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Project Title:	Soda Mountain Solar
TN #:	261595
Document Title:	Chapter 2_Project Description – February 2025 – Revision 1
Description:	This document replaces in full TN 257912. Revisions made address CEC data requests PD-1 through PD-3. This Chapter provides a detailed description of the Proposed Soda Mountain Solar Project.
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CHAPTER 2. PROJECT DESCRIPTION

2.1 Introduction

Soda Mountain Solar, LLC (applicant), proposes to construct, operate, and maintain a utility-scale solar photovoltaic (PV) electrical generating and storage facility and associated infrastructure to generate and deliver renewable electricity to the statewide electricity transmission grid. The project also includes future decommissioning, which is anticipated to occur after 40 years of operation. This project is known as the Soda Mountain Solar Project (proposed project or project).

The project is located on approximately 2,670 acres of land administered by the U.S. Department of Interior, Bureau of Land Management (BLM), California Desert District, within the jurisdiction of the Barstow Field Office in San Bernardino County. As described in Section 2.1, the BLM performed a separate review of the project under the National Environmental Policy Act (NEPA).

The project would disturb approximately 2,059 acres overall. The project would generate up to 300 megawatts (MW) of renewable energy and include up to 300 MW/1,200 MW-hours (MWh) of battery storage. The power produced by the project would be conveyed to the regional electrical grid through an interconnection with the existing Mead-Adelanto 500-kilovolt (kV) transmission line operated by the Los Angeles Department of Water and Power (LADWP).

2.2 Description of the Proposed Project

2.3 Project Location

The project is located entirely on federally owned land managed by the BLM. The 2,670-acre project site is located approximately 7 miles southwest of the community of Baker in unincorporated San Bernardino County, California (Figure 2-1, 2-2, and 2-3), approximately 50 miles northeast of Barstow. The project site is in portions of Sections 1 and 11–14, Township 12 North, Range 7 East; Sections 25, Township 13 North, Range 7 East; Sections 6, 7, and 18, Township 12 North, Range 8 East; Sections 17 – 21, 29-32, Township 13 North, Range 8 East, San Bernardino Meridian, California.

The project is bounded directly to the east by the Mojave National Preserve (administered by the National Park Service) and BLM lands, including the Rasor Off-Highway Vehicle (OHV) Recreation Area at the southeast corner. Interstate 15 (I-15), the former Arrowhead Trail Highway, runs along the western boundary of the project site. The Rasor Road Services Shell Oil gas station is located off I-15 southwest of the project site, along the access road to the project site. A residence is next to the gas station, roughly 260 feet southwest of the proposed boundary. There are no other sensitive receptors within 1,500 feet of the project site. Approximately four storm drain culverts run under I-15 adjacent to the project site. Primary access to the project site is from the Rasor Road northbound exit off I-15.

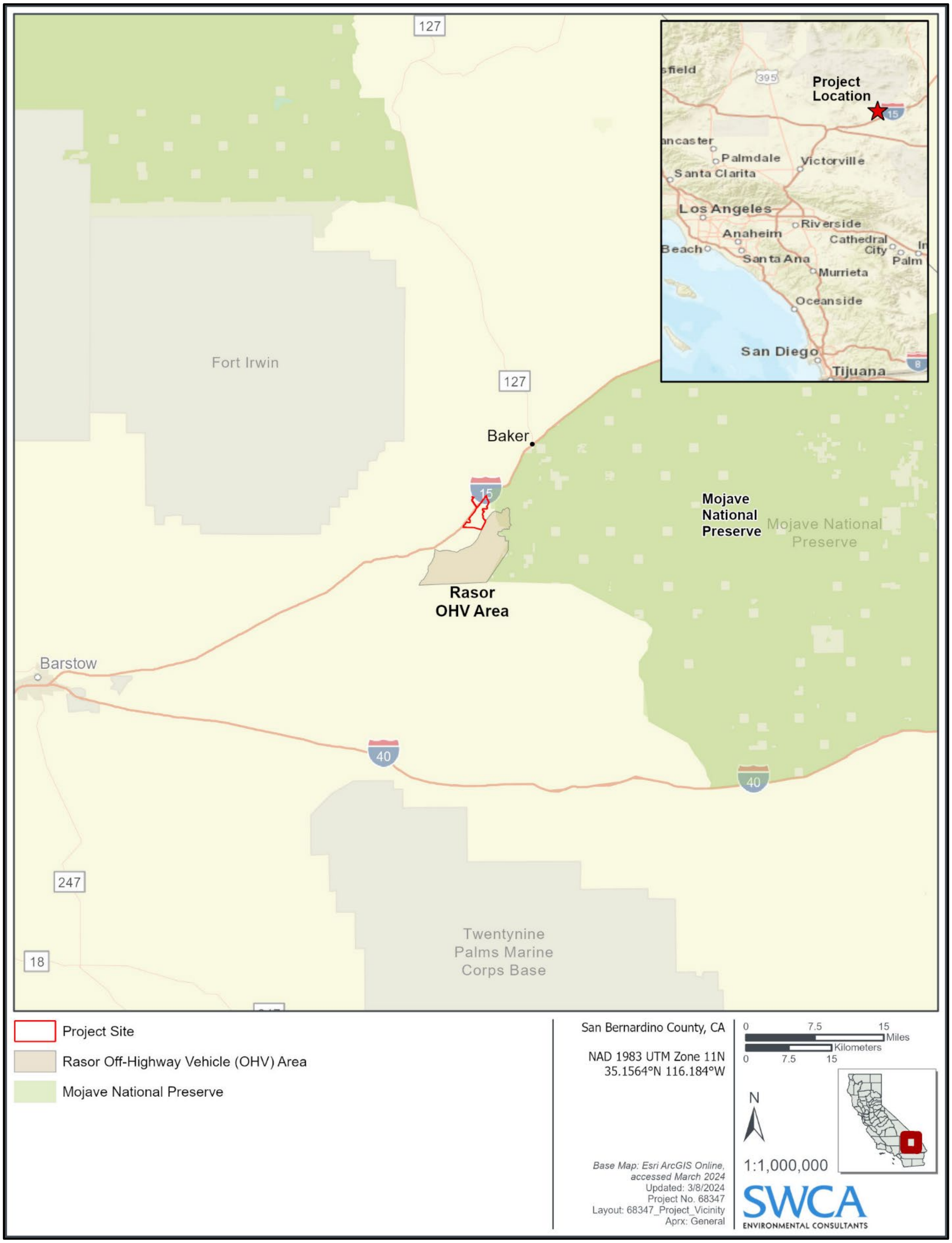

Figure 2-1. Project site vicinity.

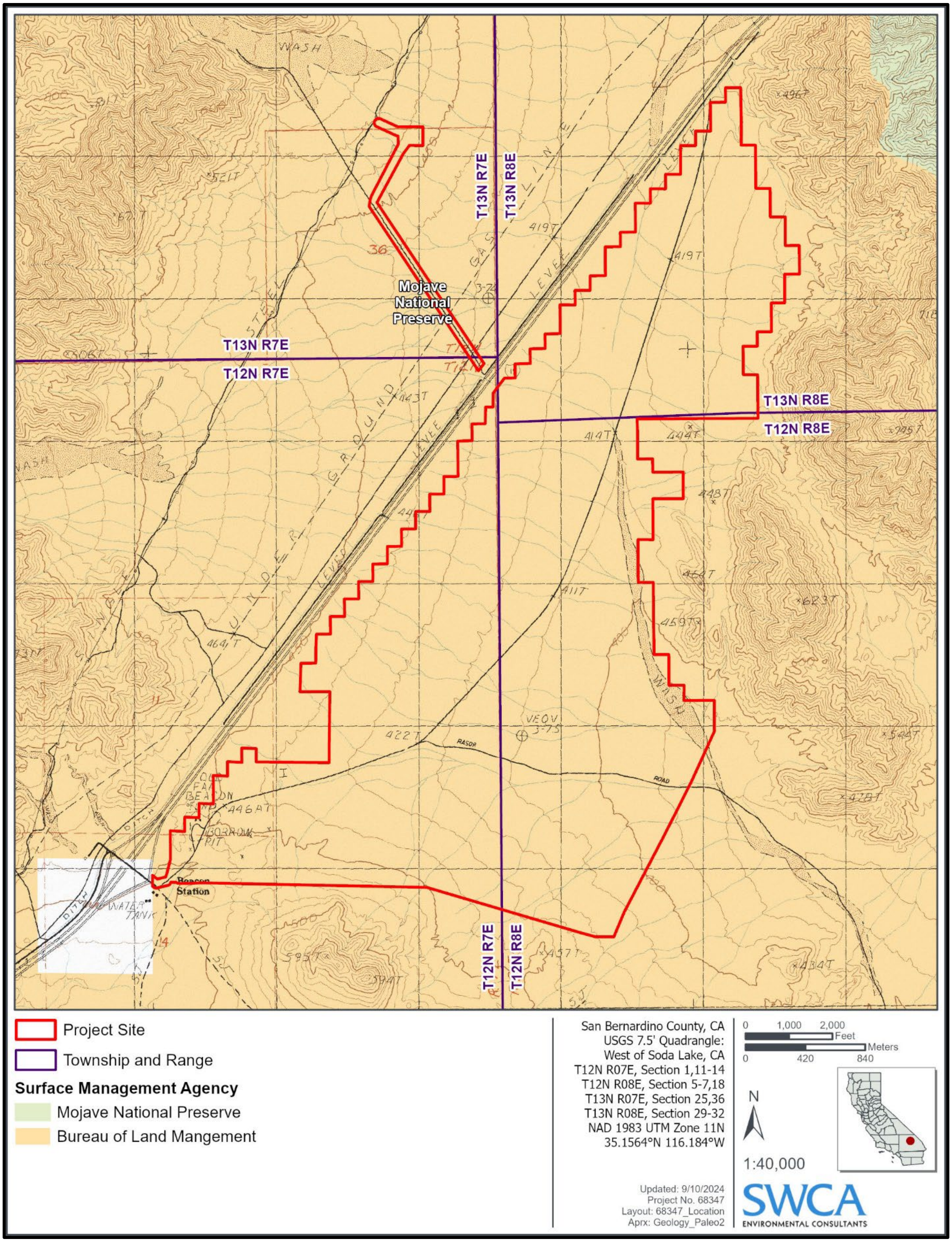

Figure 2-2. Public Land Survey location.

