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REPORT

Willow Rock Energy Storage Center (21-AFC-02)

California Unions for Reliable Energy (CURE) Data Request Response Set 2

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Foreword

On March 1, 2024, GEM A-CAES, LLC (Applicant) docketed the Supplemental Application for Certification (SAFC) Volume 1 for the Willow Rock Energy Storage Center (WRESC; 21-AFC-02). On July 16, 2024, the Executive Director recommended that the Committee accept the Supplemental AFC as complete, and that the 12-month timeline to reach a decision on the AFC, as required by Public Resources Code section 25540.6, should begin. On December 20, 2024, the Committee issued a revised Scheduling Order stipulating that January 13, 2025, is the last day for parties to file Data Requests.

Pursuant to Title 20, California Code of Regulations, section 1716(b), California Unions for Reliable Energy (CURE) docketed Data Requests Set 3 on January 13, 2025. Data Requests Set 2 presents a list of questions associated with the resource topic areas of Alternatives; Air Quality; Electric Transmission and Reliability; Biological Resources; Geological Hazards and Resources; Water Resources; and Noise.

To address CURE's request, each Data Request within Set 2 has been responded to with supplemental information or guidance on where the information may be found. For CURE data requests that involve the project's location and extent, the Applicant has based their responses on the descriptions of the Project Area and Project Boundary presented in Section 5.0 of the SAFC and the information shown in Table 5.01 and Figure 5.01, therein. For questions and responses involving specific biological surveys, the study areas are defined in Section 5.02 of the SAFC on survey-by-survey basis.

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1.0 INTRODUCTION

GEM A-CAES LLC's (the "Applicant") is responding to the California Unions for Reliable Energy (CURE) Data Requests Set 2, numbers:

- **Alternatives:** DR105
- **Air Quality:** DR106 and DR107
- **Electric Transmission and Reliability:** DR108 through DR115
- **Biological Resources:** DR116 through DR130
- **Geological Hazards and Resources:** DR131 through DR153
- **Water Resources:** DR154 and DR158
- **Noise:** DR158 and DR173

This response document addresses CURE Data Request Set 2. The responses are grouped by individual discipline or topic area. Within each discipline area, the responses are presented in the same order as presented by CURE and are keyed to the Data Request (DR) numbers (DR#). New or revised graphics, tables, or attachments are provided as attachments and are numbered in reference to the Data Request number. For a hypothetical example, the first attachment used in response to Data Request DR105 would be numbered Attachment DR105-1. Each page in this response document is sequentially page-numbered consistently with the remainder of the document, although some attachments may also have their own internal page numbering system.

2.0 ALTERNATIVES

2.1 Draft Phase I ESAs for VH Site and OT Site

2.1.1 Data Request DR105

The Applicant added four sites to the Alternatives analysis in the SAFC and California Energy Commission ("CEC") Staff requested in its Data Requests Set 1, Request No. 2 additional information regarding these sites. (TN 258681 at page 2) The Applicant responded in part that "The Draft Phase I ESAs for the VH Site and OT Site will be submitted simultaneous to this document through Kiteworks under the reference Attachments DR-2-5 and DR-2-6, respectively." (TN 258681 at page 2).

DR105: *Provide the Draft Phase I ESAs for the VH Site and OT Site once submitted through Kiteworks under the reference Attachments DR-2-5 and DR-2-6, respectively.*

Response: The requested material was provided to the parties (except CEC Staff who already received the material) on January 27, 2025 via a link to an FTP site where the documents may be securely downloaded.

3.0 AIR QUALITY

3.1 Modeling Input and Output Files

3.1.1 Data Request DR106

In the SAFC, the construction air quality impact results showed exceedances of the federal and state 1-hr NO2 standards. (TN 254806 at page 5.1-23) The SAFC also remodeled the no-architectural berm Project

concentrations for 1-hr NO2 assuming that the truck fleet used to transport the construction spoils offsite would be equipped with Tier 4 emission standards. (*Ibid.* at page 5.1-22) The remodeled emissions still showed exceedances of the Federal ambient air quality standard for the no architectural berm option. (*Ibid.* at page 5.1-24)

In Data Request Set 2 No. 25, CEC Staff asked the Applicant to *"refine the 1-hour NO2 modeling for construction phase, including both the no- architectural berm and architectural berm options."* (TN 258630 at page 2) The Applicant submitted new modeling input and output files in response as Attachment DR 25-1 via Kiteworks file transfer system. (TN 259220 at page 1)

DR106: *Provide the modeling input and output files in Attachment DR 25-1 submitted via Kiteworks.*

Response: The requested material was provided to the parties (except CEC Staff who already received the material) on January 27, 2025 via a link to an FTP site where the documents may be securely downloaded.

3.2 Monitoring Stations

3.2.1 Data Request DR107

Three monitoring stations are relied upon in the SAFC to assess criteria pollutant concentrations: Kern Route 58 Business (Kern County), Lancaster (Los Angeles County), and Victorville Park Avenue (San Bernardino County). (TN 254806 at p. 5.1-18) The highest background concentrations for the most recent 3-year period (2019 to 2023) were utilized to establish baseline air quality values for modeling purposes. (*Ibid.*) For certain pollutants, such as annual PM2.5 and SO2, the standards are based on a three-year average. (*Ibid.*) The SAFC claims these stations are the closest with the most representative and complete monitoring data relative to the Project site. The SAFC does not provide a specific rationale for using multiple monitoring stations, with Lancaster located approximately 15 miles from the site and Victorville Park about 77 miles away.

The use of multiple monitoring stations across varied locations may lead to an inaccurate representation of ambient air conditions within the Project area. Although the Lancaster station would be the most representative of the three identified stations, the Mojave Pat Avenue monitoring station, located approximately 12.8 miles from the Project area, may offer a more accurate reflection of local air conditions.

DR107: *Explain why three monitoring stations are used to assess criteria pollutant concentrations.*

Response: The monitoring data used in the SAFC was derived from the following sites in **Table DR107-1** for the 2019-2022 data period.

Table DR107-1: Monitoring Sites

Monitoring Site Name	City Location	Distance from Project Site	Measured Parameters	Data Period
Mojave Business 58	Mojave, CA.	~12.9 miles	O_3, PM_{10}, $PM_{2.5}$	2020-2022
Lancaster Division St	Lancaster, CA.	~16 miles	NO_2, CO	2020-2022 for NO_2 2019-2021 for CO but shutdown after 2021.

Monitoring Site Name	City Location	Distance from Project Site	Measured Parameters	Data Period
Victorville	Victorville, CA.	~55 miles	SO_2	2019-2021 but shutdown after 2021

CO = carbon monoxide; NO_2 = nitrogen dioxide; O_3 = ozone; $PM_{2.5}$ = particulate matter less than 2.5 microns; PM_{10} = particulate matter less than 10 microns; SO_2 = sulfur dioxide

These monitoring stations were initially selected based on the proximity to the project location and in all of the cases, are the closest monitoring site(s) to the proposed project location. Other than O_3, PM_{10} and $PM_{2.5}$, it should be noted that no additional monitoring stations exist in the immediate area around the project location.

A review of the California Air Resources Board (CARB) historical wind fields as well as the 5-year wind rose prepared by the Applicant's consultant, and included in **Attachment DR107-1**, indicates that an overwhelming percentage of winds originate from the west-northwest through southwest. Lancaster lies approximately 16 miles to the south-southeast of the project site, while Palmdale lies approximately 24 miles to the south-southeast of the project. The Mojave 58 Business site lies approximately 12.9 miles north-northeast of the proposed project site. Based on **Table DR107-1** monitoring site locations and the annual wind field flow patterns (**AttachmentDR107-1**), neither Lancaster nor Palmdale background air quality will influence the project site background concentrations in any meaningful way as a majority of these concentrations will be transported towards the east, away from the proposed project site. However, for NO_2 and CO background data, Lancaster was the only monitoring station within the air basin and was selected in part due to the heavily urban-influenced concentration data the Division Street monitoring station collects. Thus, use of this background data would conservatively characterize the site air quality for purposes of the modeling study. Note that background CO monitoring data is no longer collected within the air basin after 2021.

The only monitoring station in the regional area that measures background SO_2 concentrations is the Victorville station, and although it is located approximately 55 miles to the southeast of the site, its location in the Victorville urban area was judged to represent a conservative high value for ambient SO_2 at the project site for use in the impact modeling analysis (for the same reasons as NO_2 and CO). Background SO_2 monitoring data is no longer collected within the air basin after 2021.

The Mojave Business 58 monitoring station was used for determining the background concentrations of PM_{10}, $PM_{2.5}$, and O_3. This site was selected in part due to its close location to the proposed project site as well as representing background concentration data that is not heavily influenced by large scale urban development, which is similar to the proposed project site. Note that the Mojave Business 58 monitoring station is influenced by background sources more than the project site which would still make it a conservative measurement for background air quality.

However, additional considerations were utilized to select these monitoring sites.

Federal regulations, specifically 40 CFR Part 58 Appendix D, require that a State and Local Air Monitoring (SLAMS) network be designed to meet a minimum of three basic monitoring objectives: Provide air pollution data to the public in a timely manner, support compliance with the California Ambient Air Quality Standards (CAAQS),

National Ambient Air Quality Standards (NAAQS), and support air pollution research. A variety of site types are needed to support these basic objectives, including six general types listed below:

1) Sites are located to determine the highest concentrations expected to occur in the area covered by the network.

