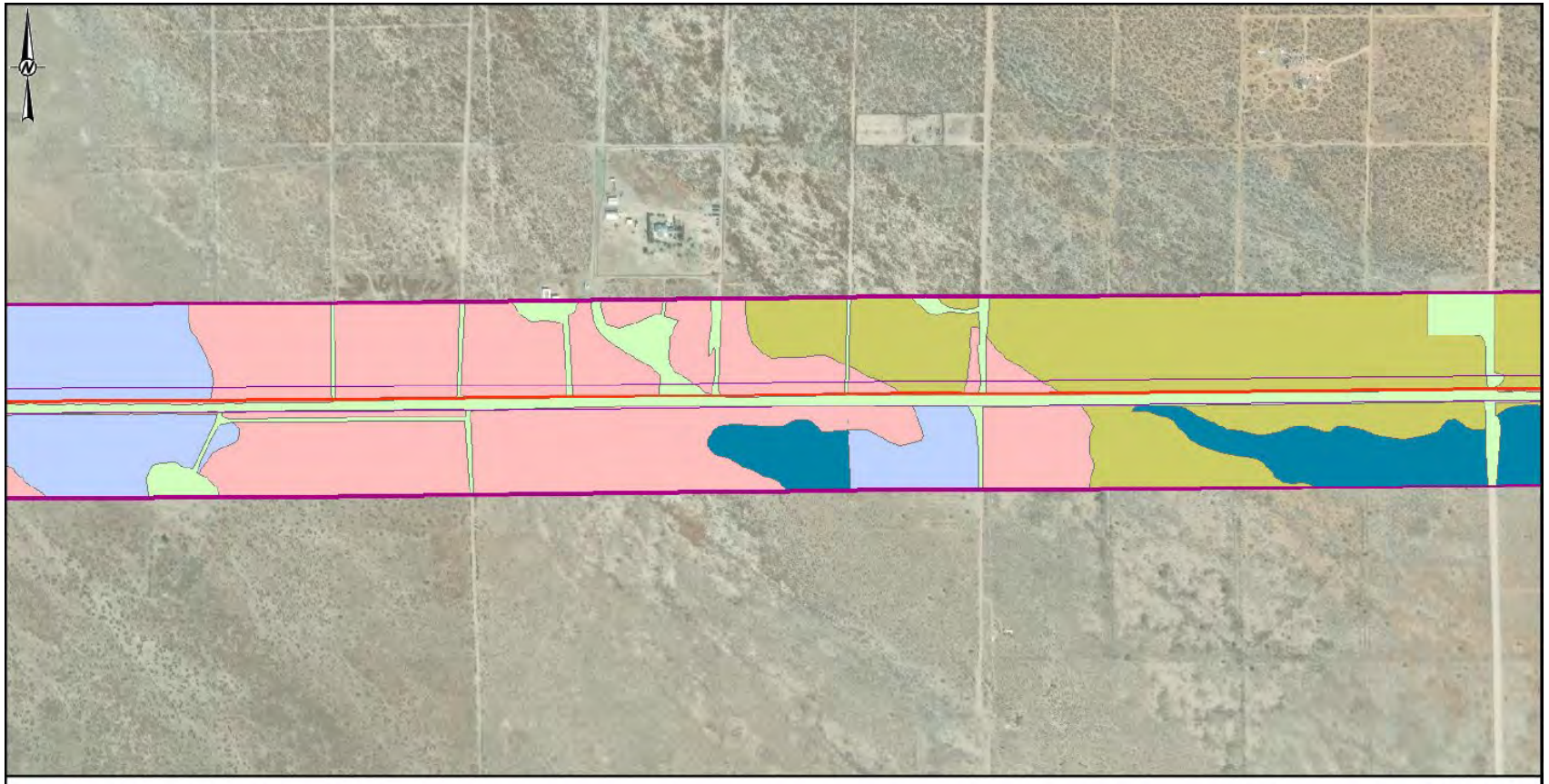


Figure 16
Appendix



Study Area (500 ft on Either Side of Transmission Line and 1,000 ft Around Project Parcels)

Proposed Transmission Line

- Preferred Route, Aboveground
- Project ROW

Vegetation Class

- Allscale scrub (ASSC)
- Creosote bush scrub (CBS)
- Disturbed/Developed (DH-DEV)
- Non-Native Grassland and Forbes (NNGF)
- Rubber rabbitbrush scrub (RRS)