2.3.1.1 EXISTING CONDITIONS

The project would occupy the alluvial valley dividing the northern and southern portions of the Soda Mountains in the Mojave Desert. The project site is composed of rural desert land and is almost entirely undeveloped (Figure 2-4). Rasor Road, an unimproved BLM public access road, runs from the site's southwest corner and splits into two forks after approximately 1.4 miles. The Rasor Road fork continues from west to east, to the Rasor OHV recreation area. Arrowhead Trail, the other fork, continues northward through the project site. Figure 2-4. Project site location and existing conditions. show the current existing conditions of the project site.

Based on a review of the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map, unnamed tributaries are located east of the project site and flow from west to east (FEMA 2023). On-site runoff primarily drains to the southeast side of the project site. FEMA Zone D floodplains, which represent areas of undetermined flood hazards, are located within the project site. Additionally, the project is not located within the California Department of Water Resources (DWR) 100-year DWR Awareness floodplain. The project site is located in the Mojave Desert Air Basin and within a Soda Lake Valley Groundwater Basin sub-basin.

There are no existing overhead or underground transmission lines on the project site that would be affected by the proposed project. The infrastructure surrounding the site includes the four-lane I-15, two high-voltage electric transmission lines, an electrical distribution line, wireless cellular telephone towers, two fiber-optic cables, and two fuel pipelines. The location of the fiber-optic cables is not publicly available. The two high-voltage electrical transmission lines to the west of I-15 are the Kramer 115-kV sub-transmission line operated by Southern California Edison (SCE) and the Mead-Adelanto 500-kV transmission line operated by the LADWP, as shown in Figure 2-3. The project would utilize one of the existing culverts under I-15 to connect the gen-tie to the Mead-Adelanto transmission line. The Mead-Adelanto Transmission Project is a 202-mile-long, 500-kV alternating current (AC) transmission line that extends between a southwest terminus at the Adelanto substation in Southern California and a northeast terminus at Marketplace Substation approximately 17 miles southwest of Boulder City, Nevada.

2.3.1.2 LAND USE AND ZONING

As shown in Figure 2-3, the project site is located within the BLM's California Desert District, within the jurisdiction of the Barstow Field Office, and the planning boundary of the California Desert Conservation Area (CDCA) Plan and the Desert Renewable Energy Conservation Plan (DRECP). The BLM signed its Record of Decision (ROD) approving the DRECP Land Use Plan Amendment (LUPA) to the CDCA Plan in September 2016 (BLM 2016). The DRECP is a landscape-level plan established by the California Energy Commission, the BLM, the California Department of Fish and Wildlife (CDFW), and the U.S. Fish and Wildlife Service (USFWS) which plan covers 22.5 million acres of public land in seven California counties. The DRECP LUPA includes land use allocations to replace the multiple-use classes established in the CDCA Plan. The project is within lands classified as General Public Land for management. However, given the BLM signed the ROD for the project in March 2016, before the BLM approved the DRECP LUPA, neither the BLM process for project review and approval nor the Conservation and Management Actions (CMAs) outlined in the DRECP are applicable to this project.

The generation-tie line (gen-tie line) west of I-15 would be located within an Area of Critical Environmental Concern and a designated federal Section 368 Energy Corridor adjacent to I-15 (corridor number 27-225).

2.3.1.3 SITE SELECTION

The project site was selected given the BLM's issuance of a ROD and associated amendment to the CDCA Plan in March 2016. The site is located within a designated federal Section 368 Energy Corridor adjacent to I-15 (Corridor number 27-225). Additionally, an existing SCE-owned 115-kV sub-transmission line and an LADWP-operated 500-kV transmission line run parallel to and adjacent to the western perimeter of the project site. The project site is located immediately adjacent to existing roadways that provide readily available access for construction and operations. The project site was selected based on consideration of the project objectives, engineering constraints, site geology, environmental impacts, water, waste and fuel constraints, and electric transmission constraints, among other factors.

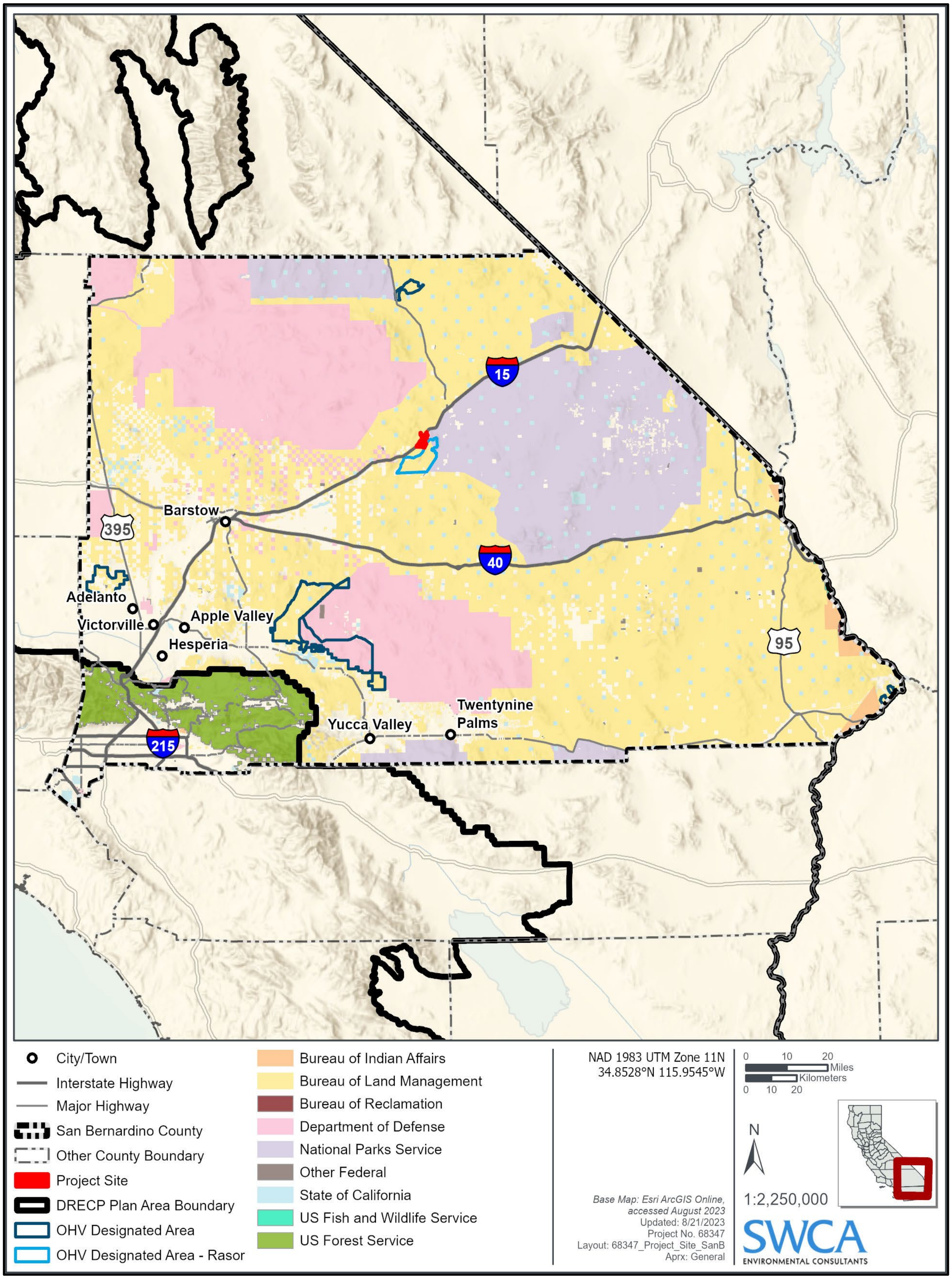

Figure 2-3. Land use management in San Bernardino County.