2) Sites are located to measure typical concentrations in areas of high population density.

3) Sites are located to determine the impact of significant sources or source categories on air quality.

4) Sites are located to determine general background concentration levels.

5) Sites are located to determine the extent of regional pollutant transport among populated areas.

6) Sites are located to measure air pollution impacts on visibility, vegetation damage, or other welfare-based impacts.

All of the sites selected for the modeling analyses are all SLAMS network monitoring stations and were specifically designed to measure objectives 1 through 5 from the list above.

The physical sitting of an air monitoring station must conform to 40 CFR Part 58 and its location must achieve a spatial scale of representativeness that is consistent with the monitoring objective and site type. The spatial scale results from the physical location of the site with respect to the pollutant sources and categories, and it also estimates the size of the area surrounding the monitoring site that experiences uniform pollutant concentrations. The categories of spatial scale are:

1) Microscale - Defines the concentrations in air volumes associated with area dimensions ranging from several meters up to about 100 meters. Designed to measure the highest concentrations.

2) Middle scale - Defines the concentration typical of areas up to several city blocks in size with dimensions ranging from about 100 meters to 0.5 kilometers. Designed to measure the highest concentrations.

3) Neighborhood scale - Defines concentrations within some extended area of the city that has relatively uniform land use with dimensions in the 0.5 to 4.0 kilometers range. Designed to measure the highest concentrations and population exposures

4) Urban scale - Defines concentrations within an area of city-like dimensions, on the order of 4 to 50 kilometers. Designed to measure regional urban concentrations.

5) Regional scale - Defines usually a rural area of reasonably homogeneous geography without large sources and extends from tens to hundreds of kilometers. Designed to measure the general background.

6) National and global scales - These measurement scales represent concentrations characterizing the nation and the globe as a whole.

The selection of the proposed monitoring sites was also based on the monitoring stations' objective, which, as a SLAMS monitoring, is the highest CAAQS/NAAQS and population exposure for measuring background air quality. These monitoring objectives can be used to support the demonstration of compliance with the CAAQS/NAAQS when coupled with dispersion modeling.

Along with the monitoring objective is the spatial scale of the monitoring site which is used to represent high-concentration locations, population, and background exposure. The spatial scale of the proposed monitoring stations is summarized below by pollutant:

- NO_2 – Middle Scale which represents highest concentration.
- O_3 – Regional Scale which represents general background.
- CO – Middle Scale which represents highest concentration.
- SO_2 – Middle Scale which represents highest concentration.
- PM_{10} – Neighborhood which represents highest concentration, population exposure, and general background.
- $PM_{2.5}$ – Neighborhood which represents highest concentration, population exposure, and general background.

None of the selected monitoring sites were designed for near road data collection.

In addition to the listed objectives of the monitoring sites and why they were selected for determining background concentrations, the NO_2, CO, and SO_2 monitoring locations are also all located within urban areas which have significant numbers of background stationary and mobile sources, thus conservatively representing background concentration data for the proposed project site which has no major sources of pollutants within the area.

There are additional SLAMS monitoring stations, but all of them are located at distances further than the sites referenced in the application. However, these monitoring stations are located northwest of the project site and are influenced by blocking terrain that separates the Antelope Valley from the southern extent of the San Joaquin Valley. Additionally, some of the sites have not collected background data for the required three-year period which is used to establish the highest background concentrations or that would adequately represent the form of the probabilistic standards for NO_2, $PM_{10,}$ and $PM_{2.5}$.

Summary of Selected Data: Based on the monitoring site locations relative to the project site, the specific monitoring objectives (CAAQS/NAAQS), the spatial scales (Regional, Middle scale, and Neighborhood), the monitoring stations in **Table DR107-1** were selected as being the most representative and conservative for determining the background concentrations to be used in the modeling analyses.

4.0 ELECTRIC TRANSMISSION RELIABILITY

4.1 BLM ROW Application

4.1.1 Data Requests DR108 to DR112

The Applicant submitted an Application for Transportation, Utility Systems, Telecommunications and Facilities on Federal Lands and Property (“SF299 Application”) to the Bureau of Land Management (“BLM”) in August of 2024. (SF299 Application (2024))[1] A Plan of Development (“POD”) was also submitted with the SF299 Application. (POD (2024)).[2]

[1] SF299 Application (2024) – GEM A-CAES LLC, Application for Transportation, Utility Systems, Telecommunications and Facilities on Federal Lands and Property (August 2024).

[2] POD (2024) – GEM A-CAES LLC, GEM A-CAES LLC Willow Rock Energy Storage Center Gen-Tie Line Plan of Development (August 2024).

The POD explains that the Antelope Valley-East Kern Water Agency ("AVEK") will supply the Project with the required water. (Ibid.) The POD states that the Applicant has filed an application for water service with AVEK and is in the process of securing a water service agreement. (*Ibid.*)

The POD also indicates that a geotechnical investigation along the 19- mile gen-tie route is necessary but has not yet occurred. (*Ibid.*) The POD estimates that the geotechnical investigation would occur prior to finalizing the Project design and would involve a subsurface evaluation as well as laboratory testing. (*Ibid.*) This geotechnical analysis would inform a geological profile and provide information about the soils conditions that may affect the engineering design of the gen-tie foundation structures.

Finally, the SF299 Application acknowledges that spills of fuels or hydraulic fluids could occur during construction.

DR108: *Discuss the status of the Applicant's application for water service submitted to the AVEK and whether a water service agreement has been reached.*

Response: An application for water service has been submitted to AVEK. The Applicant anticipates that a water service agreement will be executed prior to commencement of construction.

DR109: *State whether any geotechnical investigations or studies have been conducted along the 19-mile gen-tie route.*

Response: No geotechnical investigations have been conducted along the gen-tie route.

DR110: *Describe the soil conditions that could affect the engineering design of the gen-tie foundation structures.*

Response: Soil conditions will be established to support engineering design prior to the commencement of construction.

DR111: *Explain the available alternatives or contingencies if the geotechnical investigations along the gen-tie route present a geologic profile that would affect the engineering design of the gen-tie foundation structures.*

Response: Transmission line poles have been erected along the majority of the route for other projects. Accordingly, the Applicant does not expect there to be any issues with soil conditions. Site-specific geotechnical testing, if needed, for the transmission line will be conducted following CEC certification and prior to commencement of construction

DR112: *Describe the methods, procedures, or plans to address or contain any spills of fuels or hydraulic fluids during construction.*

Response: Section 5.5.4.1.1 of the SAFC (TN 254806) discusses the best management practices that will be deployed during construction to avoid spills and to mitigate impacts to insignificant levels in the unlikely event that they should occur.

4.2 Reliability

4.2.1 Data Requests DR113 and DR114

CEC Staff previously asked the Applicant about whether the WRESC facility could be designed with redundant systems such as above ground compressed air storage tanks, and if the facility could construct dual caverns to address potential maintenance and inspection related challenges. (TN at p. 7) The Applicant responded that "Above-ground air storage vessels are not economically viable; they have been contemplated by Hydrostor and

other compressed air technology suppliers in the past and the terrestrial pressure vessel cost is vastly greater than an underground storage cavern." (*Ibid.*) The Applicant also explained that "[c]instruction of dual caverns with separate dedicated Air and Water Shafts for each cavern will be cost-prohibitive and will lead to very long construction phases, jeopardizing the project viability." (*Ibid.*).

DR113: *Provide the analysis supporting the lack of economic viability for above-ground air storage vessels for this Project.*

Response: The economic viability of underground storage is more cost effective than above-ground pressure vessels on a dollars per unit volume basis. As an example, volumetrically the most efficient large pressure vessels are pressure spheres. The project's thermal storage spheres are projected to cost on the order of $4000 / m^3. These spheres would sit on the surface and operate at a pressure of only 17 bar, which is less than the 60-bar required for the cavern air storage. The mined cavern storage is projected to cost on the order of $550-650 / m^3.

Furthermore, from a CAPEX perspective, Hydrostor's A-CAES technology uses near-isobaric conditions, which in an underground cavern is achieved with a compensation reservoir and keeps the volume relatively low. Without the compensation reservoir, the volume increases > 10X. Under a topside tank scenario, the air storage volume requirement would be more than 6,000,000 m^3. This would add $23 billion to the capital cost of the project, a drastic increase, rendering it infeasible.

DR114: *Provide the analysis supporting the statement that construction of dual caverns would be cost-prohibitive and would lead to long construction phases for this Project.*

Response: Underground hard rock storage caverns are extremely reliable, and redundancy is not required. The air storage is presently planned to be conducted using maximum underground throughput of rock removal. Under this basis, the underground excavation is already on the critical path to project delivery taking approximately 4 years; about half of that is rock excavation. A redundant air storage cavern would also require redundant air/water shafts and reservoir which would increase the topside footprint dramatically. Overall, a redundant air storage system would extend the total construction duration by at least 50% making the project infeasible and cost prohibitive.

