Willow Rock Energy Storage Center

Department of Energy,
Office of Energy Dominance Financing

DOE/EA-2326

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CONTENTS

LIST OF TABLES

List of Figures

Acronyms and Abbreviations

A-CAES	advanced compressed air energy storage
APE	area of potential effects
Applicant	GEM A-CAES LLC
AVEK	Antelope Valley-East Kern Water Agency
BACT	best available control technologies
bgs	below ground surface
BLM	Bureau of Land Management
BMPs	best management practices
CAA	Clean Air Act
CARB	California Air Resources Board
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CGS	California Geological Survey
CNDDB	California Natural Diversity Database
CO	carbon monoxide
COCs	Conditions of Certification
dBA	A-weighted decibels
DESCP	Drainage Erosion and Sedimentation Control Plan
DOE	U.S. Department of Energy
EA	Environmental Assessment
EDF	Energy Dominance Financing
EKAPCD	Eastern Kern Air Pollution Control District
EPAct	Energy Policy Act of 2005
ESA	Endangered Species Act
FCT	federal conformity threshold
FEMA	Federal Emergency Management Agency
FONSI	Finding of No Significant Impact
GEM A-CAES LLC	GEM, or the Applicant
gen-tie	generation-tie
HP	high-pressure
IP	intermediate-pressure
IPaC	Information for Planning and Consultation
KOP	key observation point
kV	kilovolt
Ldn	day-night average sound level
LP	low-pressure
MBTA	Migratory Bird Treaty Act
mcy	million cubic yards
MSHA	Mine Safety and Health Administration
MW	megawatt
MWh	megawatt-hour
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act

NHPA	National Historic Preservation Act
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
NRHP	National Register of Historic Places
O_3	ozone
PH	public health
$PM_{2.5}$	particulate matter with a diameter of 2.5 micrometers or less
PM_{10}	particulate matter with a diameter of 10 micrometers or less
Project	Willow Rock Energy Storage Center
PSD	Prevention of Significant Deterioration
PTE	potential to emit
QA/QC	Quality Assurance/Quality Control
QMP	Quality Management Plan
SCE	Southern California Edison
SHPO	State Historic Preservation Office
SO_2	sulfur dioxide
SR	State Route
THPO	Tribal Historic Preservation Officer
tpy	tons per year
U.S.C.	United States Code
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VAR	volt ampere reactive
VFD	variable frequency drive
VOCs	volatile organic compounds
WEAP	worker environmental awareness program
WOTUS	Waters of the United States
WRCC	Western Regional Climate Center
WRESC	Willow Rock Energy Storage Center

1. PURPOSE AND NEED

1.1 Introduction

GEM A-CAES LLC (GEM, or the Applicant), a wholly owned subsidiary of Hydrostor, Inc is proposing to construct and operate the Willow Rock Energy Storage Center (WRESC) (Project). The Applicant proposes to construct the Project on private land immediately north of Dawn Road and between State Route (SR) 14 and Sierra Highway within unincorporated, southeastern Kern County, California. The Project will be able to store and deliver power during periods of increased need using compressed air technology.

The Applicant has applied for a loan guarantee pursuant to Title XVII of the Energy Policy Act of 2005 (EPAct), as amended by the Inflation Reduction Act of 2022 (42 U.S.C. 16517) and the One Big Beautiful Bill (Pub. L. No. 119-21, 139 Stat. 72 (July 4,2025)) (the Energy Dominance Financing [EDF] Program). Under Title XVII, the Secretary of Energy is authorized to provide loan guarantees for projects that support energy deployment and energy infrastructure reinvestment in the United States.

The Title XVII Program is administered by the Department of Energy's (DOE) EDF Program. EDF originates, underwrites, and services loans and loan guarantees to eligible applicants for projects that accelerate the commercial deployment of innovative energy technology. EDF has reviewed the application and determined that the WRESC is eligible for a potential loan guarantee (10 Code of Federal Regulations [CFR] Parts 609.3 and 609.5).