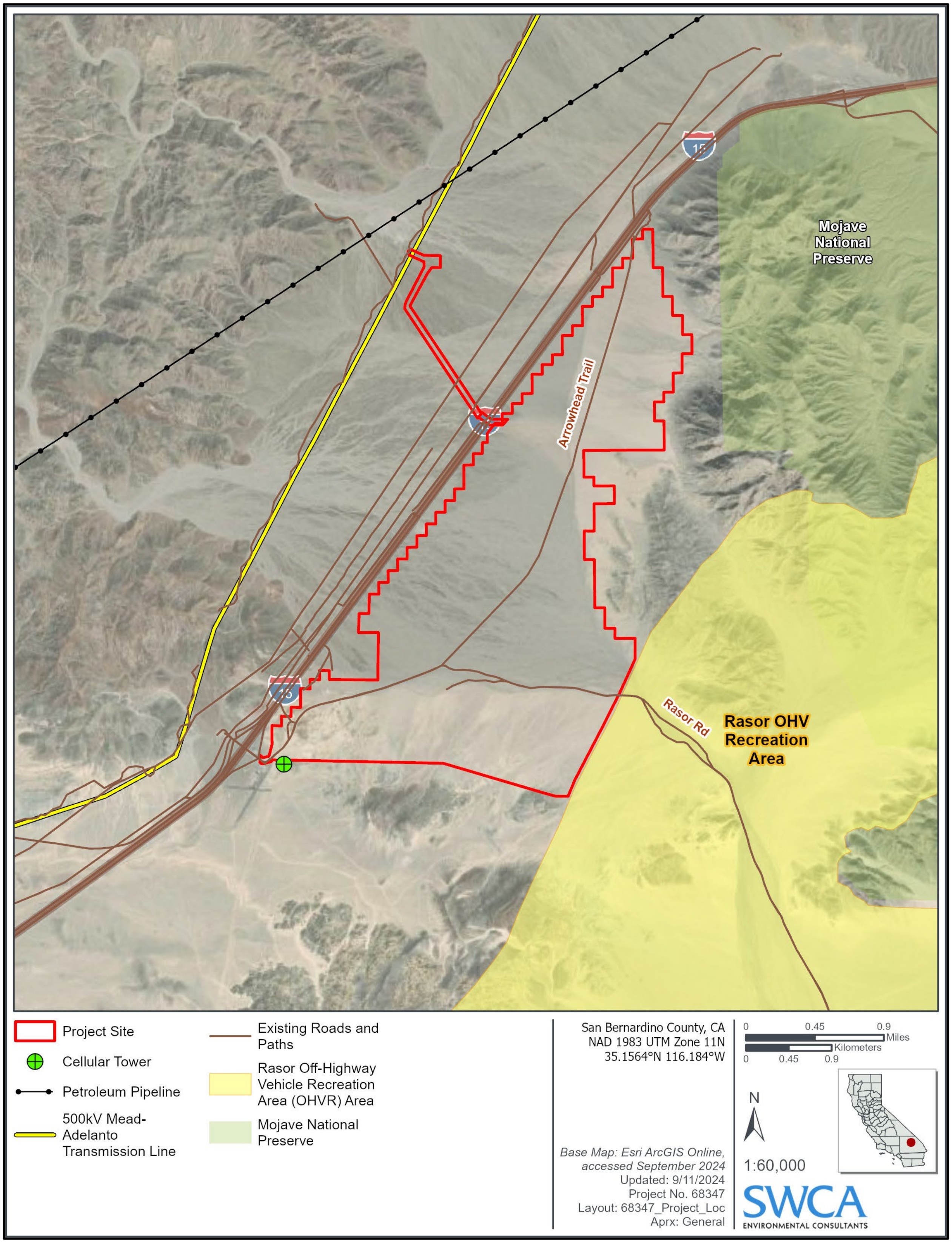

Figure 2-4. Project site location and existing conditions.

Figure 2-5. Existing view from west, facing east toward I-15 and project site.

Figure 2-6. Existing view from northwest, facing east across I-15 to project site.

2.4 Generating Facility Description and Design

The project proposes to construct, operate, maintain, and decommission a proposed 300-MW PV solar facility located on approximately 2,670 acres. The approximate disturbance acreage for the project would be 2,059 acres. As shown in Figure 2-7 through Figure 2-10, the project components are as follows:

1. The solar plant site (i.e., all facilities that create a footprint in and around the field of solar panels, including the solar field consisting of solar power arrays identified as the East Array and South Arrays 1, 2, and 3), operation and maintenance (O&M) buildings and structures, stormwater infrastructure, and related infrastructure and improvements.
2. A substation and switchyard for interconnection to the existing transmission system.
3. Gen-tie line connecting project substation, switchyard, and 500-kV Mead-Adelanto line.
4. Approximately 300 MW/1,200 MWh of battery energy storage system (BESS) across 18 acres.

The project would operate 24 hours per day year-round and would generate electricity during daylight hours when the sun is shining. The project would generate and deliver solar-generated power to the regional electrical grid through an interconnection with the existing Mead-Adelanto 500-kV transmission line operated by LADWP.

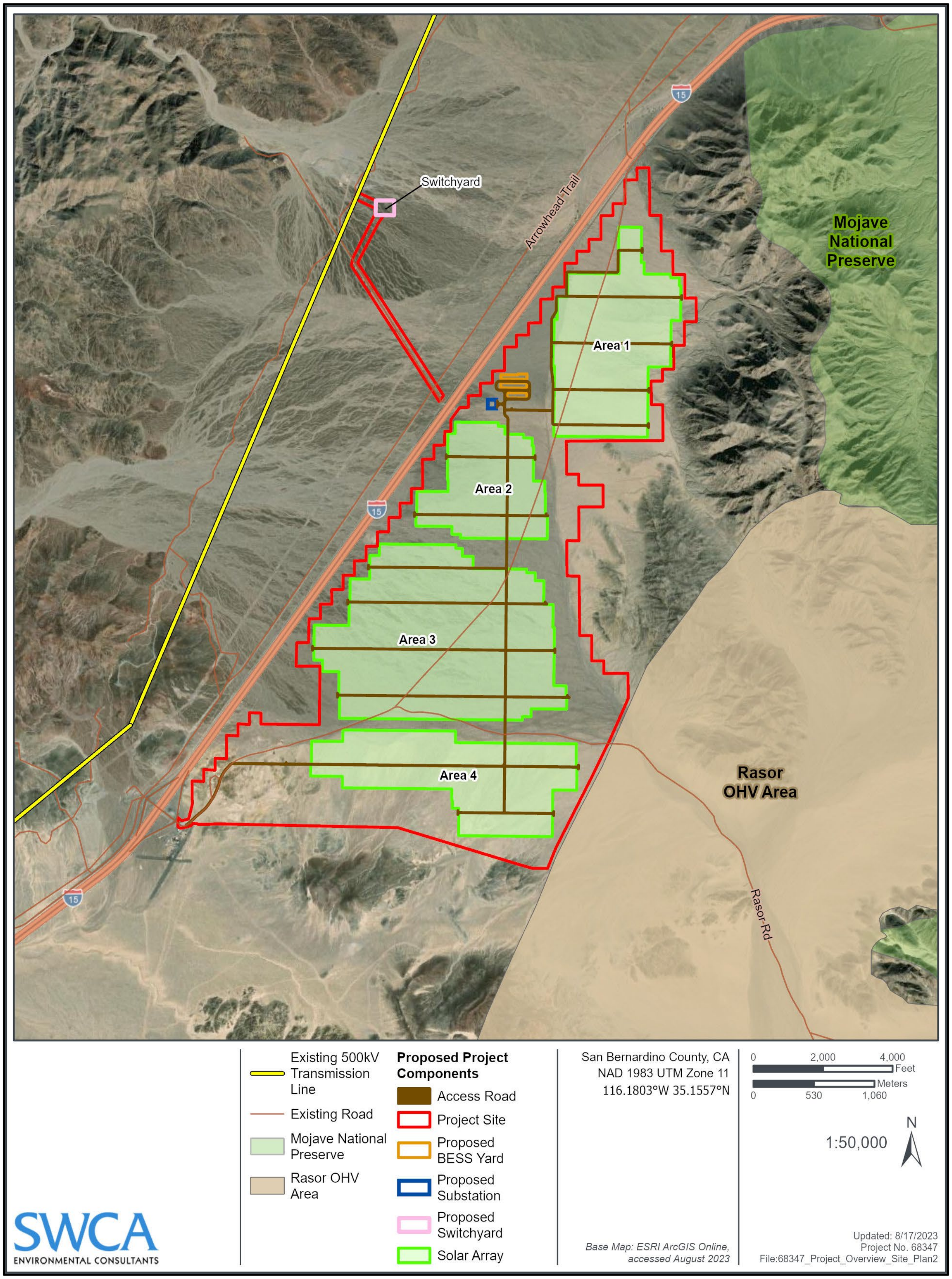

Figure 2-7. Project overview site plan.