4.3 Transmission Line Orientation

4.3.1 Data Request DR115

In its Data Requests Set 2, CEC Staff asked the Applicant to provide a Phase I Environmental Site Assessment for areas of ground disturbance along the transmission line because no such assessment is included for the transmission line between the Project and the Southern California Edison ("SCE") Whirlwind Substation. (TN 258630 at pages 3-4) Without this analysis, CEC Staff stated, "Potential sources of known or suspected environmental contamination at the WRESC or along the transmission line have not been discussed." (*Id.* at page 3) In Data Request No. 35, CEC Staff specifically asked for the locations of anticipated ground disturbance along the transmission line, including anticipated surface areas and depths.

In response, the Applicant provided Attachment DR 35-1, which includes a map that shows the proposed location of transmission line poles between the Project site and the SCE Whirlwind Substation. (TN 259220 at page 7) Attachment DR35-1 also shows the location of undergrounding associated with the gen-tie line. (*Ibid.*) Attachment DR35-1 was submitted through Kiteworks. (*Ibid.*).

DR115: *Provide Attachment DR35-1 submitted via Kiteworks.*

Response: The requested material was provided to the parties (except CEC Staff who already received the material) on January 27, 2025 via a link to an FTP site where the documents may be securely downloaded.

5.0 BIOLOGICAL RESOURCES

5.1 Baseline Conditions for Biological Resources

5.1.1 Data Requests DR116 and DR 117

Three core holes (ZEV-CH-01-23, ZEV-CH-02-23, and ZEV-CH-03-23) were drilled between March 17, 2023, and October 21, 2023 on and around the WRESC site for the Project's subsurface geotechnical investigation. (TN 254804 at p. 3-1) The three core holes were drilled to depths of 3,015 to 3,167 feet bgs using initial rotary drilling followed by setting HW casing from ground surface to 70 to 171 feet bgs and then implementing HQ rock coring methods. (TN 254806 at p. 5.4-1)

The WRESC site hosts several special-status plants, including WJTs. (TN 254806 at p. 5.2-32) For WJTs specifically, the Western Joshua Tree Conservation Act was enacted in July 2023 and prohibits the importation, export, take, possession, purchase, or sale of any western Joshua tree in California unless authorized by the California Department of Fish and Wildlife ("CDFW").

DR116: *Explain whether any WJTs were removed or impacted to conduct this geotechnical investigation.*

Response: No WJTs were removed to conduct the geotechnical investigation.

DR117: *Explain whether any other special-status species were removed or impacted to conduct this geotechnical investigation.*

Response: Geotechnical drilling was conducted under a local ministerial permit issued by Kern County. Sweeps for special-status species and sensitive features were conducted prior to drilling operation. The purpose of the biological sweeps was to identify paths to drilling locations and establish construction boundaries that avoid impacts and minimize interactions with special status species. During these sweeps, Western Joshua trees and other sensitive features (e.g. active burrows) were flagged ahead of mobilization to clearly identify no-go areas. These areas were noted by personnel conducting the geotechnical drilling program. Monitors were present onsite during drill pad construction to ensure that any sensitive resource areas were avoided and returned post-drilling to inspect and monitor pad removal to ensure that any sensitive resource areas were avoided.

5.2 Noise Impacts on Biological Resources

5.2.1 Data Request DR118

CEC Data Requests Set 4 No. 100 requested detailed analyses of noise and vibration impacts resulting from the drill-and-blast method or other blasting method, as it relates to biological resources. (TN 259326 at p. 8) The Applicant responded that "most wildlife will respond to noise levels around 40 to 50 dBA," and that "noise from construction is expected to attenuate to 45 dBA approximately 4,000 ft from the WRESC" (although this statement is inconsistent with the noise measurements in Table 5.7-9 in the SAFC). (TN 259736 at p. 12) The Applicant concluded that "wildlife that occur within this zone during construction are expected to have a level of habituation to anthropogenic noise and human activity." (*Ibid.*)

DR118: *Provide the information to support the statement that "wildlife that occur within this zone during construction are expected to have a level of habituation to anthropogenic noise and human activity."*

Response: The Project area is located between two highways and a railway line with Dawn Road to the west. These features provide an existing source of anthropogenic noise and disruption. Further observed anthropogenic activities, such as illegal dumping and squatting in and around the Project area has also introduced sources of anthropogenic noise and disturbance. Wildlife that continue to use the Project area in the existing condition case have adapted to these sources of disturbance and therefore have a level of habituation to human presence and noise.

5.3 Raven Management Measures

5.3.1 Data Request DR119

Table 1 in the Draft Raven Management Plan lists several raven management measures. (TN 259675, Attachment DR45-1) Section 2.0 of the Draft Raven Management Plan states that "[r]aven management measures outlined in Table 1 are based on guidance from Alternative A of the USFWS Draft Environmental Assessment to Implement a Desert Tortoise Recovery Plan Task: Reduce Common Raven Predation on the Desert Tortoise (USFWS 2008)." However, Alternative A is the "no action" alternative, which involves implementation of only a few raven management efforts by various federal, state, and local agencies. Moreover, the U.S. Fish and Wildlife Service's ("USFWS") *Draft Environmental Assessment to Implement a Desert Tortoise Recovery Plan Task: Reduce Common Raven Predation on the Desert Tortoise* determined that Alternative A would have a moderately adverse effect on desert tortoise populations, and that hundreds of juvenile desert tortoises would continue to be killed by ravens each year.

DR119: *Specify which raven management measures from the "no action" alternative (i.e., Alternative A) in the USFWS' Draft Environmental Assessment to Implement a Desert Tortoise Recovery Plan Task: Reduce Common Raven Predation on the Desert Tortoise will be implemented or utilized for this Project.*

Response: The goal of the Raven Management Plan (the Plan) is to reduce the potential for the Project to contribute potential predation pressure on desert tortoise from common ravens. The Plan achieves this by managing project-specific activities or features that could attract or propagate common raven. Alternative A or "the status quo" described in "Environmental Assessment to Implement a Desert Tortoise Recovery Plan Task: Reduce Common Raven Predation on the Desert Tortoise" (USFWS 2008) summarizes the following efforts employed to reduce raven predation:

- Reducing trash availability to reduce food sources for ravens
- Removing illegal dumps that provide a food source for ravens
- Fencing along highways to generally reduce road-based mortality that could provide a food source for ravens
- Install perch guards on fences where common raven may occur in desert tortoise habitat.

The Plan proposes to achieve the first three goals by employing measures to control attractants from garbage during construction and operation, removing dead animals during construction, and managing Project-related water sources. The Plan does not require perch deterrents on structures but does require nest management by installing nest discouragers following guidelines outlined by the Avian Power Line Interaction Committee (APLIC) and removal of nests outside of the breeding season. Adaptive management will be deployed as required during construction and operation.

5.4 Nest Management

5.4.1 Data Requests DR120 to DR127

The Draft Raven Management Plan states that "[p]otential measures, such as removal of raven nests in off-breeding seasons, may be required and will be determined in consultation with USFWS." (TN 259675, Attachment DR45-1) The draft plan does not identify who would be responsible for removal of raven nests and also does not discuss actions that would be taken to prevent ravens from rebuilding nests at locations where nests are removed.

The Draft Raven Management Plan states that anthropogenic structures and gen-tie lines offer raven nesting opportunities. (*Ibid.*) The draft plan does not discuss measures that would be implemented to prevent ravens from nesting on the Project's structures (e.g., buildings, tanks, etc.). However, for the Project's utility poles, the draft plan states that "[w]here feasible, the proposed project will utilize nest discouragers according to Avian Power Line Interaction Committee (APLIC) guidelines that limit establishment of raven nests (APLIC and USFWS 2005)." (*Ibid.*) The potential efficacy of this proposed measure is uncertain because the Draft Raven Management Plan does not include a feasibility assessment.

The Draft Raven Management Plan identifies raven management measures pertaining to Anthropogenic Food and Water Sources, Nest Management, Dead Animals, and Worker Environmental Awareness. Measures pertaining to Anthropogenic Food and Water Sources would be implemented during construction and operation; however, all other measures would be confined to "pre-construction and construction." (*Ibid.*) The Draft Raven Management Plan does not explain why Nest Management, Dead Animal, and Worker Environmental Awareness measures would only be necessary during the pre-construction and construction phases of the Project.

DR120: *State who will be responsible for nest removal.*

Response: Hydrostor would be responsible for retaining a qualified biologist to undertake the implementation of the raven management plan, including reviewing stick nests and providing advice on if nests should be removed and timing of removal.

DR121: *State whether modification to existing structures was analyzed or considered to reduce or eliminate the likelihood of the structures being reused as nest sites by ravens after nests are removed.*

Response: Structures have not been designed specifically to reduce potential nesting sites, except for utility structures that will be fitted with nest discouragers; however, raven monitoring will allow for adaptive management including installation of deterrents in areas where nesting has been recorded.

DR122: *Explain why nest discouragers would be infeasible.*

Response: A nest discourager could be considered not feasible where it interferes with the integrity or function of a structure or could affect worker safety.

DR123: *Identify the specific nest discouragers that may be implemented for this Project.*

Response: The project has not reached the detailed design phase, as such, the type of nest discourager has not been selected.

DR124: *Identify the design elements would be incorporated into the Project's new structures to minimize raven use (e.g., perching and nesting).*

Response: The Project has not reached the detailed design stage during which specific anti-perch/ anti-nest structures would be identified.