1.2 Purpose and Need for Agency Action

The purpose and need for DOE's proposed action, issuing a federal loan, is to implement DOE's authority under Title XVII of the EPAct, as amended. DOE EDF is using the National Environmental Policy Act (NEPA) process to assist in determining whether to provide federal financial assistance via a loan guarantee to the Applicant to support the Project. The purpose of the EDF Program is to finance and facilities in the United States that (1) retool, repower, repurpose, or replace energy infrastructure that has ceased operations; (2) enable operating energy infrastructure to increase capacity or output; or (3) enable known or forecastable electric supply at time intervals necessary to maintain or enhance grid reliability or other system adequacy needs (42 U.S.C. 16517(a)(2) and Pub. L. No. 119-21, 139 Stat. 72 (July 4, 2025).

DOE EDF is not responsible for the design, engineering, construction, startup, or decommissioning of eligible projects under EPAct. Rather, DOE EDF performs comprehensive due diligence, including a review of environmental impacts in accordance with NEPA, and makes a recommendation of the Project's reasonable prospect of repayment to the Secretary of Energy, who ultimately decides on providing a loan guarantee. Therefore, the decision before DOE is to either issue a loan guarantee for the Project as proposed by the Applicant (Proposed Federal Action) or not issue a loan guarantee for the Project (No Action Alternative).

1.3 Background

The WRESC is a bulk-scale energy storage system that uses proprietary, advanced compressed air energy storage (A-CAES) technology to generate and store electricity (the Project). The WRESC is a long-duration storage asset and would be able to deliver power to the Southern California Edison (SCE) Whirlwind Substation during periods of increased demand, such as high electrical load, when baseload plants are not operating or are being brought online, or during grid emergency conditions and/or local reliability needs. To maximize efficiency, the facility charges when renewable source generation is higher than the instantaneous system demand, providing the ability to store excess renewable generation that might otherwise be lost.

The WRESC will safely and cost-effectively store energy to support the integration of variable and/or excess renewable energy from the electric grid. The Project will use surplus electricity from the grid to operate air compressors that produce high-pressure heated compressed air. Heat will then be extracted from the compressed air, and the air will be stored in a cavern and hydrostatic compensation will be used to maintain the system at near-constant air pressure during operation. Energy can be generated on demand, supplying energy back to the grid by forcing the stored air and heat back to the surface for expansion through turbine generators. The WRESC will connect to the SCE Whirlwind Substation at the intersection of 170th Street West and Rosamond Boulevard, southwest of the WRESC site via an approximately 19-mile long, 230-kilovolt (kV) new generation-tie (gen-tie) line (Figure 1).

The Project includes energy generation and storage facility, transmission, cooling systems, operation and maintenance facilities, and other ancillary support systems. Temporary construction facilities include a rock processing facility and concrete batch plant. Various work areas and access roads within and near the WRESC include areas for the gen-tie line, material and equipment staging, laydown, and processing; facility installation; construction management; and parking. Hydrostor will construct, own, and operate the Project, which is scheduled for construction between 2026 to 2029.

The Applicant filed a complete supplemental application for certification with the California Energy Commission (CEC) to construct and operate the Project on March 8, 2024. The CEC reviewed the application in compliance with the California Environmental Quality Act (CEQA) and all local and state laws, ordinances, regulations, and standards as part of their exclusive siting authority for new thermal power plants of 50 megawatts or more under the Warren-Alquist Act of 1974. The CEC environmental review process involved application filing, data adequacy review, a third-party review (preliminary and final Staff Assessment), multiple opportunities for public involvement including public meetings and written comment periods, evidentiary hearings, a proposed decision, and a final decision.

The CEC's final decision was issued on December 19, 2025 with Conditions of Certification (COCs) that outlined environmental mitigation and monitoring requirements during construction, operation, and decommissioning of the facility. All of the COCs included in the CEC's final decision are part of the proposed Project, and Section 2.4 summarizes the COCs most relevant to reduce impacts under NEPA.