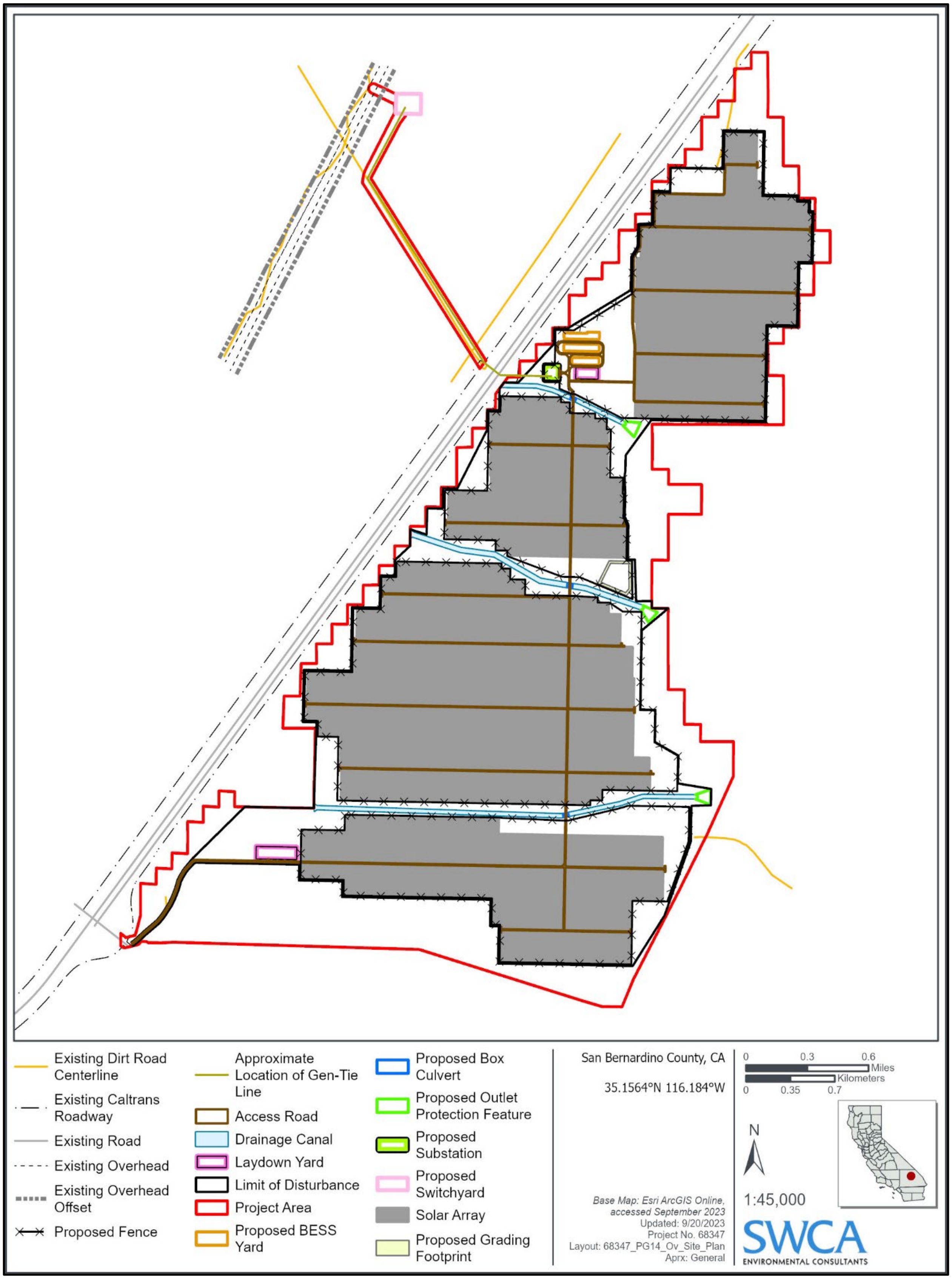

Figure 2-8. Existing and proposed conditions.

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Figure 2-9. Simulated view from west looking east at I-15 and constructed project.

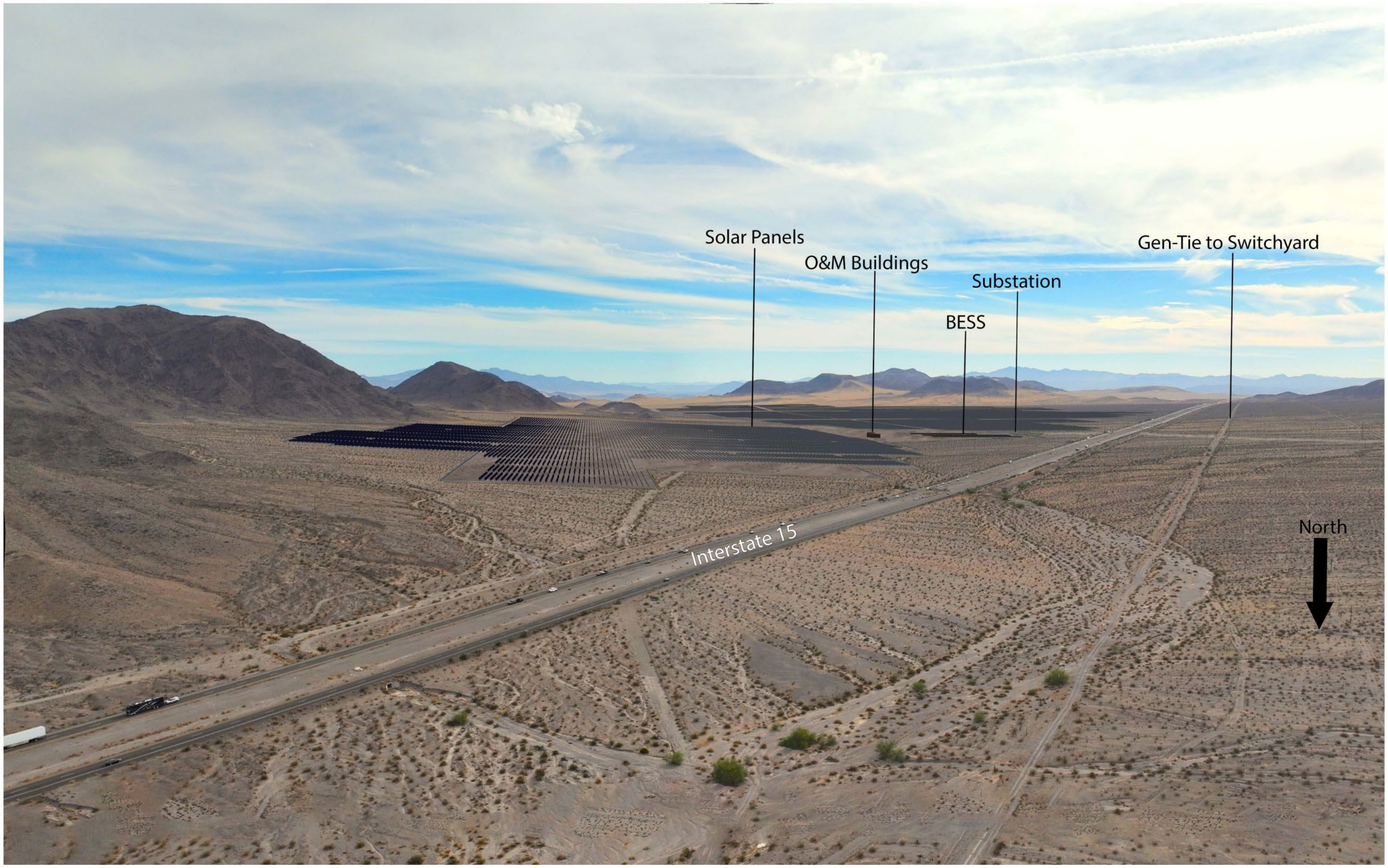

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Figure 2-10. Simulated view from northwest, facing east across I-15 to project site.

2.4.1 *Solar Panel Arrays and Support Structures*

2.4.1.1 SOLAR PANEL ARRAYS

Solar cells, also called photovoltaic (PV) cells, convert sunlight directly into electricity (voltage), which is called the "PV effect." PV cells are located on panels; rows of solar panels form an array. The PV modules are uniformly dark in color, non-reflective, and designed to be highly absorptive of all light that strikes their glass surfaces. Arrays controlled by a single motor create a system called a single-axis solar tracker, which rotates throughout the day to increase total solar exposure. For the project, hundreds of solar trackers would be interconnected to form a utility-scale PV system. The solar panel arrays would be organized into Area 1, Area 2, Area 3, and Area 4 on the southeast side of I-15, as shown in Figure 2-7.

2.4.1.2 SUPPORT AND MOUNTING STRUCTURES

The single-axis solar tracker would be mounted on structures supported by steel piles (e.g., cylindrical pipes, H-beams, or similar), which would be driven into the soil using pile/vibratory/rotary driving technique. Driven pier foundations are a "concrete-free" foundation solution that would result in minimal site disturbance and facilitate site reclamation during decommissioning. Most pier foundations would be driven to approximate depths of 6 to 12 feet deep depending upon the required embedment depth. The piles would be spaced 10 to 15 feet apart. The support structure would be elevated at least 1 foot above the base flood elevation and approximately 6 to 12 feet tall, depending on site topography.