DR125: *Describe the measures that would be implemented to prevent ravens from acquiring water from the Project's stormwater pond.*

Response: Netting would be used over the stormwater pond as needed to reduce raven access.

DR126: *Explain whether the liner on the hydrostatically compensating surface reservoir would prohibit ravens and other wildlife from acquiring water from the reservoir (e.g., from around the edge of the reservoir).*

Response: It is expected that the liner would extend to the edge of the reservoir and reduce wildlife access to water.

DR127: *Explain how water will be prevented from pooling on Project components that have flat roofs after storm events.*

Response: Flat roofs will be designed with a slight slope to avoid pooling and direct water to the vertical sides of project components.

5.5 Compliance Reports

5.5.1 Data Requests DR128 to DR130

A key component of integrated predator management is to monitor the effectiveness of the management action in meeting the stated objective. According to the Draft Raven Management Plan, the objective is to "reduce potential direct and cumulative effects of raven predation on desert tortoise and other native wildlife species with respect to the Project Area." (TN 259675, Attachment DR45-1) The draft plan does not identify the monitoring actions that would be taken to evaluate the success in achieving this objective. Furthermore, although the draft plan states that "[c]ompliance reports will be submitted to the CEC and USFWS," it does not provide a timeline for reporting and does not identify the information that would be included in the compliance reports. (*Ibid.*).

DR128: *State how often compliance reports will be submitted to the CEC and USFWS.*

Response: The frequency of compliance reports will be determined by the CEC and USFWS. The Applicant will comply with all conditions of certification.

DR129: *Describe the performance standards for the Draft Raven Management Plan.*

Response: The objective of the Draft Raven Management Plan is to reduce the Project's contribution to predation pressure on Desert tortoise from common raven. This will be achieved through the implementation of measures outlined in the Plan. The effectiveness of these measures will be reviewed through periodic monitoring during Project construction and operation. Performance standards that may be applied to test the effectiveness of the Plan include:

1) Change in common raven nest abundance in the Project area

2) Reduction or elimination of raven attractants (e.g. anthropogenic food and water)

3) Observation of raven-caused predation

4) Adaptive management will be used as necessary during construction and operation.

DR130: *Explain what actions will be taken for raven management during operations.*

Response: Table 1 of the Raven Management Plan describes what phases a specific measure would be implemented. The following measures are proposed for operation:

- Trash Management
- Facility Security and Fencing
- Reduce water availability
- Raven Monitoring and compliance

6.0 GEOLOGICAL HAZARDS AND RESOURCES

6.1 Drilling and Controlled Detonation Method

6.1.1 Data Requests DR131 to DR134

The Applicant responded to CEC Data Requests Set 4 No. 97 that "[t]he controlled detonation [sic] design parameters and materials have not yet been designed for the subsurface given that the comprehensive deep geotechnical exploration and testing program is yet to conclude." (TN 259736 at p. 9) The Applicant estimated that "a drilling and controlled detonation method will be selected during the first quarter of 2025." (*Ibid.*)

DR131: *Describe the drilling and controlled detonation method selected for the Project.*

Response: Cavern excavation will be achieved by conventional controlled detonation-based methods. The excavation will be carried out in multiple passes of variable heights. At present, the upper pass (top heading) will be 15-feet high, followed by two additional passes (benches) of 17.5-feet height. The excavation process and equipment utilized for the creation of the top heading and bench are outlined below:

1) The drillhole pattern will be painted on the face by a surveyor to ensure accurate horizontal and vertical control of the excavated opening.
2) The face will be drilled horizontally with a single or dual-boom jumbo drilling rig to a depth of approximately 16 ft.
3) Holes will be loaded with explosives using a powder truck and shot.
4) The broken rock (muck) will be loaded onto Load Haul Dump (LHD) loaders and transported to one of the production shafts.
5) When all the muck has been transported away from the face, the crown and sidewalls will be scaled, inspected, and reinforced using the appropriate support plan.
6) The face will be reinspected by a supervisor for hazards before the excavation cycle is repeated.
7) Multiple faces will be excavated concurrently to allow the different mining cycle phases to occur in other faces simultaneously, to expedite the cavern construction process.

The shaft construction method selection process is ongoing, to choose between a blind-boring vs. a conventional controlled detonation-based approach. In case the shaft construction is carried out through conventional controlled detonation-based method, the construction approach will be as follows.

1) Workers will drill development holes using a twin boom shaft drill jumbo.

2) Controlled detonation will be completed with bulk emulsion delivered via pressurized shaft emulsion pot along with Nonels initiated with an electronic detonator.

3) Mucking of the shaft will be done using two mini excavators, which will be slung into the shaft ahead of every drilling cycle.

4) Temporary ground support will be installed as the mucking of the shaft advances, which will be in the form of split sets and screen, installed either by miners using jack leg drills or slung-in custom excavator drill handlers.

5) One muck bucket will be filled at a time by the mini excavators, with the single drum hoists hoisting the bucket to surface. The muck buckets will be dumped in the headframe extending chutes, followed by a chute system to take all muck into the respective muck dumps outside of the headframe. The muck dumps will be sized to allow for later swapping of the sinking buckets for muck skips.

6) Sinking services will be installed during the shaft sinking (air, process water and ventilation), secured to the steel liners or inserts in the concrete.

7) Steel liners will be hoisted into the shaft and installed in position as the shaft advances. The installed liner elevation will be behind the bench depth to ensure acceptable clearance to avoid blast damage. The liners will be assembled within the shaft on top of a curb ring in large sections and filled via previous pours, fill hatches to minimize welding. The curb ring will be hung on hanging rods and aligned by the shaft crew. The formwork will be lowered using air hoists from a galloway (a multi-level working platform, suspended in the shaft from winches located on the surface). QA/QC resources will ensure alignment and sign off prior to concrete pouring. Concrete will be poured behind the steel liners, transported into the shaft in concrete buckets.

DR132: *Explain the rationale for selecting this drilling and controlled detonation method for the Project.*

Response: Drilling and controlled detonation represent the most efficient and cost-effective means of underground cavern construction, especially given the room-and-pillar (crisscrossing excavations) layout selected for the project. The use of fully mechanized means of excavation, such as tunnel boring, requires a single linear excavation, which is impractical given the underground geometry for the WRESC project.

The benefits of a conventional controlled detonation-based approach are: (a) the attainment of a larger diameter shaft (e.g. 24-ft diameter), which will bring down the total number of shafts required from four (for the blind-boring case) down to two, (b) reduction of the required number of shafts from four (blinding boring only) to two (conventional shaft sinking method) and (c) reduction in the time required to install the shaft liner. With a conventional controlled detonation approach the shaft liner can be installed after every 6-m of excavation advance. With a blind boring approach the liner cannot be installed until the entire shaft has been drilled.

In summary, the conventional controlled detonation approach leads to better ground control during the shaft construction and will significantly reduce cost and schedule due to the reduction in the required number of shafts,

DR133: *If a drilling and controlled detonation method has not yet been selected, explain why.*

Response: The drilling and controlled detonation method design will be part of the final subsurface design or the FEED (Front-End Engineering Design) stage which is expected to be available during the second quarter of 2025.

DR134: *If a site-specific detonation method has been selected, provide calculations for potential noise and vibration impacts and identify mitigation measures, if any.*

Response: The final design for the subsurface controlled detonation method is expected to be available during the second quarter of 2025.

6.2 Ongoing Geotechnical Investigation

6.2.1 Data Requests DR135 to DR140

The *Geotechnical Characterization Report for the Willow Rock-Dawn Road Project Site* (2024) by Agapito Associates, Inc. in SAFC Appendix 5.4-A ("Agapito 2024 report") explains that the geotechnical design parameters in the report "support the pre-FEED study for cavern construction." (TN 254804 at p. 5-1) The Agapito 2024 report recommends that "[t]hese values should be reevaluated as new information is collected from the ongoing core drilling program, and as additional information becomes available during project design." (*Ibid.*).

DR135: *State whether the analysis, calculations, and/or findings in the Agapito 2024 report have been reevaluated or revised.*

Response: At the time the "Agapito 2024 Report" was issued, the core drilling program hadn't concluded nor was the entirety of the rock mass characterization data available for the final design. At present, the geological and geotechnical data from a total of six deep exploration boreholes are available for the final design step for the subsurface i.e., the Front-End Engineering Design (FEED). An updated version of Agapito 2024 Report is available, which supersedes the earlier version.

DR136: *Describe any changes to the geotechnical design parameters in the Agapito 2024 report.*

Response: The updated version of the Agapito 2024 report has been completed and is provided as **Attachment DR136-1** (submitted via Kiteworks). The geotechnical design parameters did not change significantly. The averages from the aggregation of the additional data did change marginally.

DR137: *State whether the core drilling program is ongoing.*

Response: The core drilling program concluded in 2024.

DR138: *If the core drilling program is ongoing, describe what activities are currently occurring.*

Response: The core drilling program concluded in 2024.

DR139: *If the core drilling program is ongoing, describe the estimated duration of each activity currently occurring.*

Response: The core drilling program concluded in 2024.

DR140: *State whether any additional core drilling activities are planned at a future date and when.*

Response: No additional core drilling is planned for the project site..