1.4 Scope of Environmental Assessment

This Environmental Assessment (EA) presents information on the potential impacts associated with the construction and operation of the WRESC in Kern County, California. DOE EDF has prepared this EA in accordance with the NEPA statute (42 U.S.C. 4321-4347), DOE's NEPA regulations (10 CFR Part 1021), and DOE's NEPA implementing procedures published on June 30, 2025.

EDF's review of regulatory agency consultation (Appendix A) and the permits, authorizations, and approvals required for the project determined the scope of the environmental review and the resources that may be subject to potentially significant impacts. This EA describes the Project and its potential impacts on multiple resources areas as a result of construction and operations of the WRESC and the gen-tie line.

These resource areas assessed in this EA were identified as potentially affected by the Project and each was assessed to determine the nature, extent, and significance of those impacts (see Chapter 3). The assessment combined desktop research and analysis of existing available information with field studies, including site assessments related to presence/absence of wetlands, wildlife and vegetation, and cultural resources. The resource areas include:

- Cultural Resources, including Tribal interests
- Water Resources including groundwater, surface water, and floodplains
- Air Quality
- Noise

- Transportation
- Visual Resources
- Biological Resources and Threatened and Endangered Species
- Socioeconomics
- Health and Safety
- Waste Management
- Geological Hazards and Resources

Impacts on the following resources are not anticipated to be significant; therefore, these resources topics are not included in the scope of this EA:

- Land Use: The Project would be consistent with current County land use designations and zoning, per the zoning change approved in February 2025 (Kern County Planning and Natural Resources Department Staff Report 2025).
- Recreation: No public parks or other developed federal, state, or County recreational facilities are in the Project area or immediate vicinity.
- Soils and Farmland: No prime or unique farmland soil types are present within the Project area

Figure 1: Project Overview

2. DESCRIPTION OF THE PROPOSED ACTION

2.1 Introduction

The WRESC will be a nominal 520-MW gross (500 MW net) and 4,160-megawatt hour (MWh) gross (4,000 MWh net) facility using Hydrostor's proprietary, advanced compressed air energy storage (A-CAES) technology. Energy stored at the WRECS will be delivered to the SCE Whirlwind Substation via a new, approximately 19-mile long, 230-kV gen-tie line. The WRESC will be capable of operating on a 24-hour basis, 365 days a year with an approximately 50-year lifespan. The net electrical output of the system will vary in response to ambient air temperature conditions, electrical grid operating requirements such as voltage or volt ampere reactive (VAR) support, and other operating factors. Operational modes will be driven by operating practices, market conditions, and grid dispatch requirements.

The WRESC facility will be constructed on approximately 88.6 acres of private land immediately north of Dawn Road and between SR 14 and Sierra Highway within unincorporated, southeastern Kern County, California (Figure 2). Additional parcels adjacent to the site may be used for temporary parking, construction laydown, environmental mitigation, or the potential construction of an architectural berm (Section 2.2.6).

The project area encompasses the approximately 88.6-acre WRESC site, an additional 133 acres of private land parcels surrounding the site (referred to as P1, P2 North, P2 South, and Villa Haines) that will be allocated for potential temporary staging and laydown areas, and the roughly 380.0-acre right-of-way (ROW) associated with the gen-tie line plus a 500-foot buffer. The final site boundary and potential construction laydown areas will depend on whether excavated cavern rock would be hauled to offsite facilities in Kern County and Los Angeles County (Option 1 – Without Berm) or if excavated cavern rock would be repurposed onsite for an architectural berm on the west and north sides of the facility (Option 2 - With Berm).