2.4.1.3 ELECTRICAL CONNECTION SYSTEM

Solar panels would be electrically connected using string wiring secured to the panel support system. String wiring terminates at PV array combiner boxes or load break disconnect boxes, which are lockable electrical boxes mounted on or near an array's support structure. Output wires from combiner boxes would be routed along an underground trench system approximately 3 to 6 feet deep and 1 to 6 feet wide, including trench and disturbed area, to the central inverter pads. Inverters are a key component of solar PV power-generating facilities because they convert the solar panel's direct current (DC) power into AC power and step up the voltage for use with the transmission network. The output voltage of the inverters would be stepped up from 600 to 1,200V DC to 34.5kV AC power and transmitted by underground collection lines to the project substation.

2.4.2 *Substation*

The 140,000-square-foot high-voltage substation would be located adjacent to Area 1 and Area 2 on a raised gravel pad and would have a maximum height of 35 feet (see Figure 2-7 and Figure 2-8). The substation would include the main Generation Step Up (GSU) transformer, high-voltage circuit breakers, switches, meters, instrumentation transformers, relay equipment, a control enclosure, and related equipment. The substation equipment would be mounted on concrete foundations and steel structures (hot dip galvanized or weathering steel).

All the underground 34.5-kV collection lines would be combined at the substation, and the voltage would be stepped up to 500 kV via the GSU transformer. All interconnection equipment, including the control room, would be installed aboveground on concrete foundations and steel structures within the substation footprint.

Power to the project substation control enclosure would be provided primarily by a station service transformer (roughly 50 kilovolt amps [kVA]) located within the substation yard. The control enclosure would be equipped with a backup battery and an energy management system capable of powering the control enclosure for 48 hours in the event of an outage. In the event of a prolonged outage, a secondary power source will be provided via an underground connection to Kramer 115-kV sub-transmission line owned by SCE, which runs parallel to I-15.

2.4.3 *Switchyard*

The switchyard would be set on an approximately 234,300-square-foot raised gravel pad and would have a maximum height of 100 feet. The switchyard would be located 0.8-mile northwest of I-15, adjacent to the LADWP Mead-Adelanto 500-kV transmission line ROW. The switchyard would include the High Voltage Bus Structure, high-voltage circuit breakers, switches, instrumentation transformers, relay equipment, a control enclosure, and related equipment. Like the substation, the switchyard equipment would be mounted on concrete foundations and steel structures (hot dip galvanized or weathering steel).

Power to the switching station control enclosure would be provided primarily by a station service transformer (roughly 50 kVA) located within the substation yard. The control enclosure would be equipped with a backup battery and an energy management system capable of powering the control enclosure for 48 hours in the event of an outage. In the event of a prolonged outage, a secondary power source will be provided via an underground connection to Kramer 115-kV sub-transmission line owned by SCE, which runs parallel to I-15.

2.4.4 *Gen-tie Line*

The approximately 1-mile 500-kV gen-tie line would be designed in accordance with LADWP design standards including required right-of-way (ROW) width. The gen-tie would also use eleven tubular steel pole support structures and six lattice towers, all of which would be approximately 160 feet high. A small segment of the gen-tie line, approximately 450 feet, would go under I-15 near an existing Caltrans culvert. On either end of this underground section there would be riser towers and transition to overhead tower structures. Both the underground section of the gen-tie line and the riser towers would be designed in accordance with General Order 128.

2.4.5 *Battery Energy Storage System*

A BESS absorbs, holds, and then reinjects energy from the PV system into the electrical grid. The project is anticipated to include up to 300 MW/1,200 MWh of energy for dispatch into the local electrical grid via the same point of interconnection as the solar arrays. The BESS would be located adjacent to the substation and Area 1. Up to 18 acres may be utilized for the BESS throughout the project site at full buildout.

2.4.5.1 BATTERIES

Individual lithium-ion cells typically form the core of the BESS and are assembled in sealed battery modules. The battery modules would be installed in self-supporting racks electrically connected either in series or parallel to each other. The operating rack-level DC voltage currently ranges between 700 and 1,500 volts (V). The individual battery racks are connected in series or a parallel configuration to deliver the BESS energy and power rating.

2.4.5.2 BATTERY ENERGY STORAGE SYSTEM ENCLOSURE AND CONTROLLER

The BESS containers would house the batteries described above, as well as the BESS unit controllers. There would also be a site controller, located in a pad mount enclosure within the BESS yard. The BESS site controller is a multilevel control system for the battery modules, power conversion system, medium-voltage system, and up to the point of connection with the electrical grid. The controllers ensure that the BESS effectively mimics conventional turbine generators when responding to grid emergency conditions. The BESS enclosure would also house required heating, ventilation, and air conditioning (HVAC) and fire protection systems. The battery storage containers would be built using standard International Organization for Standardization (ISO) shipping containers, and each would measure approximately 20 feet in length, 6 feet in width, and 8 feet in height, although other smaller form-factor structures exist that may be used. The containers would be painted Sudan Brown.

The safety system would include a fire detection, alarm, and suppression control system that would be triggered automatically when the system senses imminent fire danger. A fire suppression control system would be provided within each on-site battery enclosure. The safety system would use either a waterless evaporating fluid, a sustainable clean agent (not a hydrofluorocarbon clean agent), or an alternative suppression agent, such as an inert gas. The control system would also notify the project operators and could be configured to notify local first responders as well.

2.4.6 *Operation and Maintenance Area Facilities*

2.4.6.1 BUILDINGS

Three buildings related to operations, maintenance, and storage would be constructed as part of the project. One building would be 2,400 square feet, and the other two buildings would each be 5,000 square feet in area. Similar to the BESS, each building would be painted Sudan Brown. These buildings would be in the northwest portion of the site next to the BESS facilities. All of these facilities would be monitored by on-site O&M personnel and/or remotely.

The project would power the O&M buildings via a 480-V circuit from the BESS Auxiliary Power distribution system. This circuit will be fed from the collector substation and transformed to 480 volts via an auxiliary transformer mounted at the BESS yard. Power will be distributed via 480-V switchgear at the BESS yard. Power distribution will be via underground cables. Backup power to the O&M facilities would be via a local microgrid. This system would consist of solar PV panels mounted to the roof of the O&M buildings, a backup battery providing 24 hours of standby power, and an automatic transfer switch. This connection removes the need to have an emergency generator as part of the proposed project.

2.4.6.2 PARKING AREAS

A 13,200-square-foot parking area would be located adjacent to the buildings described above, in the southwest corner of the site. They would be composed of compacted soil covered with filter fabric and 4-12” of compacted Class II aggregate base. The parking areas are not expected to exceed approximately 0.33 acre, or 13,200 square feet. Parking would be provided for the anticipated employees during project operation, for visitors, and for other equipment anticipated to be on-site at any time.

2.4.6.3 ACCESS ROADS

Primary operational access to the project site would be provided via the existing Rasor Road, that runs from I-15 eastward to the Rasor OHV recreation area (Figure 2-11). No public road improvements are proposed within the San Bernardino County maintained road ROW on Rasor Road. The portion of Rasor Road on BLM land would serve as the entrance and primary access road within the site is approximately 0.4-mile in length. The project would maintain and improve this portion of Rasor Road up to 26 feet wide and include a gated entrance to the project site which can be accessed approximately 250 feet southeast from the I-15 northbound off-ramp. Although it would be closed to the public during project construction, Rasor Road would reopen during project operation and serve as the main access to Rasor OHV recreation area.

Currently, Arrowhead Trail splits off of Rasor Road and runs north-south. Arrowhead Trail would be closed; the project would construct internal access road(s) which lead to the substation and between the solar arrays. These internal access roads would be up to 26 feet wide and include a 50-foot turning radius at the project boundary.

Northwest of I-15, the project would construct an access road up to 26 feet wide underneath the gen-tie line to access the gen-tie line and switchyard.

These roads would consist of compacted native material and would be graded as necessary but would generally follow the existing terrain covered with filter fabric and 4 to 12 inches of compacted Class II aggregate or amended with Class II aggregate only where native soils are not suitable for heavy traffic. Larger boulders that could impede vehicle access would be removed. These permanent access roads would be compacted to meet load requirements for vehicle traffic over the life of the project.