6.3 Subsurface Rock Mass Hydraulic Connectivity

6.3.1 Data Requests DR141 to DR143

Packer testing at deep exploration boreholes has been conducted to estimate the hydraulic conductivity of the underground rock mass surrounding the Project's proposed underground cavern. (TN 259675 at p. 18) This information is important for several reasons, including, but not limited to, the volume of water that could migrate to surrounding rock formations. As of October 2024, packer testing in a sixth deep exploration borehole was ongoing. (*Ibid.*)

DR141: *State whether the packer testing in the sixth deep exploration borehole is complete and if not, provide an estimated timeframe for completion.*

Response: The packer testing from the sixth borehole is complete.

DR142: *If the packer testing in the sixth deep exploration borehole is complete, disclose the findings from the packer testing in the sixth deep exploration borehole.*

Response: The packer testing flow rates and resultant formation permeability data from the sixth hole is presented in the bar graph plots below, where the proposed cavern horizon is also identified. The results are consistent with packer permeability dataset obtained from the previous five boreholes and indicate a very tight geologic formation.

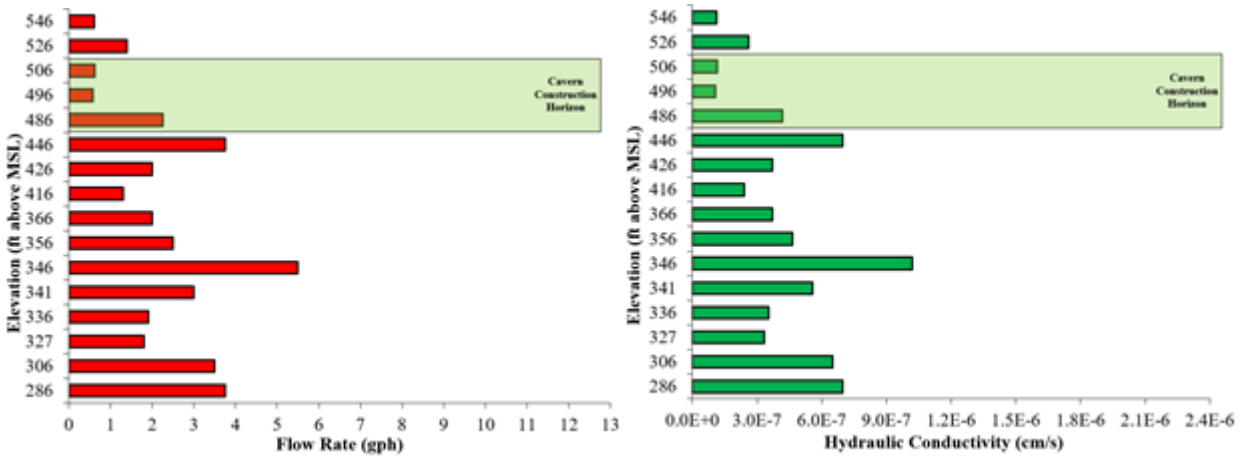

Figure DR142-1: Recorded Flow Rate (left) and Permeability (right) in Core Hole ZEV-CH-06-24

DR143: *If the packer testing in the sixth deep exploration borehole is complete, provide the reports, data, and information related to this testing.*

Response: Data is provided as **Attachment DR143-1** (submitted via Kiteworks).

6.4 Leakage Analysis

6.4.1 Data Requests DR144 to DR150

In response to CURE's Data Request Set 1 No. 104, the Applicant describes the framework for the forthcoming leakage analysis to assess the cavern's water and gas containment properties. (TN 259338) The objective for the leakage analysis is described by the Applicant as "[m]odel[ing] how air and water will flow into and out of the rock mass during compression/generation cycle to estimate potential leakage rates into and from the rock mass."

(*Ibid.*) Three charging/discharging/standby scenarios are to be considered in the leakage analysis. (*Ibid.*) "The threshold of acceptability of leakage is <2% per day." (*Ibid.*)

DR144: *Provide a copy of the leakage analysis report.*

Response: The leakage analysis report is provided in **Attachment DR144-1** (provided via Kiteworks).

DR145: *If the report is still incomplete, estimate a date or timeframe for when the report will be docketed.*

Response: The leakage analysis report is provided in **Attachment DR144-1**.

DR146: *Identify the potential leakage rates into and from the rock mass.*

Response: The worst case daily net air leakage rate into the rock mass is estimated to be 9.54 kilograms per day per meter of cavern length or 0.36% of the stored air in the cavern.

DR147: *State whether any underground temperature readings have been measured.*

Response: Yes, the bedrock temperatures were measured at all six boreholes from the top of the bedrock to hole bottom.

DR148: *If temperature measurements or data are available, provide the temperature data.*

Response: The temperature measurements are included in the borehole geophysical logs, which are included in the appendices of the Geotechnical Summary Report by Agapito.

DR149: *If temperature measurements or data are available, explain the methods implemented to obtain this data.*

Response: The downhole geophysical logging, of each of the six boreholes, included a temperature sensor which continuously logged the formation temperature down to the respective borehole bottoms.

DR150: *Discuss how underground temperature(s) affect the Project's leakage rates and hydraulic connectivity.*

Response: The leakage analysis was performed at 31-degrees Celsius which is the representative of temperature of the rock mass at the cavern level.

6.5 Cavern Seal Failure

6.5.1 Data Requests DR151 to DR153

The Risk Analysis for the Silver City Energy Storage Project, which proposes to use Hydrostor's proprietary advanced compressed air energy storage technology, identifies structural failure due to cavern seal failure as a rare but catastrophic risk. (Risk Analysis (2023))[3] The analysis explains that the failure of the cavern seal may result from seal fatigue from repeated pressurization and de-pressurization or errors during the construction of the seal. (*Ibid.*) The SAFC does not disclose or analyze potential hazards from cavern seal failure.

DR151: *State whether a risk assessment has been performed for this Project.*

Response: Yes, Hydrostor has performed a Risk assessment of the Willow Rock Project.

[3] Risk Analysis (2023) - Appendix 16, Risk Analysis for the Silver City Energy Storage Project (May 26, 2023), available at: https://majorprojects.planningportal.nsw.gov.au/prweb/PRRestService/mp/01/ getContent?AttachRef=SSD-47065463%2120230814T003409.055%20GMT

DR152: *Discuss whether there is a risk of cavern seal failure for this Project.*

Response: Yes, a risk has been identified and is being accounted for in the project's engineering design. For clarification, for the Willow Rock project the pressure will remain constant during the operational life of the project as the cavern pressure is maintained by the hydrostatic column of water and the compensation reservoir, so there is no effect associated with fatigue and repeated pressurization and de-pressurization.

DR153: *Describe the methods or procedures to address or avoid cavern seal failure.*

Response: There are multiple safeguards to prevent the loss of cavern air seal. Physical/inherent design measures, control, mitigation and procedural safeguards are identified, considered and assessed to demonstrate that the potential risk is reduced to be acceptable according to industry recognized standards.

7.0 WATER RESOURCES

7.1 Water Inflow

7.1.1 Data Requests DR154 and DR158

A Draft Emergency Action Plan was docketed by the Applicant as Attachment DR75-1 to its responses to CEC Data Requests Set 3. (TN 259675 at Attachment DR75-1) "Water Inflow" is identified as a potential emergency situation. (*Id.* at pp. 2-3) This event is not discussed in detail in the SAFC. The Draft Emergency Action Plan distinguishes between a "Minor Water Inflow" and an "Extreme Water Inflow." The emergency procedures differ between the two emergency situations as follows:

- Minor Water Inflow – Notify shift superintendent. Check for methane in the area of inflow. Develop remedial action as required, in conjunction with Marathon;
- Extreme Water Inflow – Shut down the source of the inflow if possible. If the inflow is from the ground, evacuate immediately. Shut down all electrical power to equipment. Check methane levels during evacuation. *(Ibid.*)

DR154: *Describe a "Minor Water Inflow" event as identified in Attachment DR75-1 in TN 259675.*

Response: The draft Emergency Action Plan was provided as an illustrative example of a potential Draft Emergency Action Plan. Terms and other items need to be defined and refined following the detailed design process.

DR155: *Describe an "Extreme Water Inflow" event as identified in Attachment DR75-1 in TN 259675.*

Response: The draft Emergency Action Plan was provided as an illustrative example of a potential Draft Emergency Action Plan. Terms and other items need to be defined and refined following the detailed design process.

DR156: *Explain the factors that distinguish a "Minor Water Inflow" from an "Extreme Water Inflow."*

Response: The draft Emergency Action Plan was provided as an illustrative example of a potential Draft Emergency Action Plan. Terms and other items need to be defined and refined following the detailed design process.

DR157: *Describe how methane may be released in the event of water inflow as described in Attachment DR75-1 in TN 25967.*

Response: The draft Emergency Action Plan was provided as an illustrative example of a potential Draft Emergency Action Plan. Terms and other items need to be defined and refined following the detailed design process. The example was from a gas storage project. The WRESC will not release methane.

DR158: *Specify the mitigation measures, if any, to address potentially significant impacts from water inflow.*

Response: The draft Emergency Action Plan was provided as an illustrative example of a potential Draft Emergency Action Plan. Terms and other items, including emergency measures, need to be defined and refined following the detailed design process.