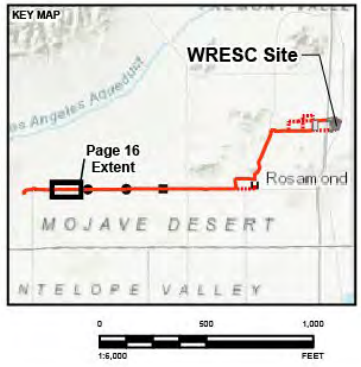


Figure 17
Appendix

Source: Attachment DR46-1

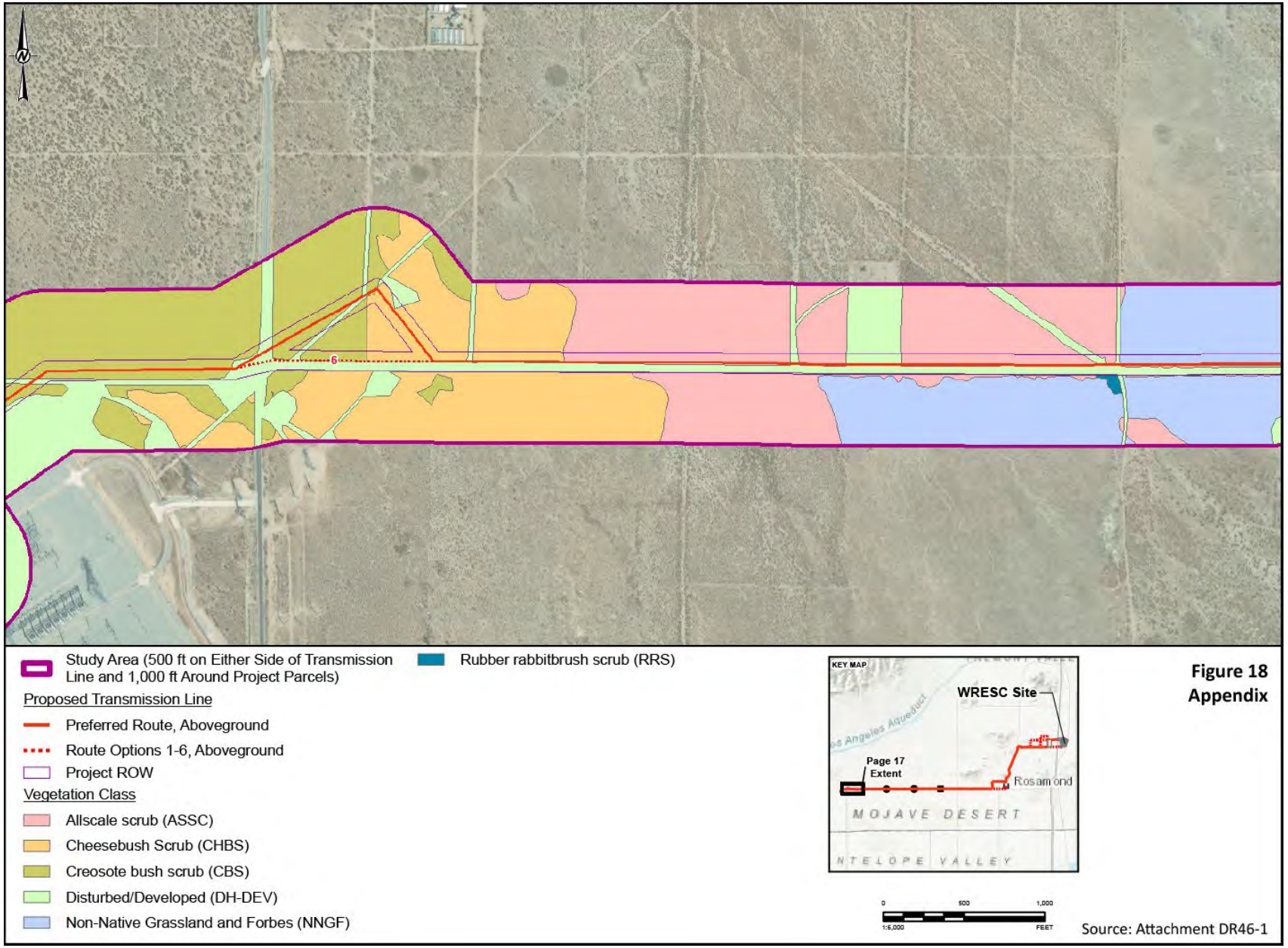
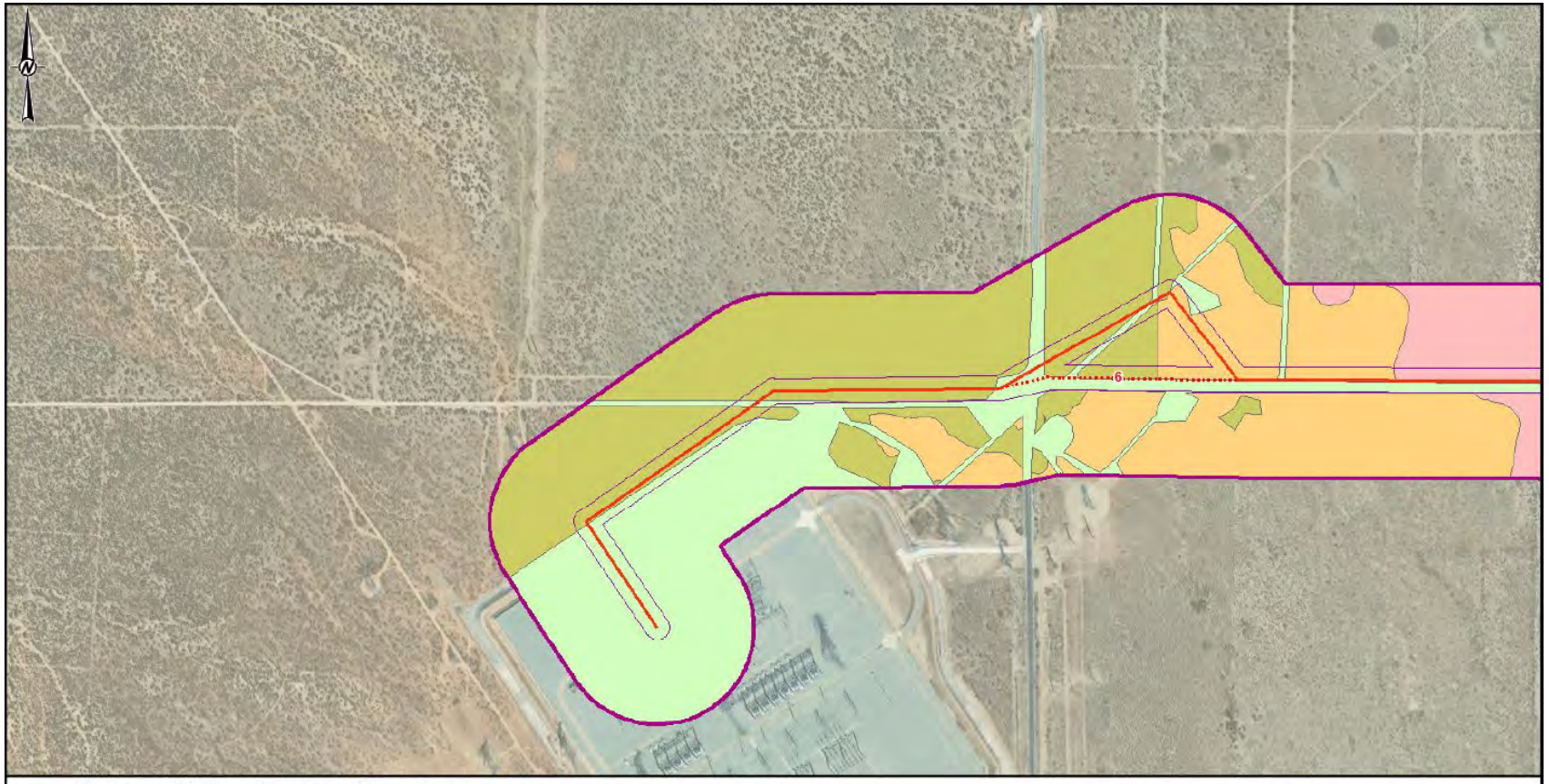


Figure 18
Appendix

Source: Attachment DR46-1



Study Area (500 ft on Either Side of Transmission Line and 1,000 ft Around Project Parcels)

Proposed Transmission Line

- Preferred Route, Aboveground
- Route Options 1-6, Aboveground
- Project ROW

Vegetation Class

- Allscale scrub (ASSC)
- Cheesebush Scrub (CHBS)
- Creosote bush scrub (CBS)
- Disturbed/Developed (DH-DEV)
- Non-Native Grassland and Forbes (NNGF)

Figure 19
Appendix

Source: Attachment DR46-1