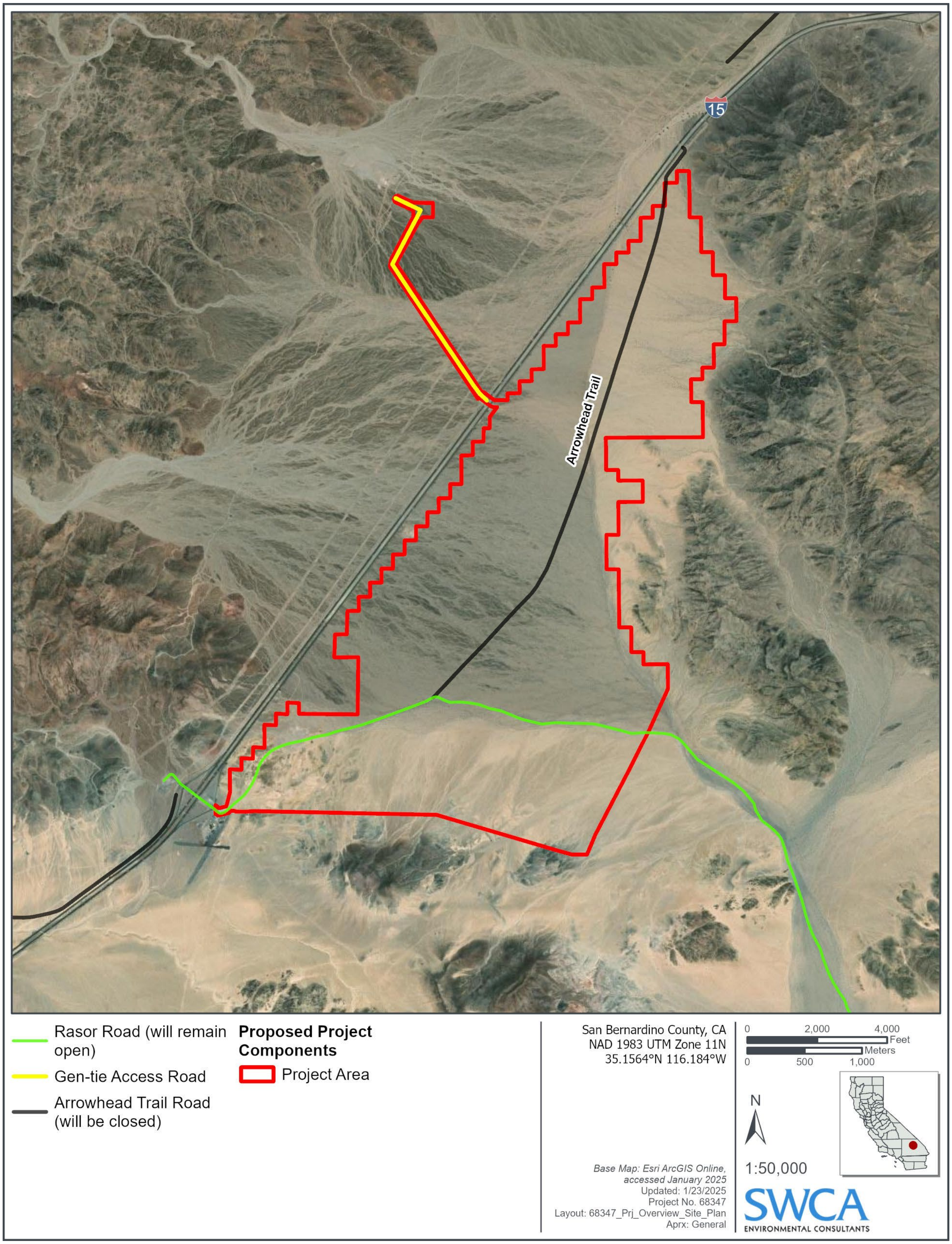

Figure 2-11. Existing and proposed roadways.

2.4.6.4 SITE SECURITY AND FENCING

All project components would be surrounded by warning signage, perimeter security fencing, desert tortoise exclusionary fencing, and perimeter security cameras. Combined security and desert tortoise fencing would be installed surrounding each individual array field and extend to include the substation and BESS area. A permanently gated, 8-foot-high chain-link fence with three-strand barbed wire meeting National Electric Safety Code requirements would be constructed around the substation and the switchyard. The line posts and terminal posts of the fence would be buried up to 3.5 feet deep, and the distance between posts would be approximately 10 feet. All permanent tortoise exclusionary fencing would be constructed in accordance with Chapter 8, Desert Tortoise Exclusion Fence, of the USFWS's 2009 Desert Tortoise Field Manual (USFWS 2009).

2.4.6.5 LIGHTING

Lighting would be provided at the Rasor Road site entrance, O&M buildings, substation, and switchyard. Exterior security lighting would be installed to provide safe access to project facilities as well as visual surveillance. Some portable lighting also could be required for essential nighttime maintenance activities. All lighting would be kept to the minimum required for safety and security; sensors, motion detectors, and switches would be used to keep lighting turned off when not required. All lighting would be compliant with San Bernardino County Dark Sky Ordinance.

2.4.7 *Landscaping*

The project would plant a variety of native and drought tolerant trees and shrubs along the western boundary of the project site. There would be approximately 30 acres of landscaped areas on-site, including up to 5 acres of irrigated landscaped areas as needed.

2.4.8 *Drainage and Erosion Control*

Grading of up to 2,059 acres and other types of ground treatment would be conducted outside of existing major drainage channels and would not involve substantial changes to site topography. Once construction is complete, the topography beneath the solar panels would generally be the same as the baseline condition except in areas where soil has been compacted or rocks and isolated surface undulations have been removed by grading. Native vegetation would be allowed to reestablish naturally and would be trimmed during operation as necessary.

Security fencing would not be used in the major drainage channels in between the array fields to minimize impacts to wildlife corridors and stormwater flow. If needed along larger drainages, breakaway fencing would consist of a driven post with detachable connections just above ground level, which allow the fencing to yield to the force of a storm event without damage to the embedded portion of the post. Following such an event, the fence would be reattached to the post. The entrance to each access road along the perimeter would include a security gate.

The design of the array fields would avoid placing solar panels within the stormwater flow corridors downstream of the existing culverts under I-15 so that flows from the culverts would continue to follow existing braided flow channels. Three drainage channels would be constructed between the array fields. Each channel would be approximately 3 feet below grade and vary in width and length. Approximately ten temporary sediment basins of varying sizes and depths would be constructed adjacent to the drainage channels and throughout the site and removed at the conclusion of construction.

Development within the channels would be limited to access road crossings and potential subsurface collector lines. Approximately twelve box culverts and eight low-water crossings would be installed at the intersection of access roads and drainage channels, and permanent protection berms would be constructed along the edges of the arrays near these flow corridors to prevent occasional side channel flows from entering the array fields. Temporary and permanent fiber rolls would also be installed on slopes before they transition into steeper slopes to control runoff.

2.4.9 *Solid Waste and Hazardous Materials Management*

Construction would generate solid waste. All waste generated during construction would be stored in wind-proof and wildlife-proof containers that periodically would be transported to an off-site disposal facility authorized to accept the waste. During construction, portable sanitary facilities would be located in the project area and maintained by a local contractor.

During operations and maintenance, some PV panels would require replacement due to breakage or other damage or to take advantage of new technologies. Removed PV panels would be recycled or disposed of in accordance with applicable local, state, and federal standards and regulations.

Hazardous materials that may be used and stored during construction and/or operations and maintenance could include gasoline and diesel fuel, paints, thinners, solvents, sealants, lubricants, hydraulic fluids, herbicides. Facility transformers would contain non-polychlorinated biphenyl (PCB)-rated dielectric fluid. Due to the non-hazardous nature of these transformer fluids, secondary containment is not required. Facility breakers may contain SF6 gas insulating fluid depending on final design but will comply with California Air Resources Board regulations.

Hazardous materials would be stored within secondary containment to control any potential leaks of oils, grease, fuels, and other hazardous materials stored at the project site. All potential contaminants would be stored and used at least 50 feet from any defined or constructed channels or basins at all times. If quantities exceed regulatory thresholds, a spill prevention control and countermeasure (SPCC) plan would be developed prior to project construction in accordance with applicable regulations and would include a facility diagram that would identify the location and contents of hazardous materials containers; potential equipment failures; containment and diversionary structures; facility drainage; personnel, training, and spill prevention procedures; and emergency contact information. Diversionary structures meeting the requirements of the SPCC plan would be provided for oil-containing equipment, including transformers, at the project site. Transformers would be inspected on a regular basis to detect and respond to any leakage.

All use, storage, transport, and disposal of hazardous materials associated with the project would be done in strict accordance with federal, state, and local regulations and guidelines. Employees would be trained in the appropriate protocol for notification and cleanup of hazardous materials. Additionally, the site would be supplied with adequate spill containment kits and personal protective equipment in case of a release.

2.5 Construction

The following sections provide details about the timeline and process for construction of the project. Once construction is complete, the project would operate for approximately 40 years. Construction would begin in the second quarter of 2026, and initial operation would begin in the fourth quarter of 2027. Full-scale commercial operation is anticipated to begin by the second quarter of 2028.

2.5.1 *Construction Schedule and Workforce*

Construction of the project is anticipated to begin in the second quarter of 2026 and occur over an approximately 18-month period and consist of overlapping construction stages. Stage 1 would include mobilization, site preparation, grading, fencing, preparation of roads and laydown areas, and installation of measures in the Stormwater Pollution Prevention Plan (SWPPP) as well as erosion control features. Stage 2 would include installation of solar array structural components including piles, racking systems, and foundations. Stage 3 would include installation of the solar and BESS inverters, solar panels, battery storage systems, and ancillary equipment, and would also include trenching activities to install cables and other electrical equipment. Stage 4 would include inspections, testing, and commissioning. Stage 1 would be from months 1 to 8, Stage 2 would be from months 4 to 12, Stage 3 would occur during months 10 to 116, and Stage 4 would occur during months 15 to 18. An average of 200 construction workers would operate daily on-site, with an anticipated 300 construction workers during peak construction activities.

The typical construction work schedule is expected to be from 6:00 a.m. to 6:00 p.m., Monday through Friday. However, to meet schedule demands or to reduce impacts, it may be necessary to work early mornings, evenings, or on weekends during certain construction phases. The work schedule may be modified throughout the year to account for changing weather conditions (e.g., starting the workday earlier in the summer months to avoid work during the hottest part of the day for health and safety reasons). If construction work takes place outside these typical hours, activities would comply with San Bernardino County standards for construction noise levels. For safety reasons, certain construction tasks, including final electrical terminations, must be performed after dark when no energy is being produced. The project would use restricted nighttime task lighting during construction. Lighting would include only what is needed to provide a safe workplace, and lights would be focused downward, shielded, and directed toward the interior of the site to minimize light exposure outside the construction area.