8.0 NOISE

8.1 Construction Noise Analysis and Usage Factors

8.1.1 Data Requests DR159 and DR160

The Project's construction noise impact analysis was performed using CadnaA software. Section 5.7 of the SAFC states the "usage factors" for equipment. The information appears to be provided in the form of hours per 24-hour day, listed in SAFC Table 5.7-8. Table 5.7-8 discloses the construction noise source data and shows the construction noise source inputs as octave band levels. The CadnaA software allows the user to input source parameters as sound power or sound pressure levels, number of minutes/usage rate, or a daily schedule. The output of this software can show various metrics, such as an hourly Leq or a daily Ldn. It is not clear if the noise model assumed all equipment would be operating during the busiest time(s) of the day or distributed the usage hours over a time range (e.g., 8 usage hours applied over a 15-hour daytime hour period).

SAFC Table 5.7-9 shows the "modeled construction noise," which are also shown as noise contours in SAFC Figures 5.7-4 and 5.7-5. The metrics are not labeled.

DR159: *Explain how the usage hours are applied for equipment in Table 5.7-8.*

Response: Usage rates are based on the total workday; therefore it does not matter if the work day is 12 hours or 8 hours, the usage rate remains the same. For a 50% usage rate, it's an ~ 3BA reduction in the overall average noise level compared to 100%. For example. Total hours are based on length of workday, but the noise levels would not change based on workday hours changing.

DR160: *State which metric is shown in the results (Table 5.7-9 and Figures 5.7-4 and 5.7-5), e.g., hourly Leq or daily Ldn.*

Response: The metric shown is Leq.

8.2 Nighttime Construction Noise

8.2.1 Data Requests DR161 to DR168

The SAFC at p. 5.7-15 states that "(c)avern 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." Table 5.7-7 explains that nighttime work would include "rock handling on the surface" to support the underground cavern construction activities. The SAFC at p. 2-31 also estimates that "rock crushing" will occur onsite for up to 10 hours per day but does not provide the time of the day for rock crushing.

DR161: *Describe the activities involved with rock handling on the surface, as described in SAFC Table 5.7-7.*

Response: Night-time rock handling at the surface would consist of pile management of cavern waste rock to prepare for day-time crushing operations.

DR162: *Describe the activities involved with rock crushing, as described on page 2-31 of the SAFC.*

Response: Rock crushing activities will consist of stock-pile management, crusher loading, rock crushing and haul truck loading.

DR163: *Estimate the number of hours for rock handling on the surface, as described in SAFC Table 5.7-7.*

Response: Outside of crushing activities, rock handling at the surface may occur at any point but it is not anticipated to be a 24-hr operation.

DR164: *Estimate the number of hours per day rock crushing will occur during the daytime.*

Response: Rock crushing activities are anticipated to be 10 hrs a day, during the day-time construction operations.

DR165: *Estimate the number of hours per day rock crushing will occur during the nighttime.*

Response: Rock crushing is not planned to be performed during the night-time.

DR166: *Describe the type and number of noise-generating equipment (e.g., crushers, loaders, haul trucks) for rock handling at night. Include height above ground level for sound sources and sound levels for each source.*

Response: During night-time operations, anticipated utilized equipment will consist of skid-steers, loaders and haul trucks. Estimated equipment counts: 2 skid steers, 2 loaders, and 2-3 haul trucks.

DR167: *Describe the type and number of noise-generating equipment (e.g., crushers, loaders, haul trucks) for rock crushing at night. Include height above ground level for sound sources and sound levels for each source.*

Response: Rock crushing is not planned to be performed during the night-time.

DR168: *Identify the locations where the rock handling and rock crushing activities will occur.*

Response: See **Attachment DR168-1** (submitted via Kiteworks). Rock handling and crushing is planned in the southwest portion of the project site north of Dawn Road. Night-time hauling will be performed from the production shaft south of the cuttings pond to the temporary storage area.

8.3 Operational Noise

8.3.1 Data Requests DR169 and DR170

No time weighting was used for the operational sources based on Appendix 5.7E and no usage factors for the equipment used during operations is provided in SAFC Table 5.7-11. It therefore seems that the equipment was modeled at 100% operation.

Additionally, SAFC Table 5.7-12 shows the “modeled operational noise levels at residential receptors,” which are also shown as noise contours in SAFC Figure 5.7-6. The metrics are not labeled.

DR169: *State whether equipment was modeled at 100% operation.*

Response: Yes, operations were modeled in “Steady State” meaning continuously operating. 100% usage rate.

DR170: *State which metric is shown in the noise modeling results (Table 5.7-12 and Figure 5.7-6), e.g., hourly Leq or daily Ldn.*

Response: The metric shown is Leq.

8.4 Background Noise Levels

8.4.1 Data Requests DR171 to DR173

The SAFC utilizes the L90 metric to define the noise level that is exceeded 90% of the time, commonly used to represent background noise. Table 5.7-3 in the SAFC describes the monitoring locations included in the baseline noise study. This table shows that 25-hour noise surveys were performed at CML-1 and CML-6 (only CML-1 is located near residential areas as depicted in Figure 5.7-1). Table 5.7-3 also shows that nighttime conditions were documented with 15-minute duration short-term measurements at ML-2, ML-3, and ML-4 as listed in Table 5.7-3. The information in Table 5.7-3 is inconsistent with the information in Table 5.7-4. Table 5.7-4 shows nighttime noise data collected at ML-2 (00:20 or 12:20 AM), ML-4 (23:08 or 11:03 PM), and ML-5 (22:22 or 10:22 PM), but not ML-3.

DR171: *Clarify where nighttime noise measurements (ML-2, ML-3, ML-4, ML-5) were taken and whether information was extrapolated from other locations given the inconsistencies between Tables 5.7-3 and 5.7-4.*

Response: UTM coordinates for each measurement location are provided in Table 5.7-3. Measurements were not extrapolated from one location to another.

DR172: *Provide revised versions of Table 5.7-3 and 5.7-4.*

Response: Table 5.7-3 has been updated (see below). Table 5.7-4 remains the same.

Table 5.7-3: Monitoring Locations Included in the Baseline Noise Study

Site	Existing Land Use	Geographic UTM Coordinates		Monitoring Dates	Sample Type
		Latitude	Longitude		
CML-1	Residence	393496 m E	3864881 m N	May 24–25, 2023	25-hour continuous monitoring
ML-2	Residence	395186 m E	3866725 m N	May 23 and May 25, 2023	15-minute minimum daytime/nighttime
ML-3	Residence	395354 m E	3863487 m N	May 25, 2023	15-minute minimum daytime
ML-4	Residence	394854 m E	3860249 m N	May 22 and May 24, 2023	15-minute minimum daytime/nighttime
ML-5	Residence	391748 m E	3863567 m N	May 22, and May 24, 2023	15-minute minimum daytime/nighttime
CML-6	WRESC Site	394381 m E	3863678 m N	May 22–24, 2023	25-hour continuous monitoring

UTM = Universal Transverse Mercator

DR173: *Provide temperature data during the background noise survey, if available.*

Response: Temperature data were provided in Appendix 5.7B of the Supplemental AFC. (TN# 254807).