2.5.2 *Preconstruction Activities (Stage 1)*

Prior to construction, all contractors, subcontractors, and other on-site personnel would receive Worker Environmental Awareness Program (WEAP) training regarding the appropriate work practices necessary to effectively understand and implement the biological commitments in the project description, implement the mitigation measures, comply with applicable environmental laws and regulations, avoid and minimize impacts, and understand the importance of these resources and the purpose and necessity of protecting them.

Qualified biologists would conduct preconstruction surveys for sensitive species. Sensitive resource areas would be flagged so they are avoided or appropriately managed during construction. Preconstruction field survey work would include identifying precise locations of the project site boundary and desert tortoise and security fencing. Construction staging areas would be established for storing materials, construction equipment, and vehicles. These features would be subsequently staked in the field. No paint or permanent discoloring agents would be applied to rocks or vegetation to indicate survey or construction limits. All off-road vehicle travel, fence installation, and staging area establishment would be surveyed and/or monitored by qualified biologists, archaeologists, and tribal monitors, as appropriate. The preconstruction field surveys would be conducted during daylight hours, and vary in length and timing, depending on the species found on-site. The proposed WEAP training would be required before a worker would be allowed to work on the site. These trainings would also occur on a continuous basis during construction.

2.5.3 *Site Preparation (Stage 1)*

As shown in Figure 2-12, approximately 2,059 acres throughout the site would be disturbed. Grubbing and grading would be required across a majority of the site to level rough or undulating areas, including around roads and laydown areas, as well as the BESS yard, substation yard, and switchyard. Grubbing and grading would also be required to prepare soils for concrete foundations for substation equipment, inverters, energy storage systems, and the operations and maintenance buildings. Grubbing would involve the removal of vegetation from the construction site, while grading would include earthwork to achieve a certain base or slope. Mowing, minimal grubbing, and grading may also be required in the array areas to prepare the site to receive pile foundations. There would be approximately 630,000 cubic yards of cut and 180,100 cubic yards of fill, thus requiring approximately 449,900 cubic yards of cut on-site. The 449,900 cubic yards of net cut would be balanced throughout the disturbed area within the project site.

Per Mojave Desert Air Quality Management District Rule 403, as part of project construction, the applicant would develop a Dust Control Plan that describes all applicable dust control measures to address construction-related dust (Mojave Desert Air Quality Management District 2020). Further, a SWPPP or SWPPP-equivalent document required by the Lahontan Regional Water Quality Control Board (RWQCB) would be prepared by a qualified engineer or erosion control specialist and would be implemented before construction. The SWPPP would be designed to reduce potential impacts related to erosion and surface water quality during construction activities and throughout the life of the project. It would include project information and best management practices (BMPs). The BMPs would include dewatering procedures, stormwater runoff quality control measures, concrete waste management, stormwater detention, watering for dust control, and construction of perimeter silt fences, as needed.

2.5.4 *Solar Array Assembly and Construction (Stage 2)*

Construction of the solar arrays would begin with the installation of array support posts, which would be driven into the soil using a pile/vibratory/rotary driving technique to a depth of approximately 6 to 12 feet. Single-axis solar tracking structures would be fastened to the support piles. Once the support structures are in place, solar panels would be attached to the support frame. The assembled groups of solar panels would be wired together into strings through connectors on the back of the modules. Assembled panel sections would then be connected to combiner boxes located throughout the arrays that would deliver power to the inverter. Output wires from combiner boxes would be routed along an underground trench system approximately 3 to 6 feet deep and 1 to 6 feet wide, to the central inverter. Central inverters would be mounted on concrete pads or driven piles. Central inverters would be brought in by tractor-trailers through the Rasor Road site entrance and delivered directly to the mounting pad sites where they are placed by mobile crane.

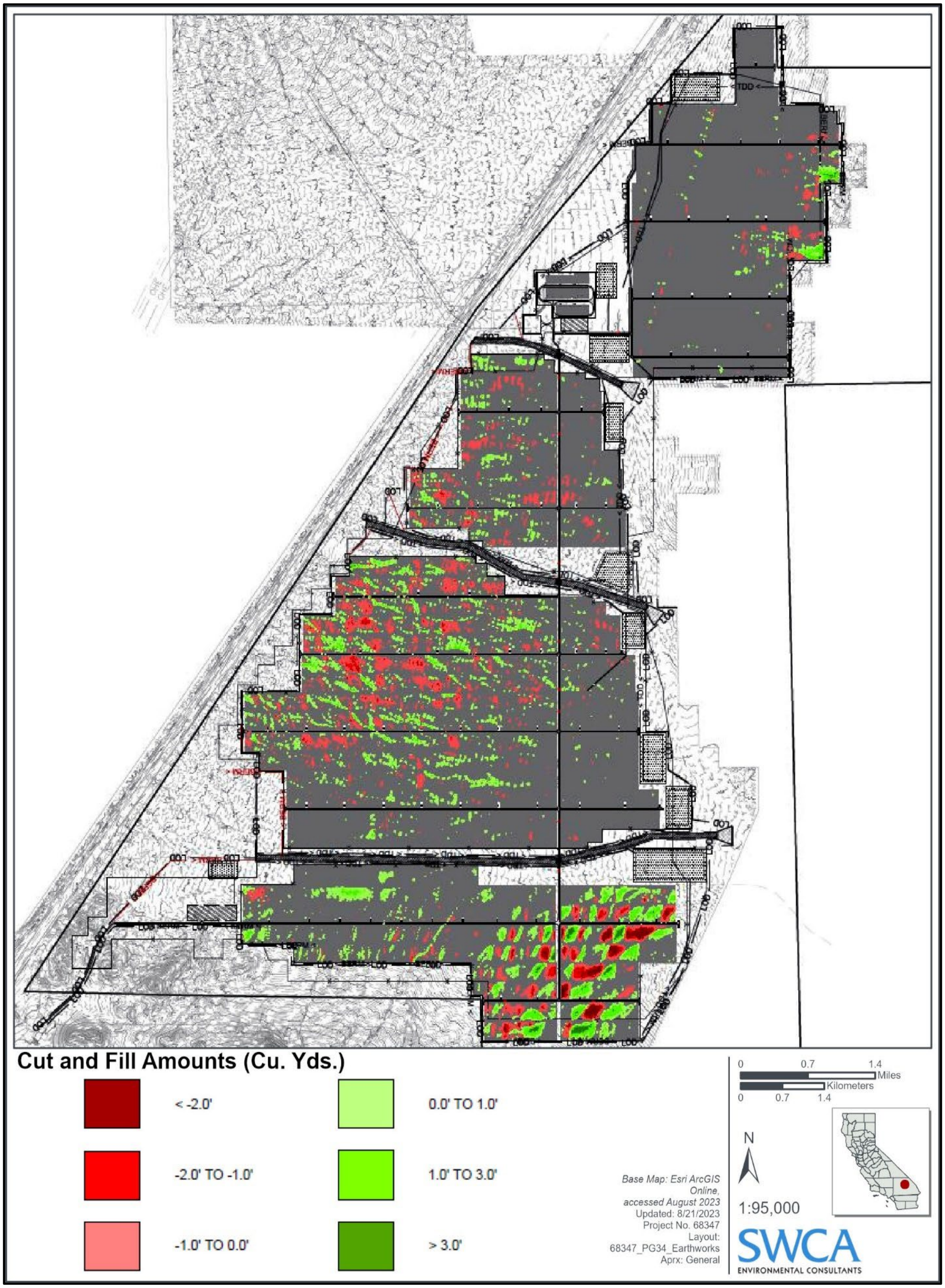

Figure 2-12. Proposed earthwork.

2.5.5 *Substation, Switchyard, and Gen-tie Construction (Stage 3)*

Construction of the project substation, switchyard, and interconnection to the Mead-Adelanto 500-kV transmission line would occur concurrently with the construction of the solar arrays. In order to construct the transmission line, one tower would be removed from the existing line, and multiple new tower structures would be constructed adjacent to location of the removed tower. The new towers would carry the 500-kV transmission line into and out of the new switchyard. The sequence of construction would be to install the new towers and equipment, string the new line, then request and outage to cut in the new line to the existing Mead-Adelanto line.

The proposed gen-tie line which would connect the new switching station to the project substation would be installed using concrete caisson foundations or driven poles. Upon installation of all poles, the line insulators and switches would be installed. Upon installation of all line equipment, the conductors would be strung along the poles.

The substation and switchyard areas would be graded and compacted to an approximately level grade and raised at least one foot above the adjacent grade to prevent flooding. Upon completion of the raised pad, concrete foundations, underground cabling, and a grounding grid would be installed. Upon completion of the underground work, steel structures would be installed to mount equipment. Once the steel structures are constructed, the substation equipment would be installed including transformers, switches, breakers, and control enclosures. Then, wiring and terminations will be performed at all equipment, after which equipment testing will be performed.

The gen-tie line would be routed to the project switchyard by boring under I-15. The boring operation would be accomplished by constructing a boring pit on each side of I-15 to initiate and terminate the bore. The gen-tie line would cross I-15 through bores in a 200-foot-wide corridor at a 90-degree angle and would be installed per Caltrans requirements. Alternative design concepts for boring design, including through an existing culvert, may be considered based on project requirements. No overhead generation-tie lines crossing I-15 are proposed.

2.5.6 *Electrical Construction Activities (Stage 3)*

Buried electrical lines for DC array wiring and AC wiring between inverters and transformers would then be installed using trenching machines. The trenches would be approximately 3 to 6 feet deep and 1 to 6 feet wide. The trenched areas would be backfilled and compacted after the cables are laid into place It is anticipated that the solar panels would require one washing during the construction phase prior to energizing and performance testing of the arrays in order to remove the dust that has accumulated on the panels during construction.

The medium-voltage collection cables would be trenched at depths up to 4 to 8 feet using a trenching machine. The trenches would be approximately 12 to 36 inches wide. Multiple trenches may be placed adjacent to each other, depending on the number of collector circuits in a particular location. The cables would be placed within the trenches in layers (as necessary) followed by backfill and compaction operation. Alternatively, a single pass trenching and cable installation machine could be used to automate the cable placement and backfill process. The main trenching operations would be for installation of DC cables from the combiner boxes to the inverters and installation of AC collector circuits between inverters and the substation. The collector cable would be installed by circuit in conduits, with each circuit contained in a single 6-inch-diameter conduit (typical) spaced approximately 10 feet on center. The exact locations would be determined during detailed design.

2.5.7 *Construction Equipment and Materials*

Standard construction equipment would be used during construction, including earth-moving equipment (e.g., bulldozers, excavators, backhoes) and road-building equipment (e.g., compactors, scrapers, graders). Construction equipment would include air compressors, all-terrain passenger vehicles, backhoes, cranes, a drill rig, tractor-trailers, flat-bed trucks, telehandlers, pick-up trucks, pile drivers, trenchers, portable generators, and water trucks. Construction equipment and maintenance trucks would be maintained to minimize leaks of motor oils, hydraulic fluids, and fuels. No extremely hazardous materials are currently anticipated to be produced, used, stored, or disposed of as a result of the project.

Most of the fuel required by construction and operation staff vehicles and engines would be procured at commercial gas stations in the local area, such as at the service station at Rasor Road or in Baker. A limited amount of #2 diesel and gasoline petroleum fuels (approximately 500 gallons each) would be stored in the staging areas in above-grade steel tanks with secondary containment.

Concrete would be required for building or structure footings and foundations and pads for inverters, transformers, water tank footings, and substation equipment. In areas where driven support posts are not practical for the solar arrays, pre-drilling and installation of posts with sand slurry may be used.

2.5.8 *Construction Vehicle Access and Traffic*

All construction materials would be delivered by truck. Most truck traffic would occur on designated truck routes and major streets. Construction traffic would include periodic truck deliveries of materials and supplies, equipment, recyclables, trash, and other truck shipments, as well as construction worker commuting vehicles. Most construction equipment and vehicles would be brought to the site at the beginning of each construction phase during construction mobilization and remain on-site throughout the duration of the construction phase for which they were needed. Generally, the equipment and vehicles would not be driven on public roads while in use for the project. Equipment will be brought to site on trailers with permitted load as required by Caltrans.

Over the approximately 18-month construction period, the project would require approximately 1,000 truckloads of construction materials per month for delivery of components and construction materials, including concrete. Up to 90,000 truckloads would result over the total construction period, excluding travel by construction workers. As water is obtained from an off-site source during construction, an estimated 17 water transport truck trips per day would also be required. Average truck traffic would be approximately 80 trucks per day, 25 days per month. The project would use a just-in-time delivery system with supplies and components delivered on a schedule to minimize on-site storage needs.

The project would prepare a Construction Traffic Management Plan, to provide construction vehicle information, facilitate traffic control methods, and provide a designated contact for addressing complaints.

2.5.9 *Construction Water Supply and Use*

Project construction would take place over approximately 18 months. Water would be needed primarily for dust control and soil compaction during the first 90 days of grading activities, with small amounts used for sanitary and other purposes. During Stage 1 and Stage 2 of construction, which includes the 90-day grading period, the project would require approximately 200,000 gpd, or approximately 336 acre-feet per year (af/yr). Water requirements in the second year of construction are expected to be less than 110 af/yr, or half of the requirement of the first year of construction.

Five temporary water tanks of 100,000 gallons would be brought on-site by truck to store water in anticipation of construction water needs. The tanks would be housed on trailers located along access roads or within areas that have been cleared for installation of project components. The tanks may be moved around the site as construction progresses and would be used to fill on-site water trucks. The temporary water storage tanks would be removed after construction. Water used for construction would be supplied by a private groundwater well in Baker, San Bernardino County.

2.6 Operation and Maintenance

The project would begin operation in 2027 and operate 7 days a week, 365 days a year, with an approximately 40-year anticipated lifespan. Operational needs at the site include monitoring and optimizing the power generated by the solar arrays and interconnection with the transmission lines, operating the Supervisory Control and Data Acquisition (SCADA) system, troubleshooting the collector lines and repairing damaged cables, connections, or equipment, performing preventative maintenance per manufacturer recommendations, and conducting panel-washing activities periodically through the year. Additional maintenance would be required to maintain the administrative buildings, fencing and signage, roadways, and other ancillary facilities at the site. Project would hire local workforce as available to perform operations and maintenance.

2.6.1 *Operation and Maintenance Workforce*

The project substation would be uncrewed during operation; however, a workforce of approximately 2 to 4 personnel would visit the substation on an as needed basis for maintenance, equipment operation, and/or security. The project would be remotely controlled, eliminating the need for permanent on-site employees. Final staffing levels and configuration would be based on the final site configuration and early operating and maintenance experience. The facility would not be accessible to the public, and access will be infrequent and limited to authorized personnel.

2.6.2 *Automated Facility Control and Monitoring System*

The project would be operated and monitored by means of a SCADA system located in the control building. Sensors located at each inverter, BESS, project switches, and breakers would report operational parameters. Data access, as well as the operation of the project PV and BESS systems would be controlled, either on-site or remotely, through a high-security system. The non-conductive fiber-optic communications cable would be co-located with the low-voltage DC and AC wiring to reduce environmental impacts. Personnel communication would use two-way radio/receptor stations, which would require a Federal Communications Commission (FCC) license.

2.6.3 *Operational Water Supply and Use*

Project operation would require water for dust control, panel washing, and fire protection. The non-potable water for the project would be supplied by an existing private groundwater well located in Baker, San Bernardino County. This water would be trucked in from this well to support project operations.

Water would be used to clean the PV panels; dust and dirt build-up reduces the amount of incoming solar radiation striking the active PV layer within the panel. To reduce this effect, panel washing would be conducted three times per year over a 3-week period during operations, or additionally as necessitated. The water would drain by gravity to panel-washing trucks for use. Panel washing would require approximately 2.8 af (912,384 gallons) of water per year. In total, an estimated 5.6 af/yr of water would be used for panel washing, dust control and suppression during operation.

Three 10,000-gallon water tanks would be located throughout the site near the operation and maintenance building, BESS, and adjacent to the solar arrays. The water tanks would provide storage of water used for fire suppression. The tank would not require a regular supply of water because the water would be withdrawn only in the event of a fire. The tank would be monitored periodically and refilled as needed to replace evaporative losses. For fire suppression water supply, the project would conform to County requirements, which incorporate National Fire Protection Association (NFPA) Standards 1142 and 13 by reference and provide minimum requirements for fire suppression water supply where no public water supply is available (Standard 1142) and sprinkler systems (Standard 13).

2.7 Decommissioning and Site Reclamation

The solar ROW grant is authorized for a 30-year term and would be subject to renewal at that time. When the project reaches the end of its useful life, structures and equipment would be removed for reuse or sold as scrap, and the land surface would be reclaimed. A Decommissioning and Site Reclamation Plan has been prepared for the project. Because site conditions are likely to change over the life of the project, and to ensure that the decommissioning and site reclamation plan addresses all necessary conditions, the draft will be finalized and approved by the BLM before decommissioning and reclamation activities begin.

Upon decommissioning, aboveground structures would be dismantled and removed from the site. Where required by the BLM, concrete pads or foundations would be demolished, and rubble would be removed to an off-site disposal facility authorized to accept the waste. Belowground facilities may be disconnected at the surface and left in place in conformance with guidance and approval from the BLM. New project access roads and corridors would be closed, with the exception of Rasor Road, which would remain accessible.

Decommissioning of the substation and switchyard would involve deconstruction of structures. Salvaged materials would be recycled to the extent possible. Material that cannot be recycled would be transported for disposal in authorized landfills. Underground cabling and conduit may be left in place. The substation and office/storage areas would be graded to approximate the natural contour.

The applicant would prepare and implement a final closure and reclamation plan addressing removal of structures and site restoration in conformance with BLM requirements at the time of decommissioning. Construction hours and site cleanliness practices would be approximately the same during decommissioning as during construction.