ATTACHMENT DR107-1

Annual Wind Field Flow Pattern and 5-year Wind Rose Figures

Figure 1

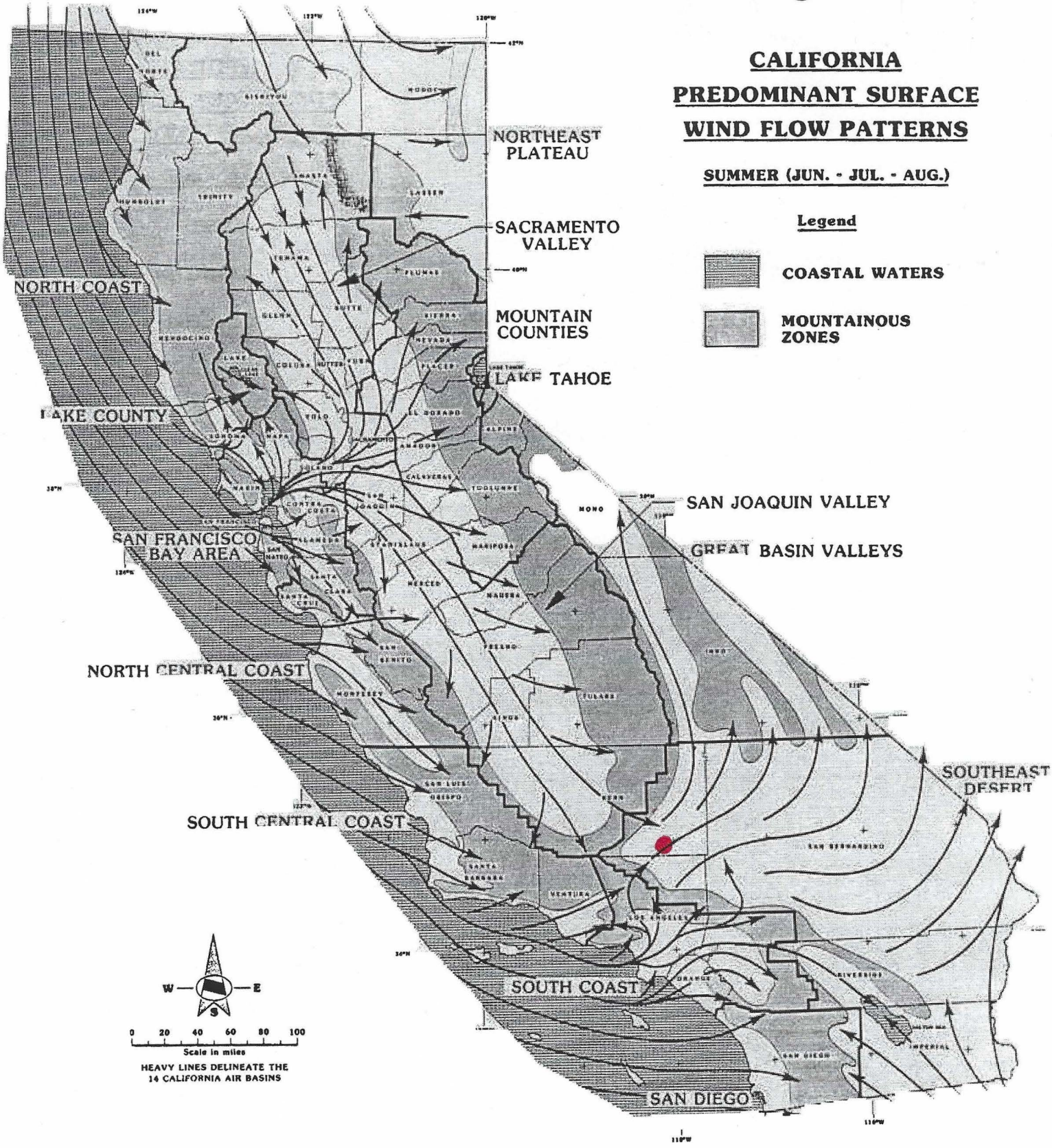

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Figure 2

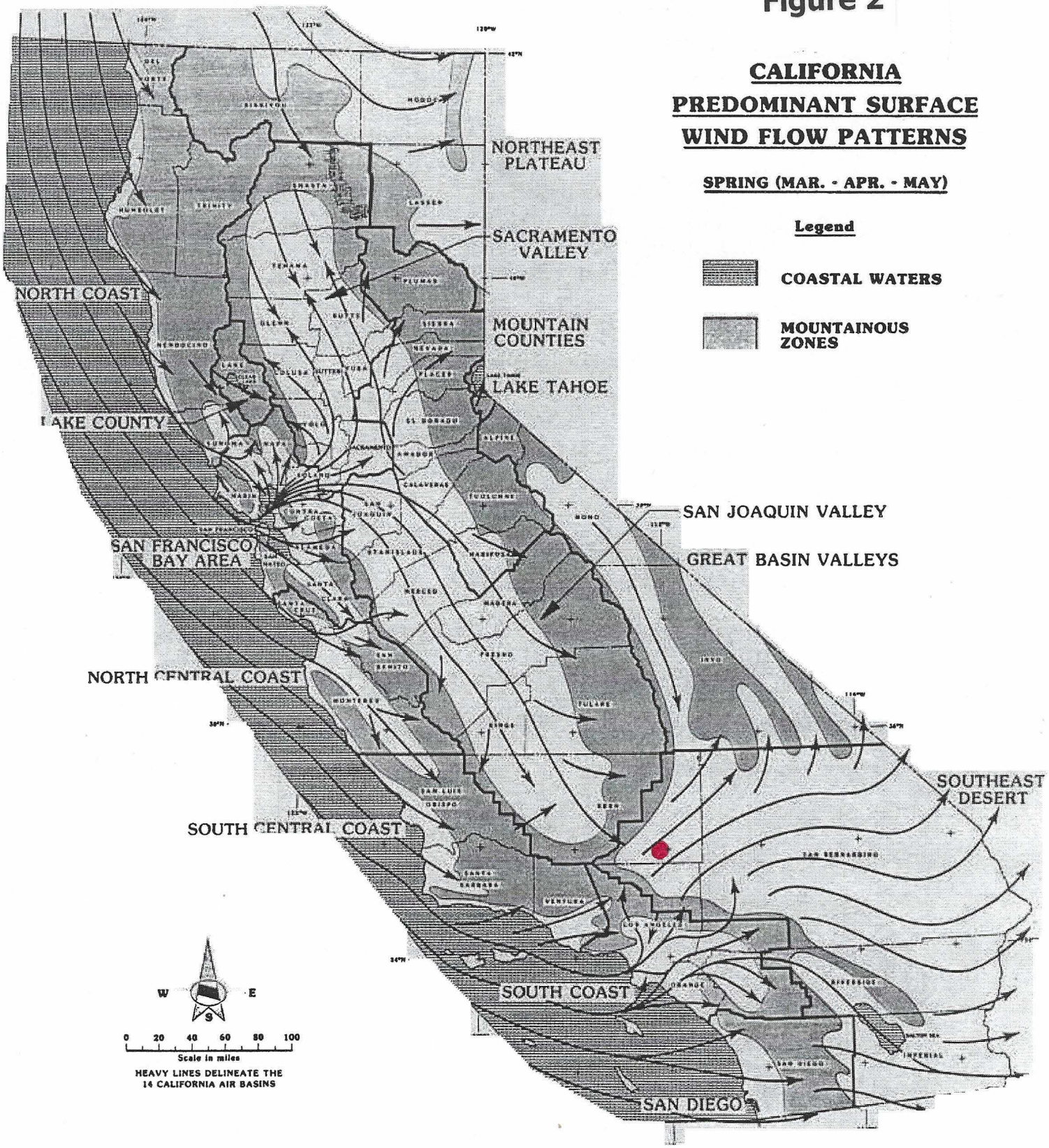

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Figure 3

CALIFORNIA PREDOMINANT SURFACE WIND FLOW PATTERNS

WINTER (DEC. - JAN. - FEB.)

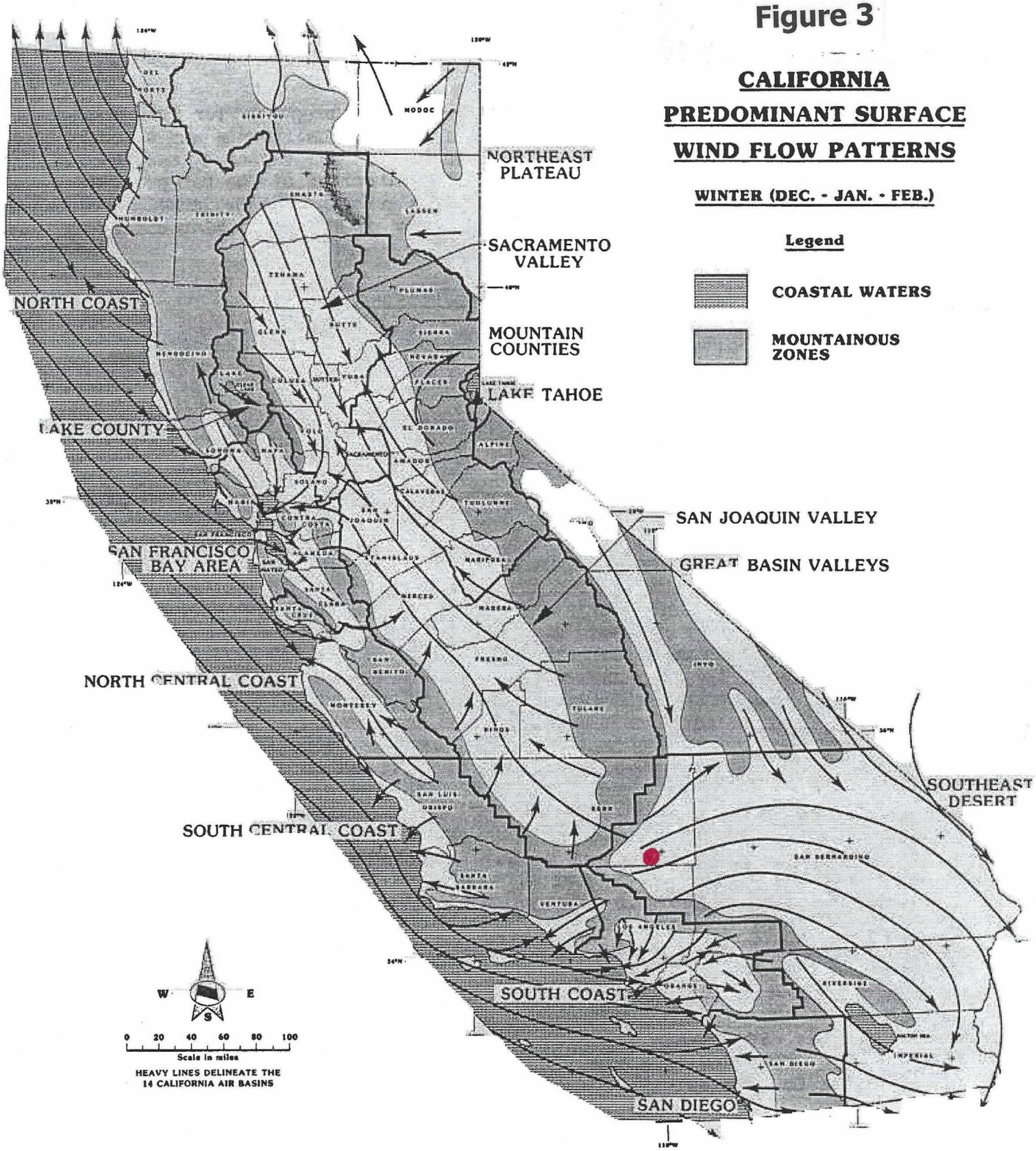

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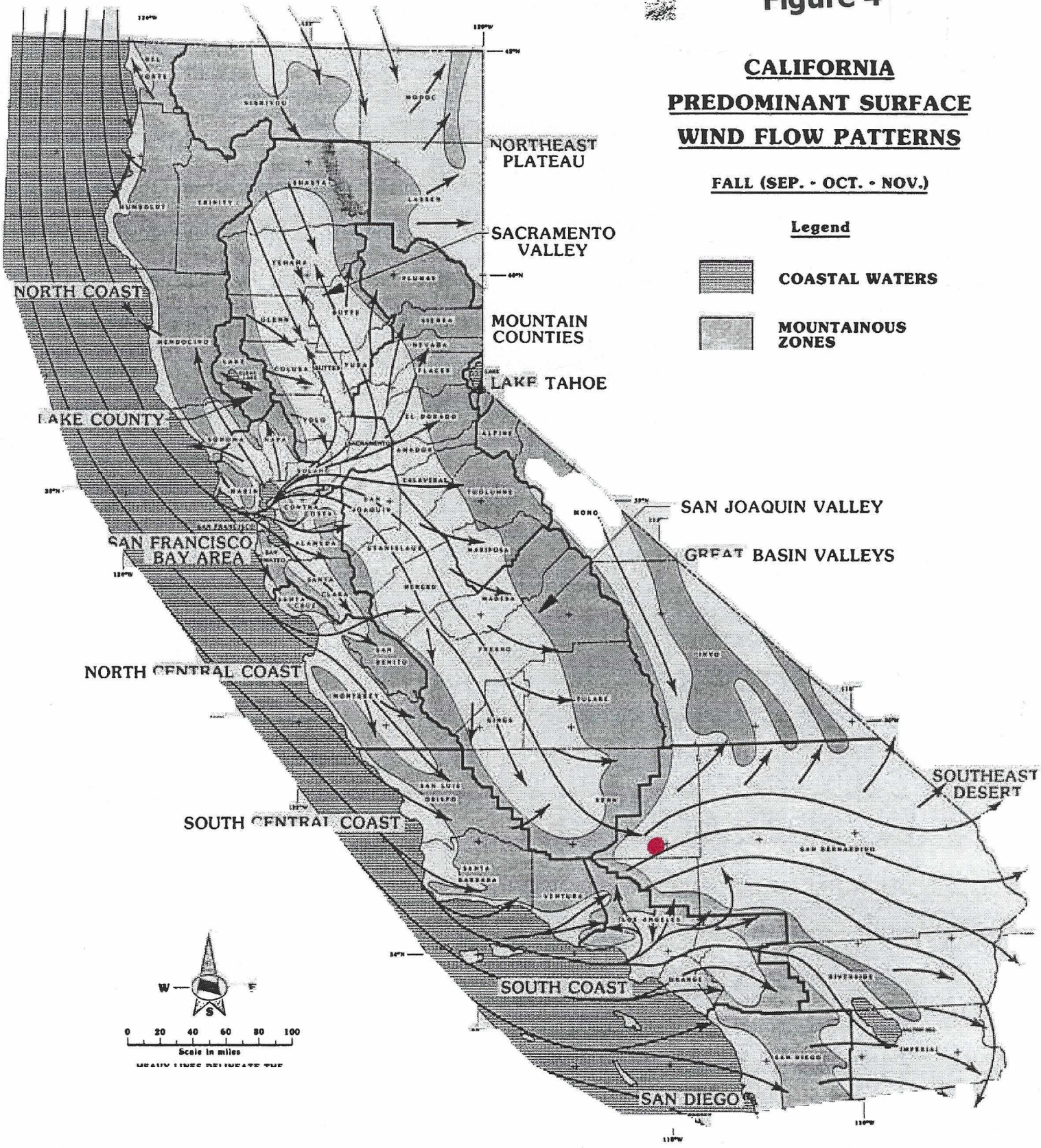
Figure 4



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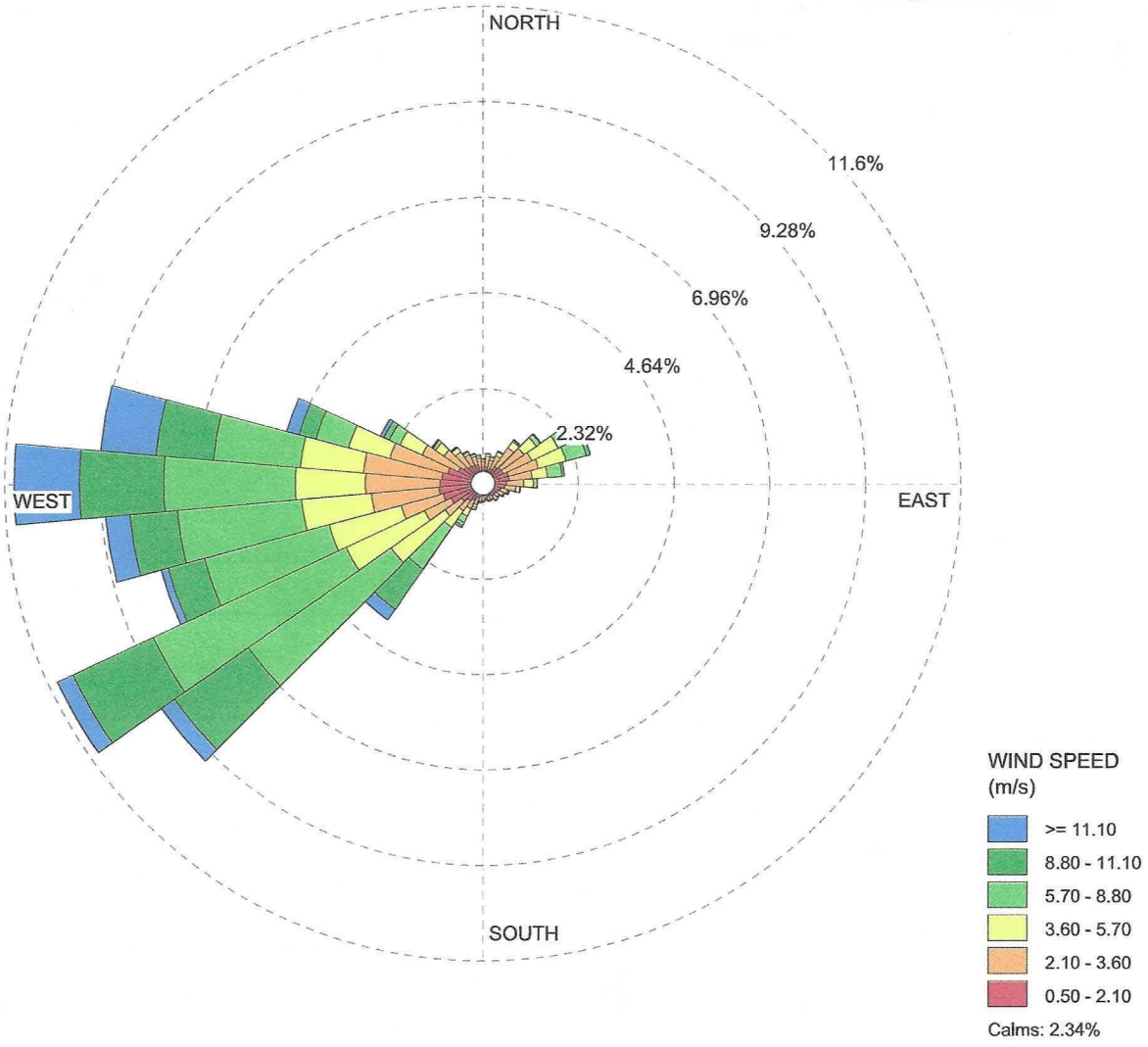
WIND ROSE PLOT:

Annual Wind Rose
WRESC

DISPLAY:

Wind Speed
Direction (blowing from)

Figure 5



COMMENTS: Lancaster/Fox Field Airport 2018-2012	DATA PERIOD: **Start Date: 1/1/2018 - 00:00** **End Date: 12/31/2022 - 23:59**	COMPANY NAME: **Atmospheric Dynamics, Inc.**	
		MODELER:	
	CALM WINDS: **2.34%**	TOTAL COUNT: **43580 hrs.**	
	AVG. WIND SPEED: **5.28 m/s**	DATE: **1/20/2024**	PROJECT NO.:

ATTACHMENT DR136-1

Agapito December 2024 Geotechnical Report (submitted via Kiteworks)

ATTACHMENT DR143-1

Packer Testing Data (submitted via Kiteworks)

ATTACHMENT DR144-1

Leakage Analysis Report (submitted via Kiteworks)

ATTACHMENT DR168-1

Rock Handling and Crushing Location (submitted via Kiteworks)

wsp.com