The area of permanent and temporary disturbance for the Project is summarized in Table 1. The Project includes construction and operation of the following features:

- Energy Generation and Storage Facility, Transmission, and Cooling Systems
  - Electric-motor-driven air compressors
  - Compressed air-powered turbine generators with air discharge stacks
  - Heat extraction and recovery main process heat exchangers
  - Thermal storage system using water
  - Cooling system, including air-cooled heat exchangers
  - Hydrostatically compensating surface reservoir with liner and interlocking floating cover
  - Underground, compressed air storage cavern
  - Aboveground piping, pipe racks, and filter houses
  - Underground compressed air storage cavern
  - Interconnecting shafts for movement of compressed air and water to and from the cavern
  - An on-site switchyard with 230-kV and 13.8-kV oil-filled transformers
  - Approximately 19-mile-long, 230-kV single circuit gen-tie line that includes approximately 186 transmission poles
  - Potential construction of an aboveground architectural berm for onsite reuse of excavated cavern rock

- Operation and Maintenance Facilities, and Other Ancillary Support Systems
  - Stormwater drainage system and stormwater percolation
  - Employee and visitor parking area with electric vehicle charging ports and landscaping
  - Fire detection and suppression systems with a water tank and diesel-fired pump
  - Water supply pipeline connecting to Antelope Valley East Kern Water Agency's (AVEK) existing infrastructure, located adjacent the WRESC site
  - Combined office, control room, and maintenance building with a septic tank system
  - Extension/upgrades to Dawn Road between the SR 14 interchange and Sierra Highway
  - Security perimeter fencing with access gates
  - Permanent access roads within and surrounding the WRESC
  - Diesel-fired emergency engines to maintain critical loads in the event of a loss of power
- Temporary Construction Facilities
  - Temporary laydown and parking areas including cavern construction laydown area, construction phase earthwork areas, cavern rock temporary re-use areas, cavern rock temporary backup re-use areas, and parking areas located on adjacent and nearby parcels
  - Temporary rock crushing facility and portable concrete batch plant to support cavern construction and excavated rock management
  - Temporary entrances for construction
  - Temporary conductor pull and tensioning sites
  - Temporary disturbance for each transmission pole placement
  - Temporary access road for portions of the gen-tie line corridor that do not have established access

2.1.1 Energy Generation and Storage Facility

The energy generation and storage facility includes four air compression drivetrains and four air-expansion turbine generators. Each compressor includes a dedicated lubricating/control oil system, dedicated synchronous motor controllers, and protective relaying. The compressor surge controller will be integrated to monitor and manage the compressors. Each air-expansion turbine generator will have a dedicated lubricating/control oil system, a dedicated turbine and generator control, and protection systems.

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

Table 1: Summary of Project Disturbance Areas

Project Component	Approximate Acreage (without Architectural Berm)	Approximate Acreage (with Architectural Berm)	Permanent or Temporary[1]
Main Facility and Permanent Access Roads[7]	88.6	88.6	Permanent
Architectural Berm	0	74.6	Permanent
Site Construction Laydown and Parking[3]	72.6	69.8	Temporary
Transmission Pole Foundations	0.2	0.2	Permanent
Transmission Pole Construction Sites[4]	23.6	23.3[6]	Temporary
Pull and Tensioning Sites[2]	21.5	21.5	Temporary
Transmission Line Undergrounding	0.7	0.7	Temporary
New Temporary Access Roads	3.7	2.1	Temporary
Total Permanent	88.8	163.5	Permanent
Total Temporary[5]	122.2	117.3	Temporary

[1]Temporary impacts that occur within a permanent impact area were classified as permanent impacts to avoid being counted twice.

[2] Some Pull and Tensioning Sites overlap with Site Construction Laydown and Parking. The overlapping areas have been measured as Pull and Tensioning Sites.

[3] Temporary impacts within pole construction sites, pull and tensioning sites, and access roads that occur within site construction laydown and parking area were subtracted from the site construction laydown and parking area total to avoid double counting of temporary disturbance.

[4] Some Transmission Pole Construction Sites overlap with Site Construction Laydown and Parking. The overlapping areas have been measured as Site Construction Laydown and Parking.

[5] Temporary impacts within pole construction sites, pull and tensioning sites, and access roads that occur within site construction laydown and parking area were subtracted from the site construction laydown and parking area total to avoid double counting of temporary disturbance.

[6] "With berm" acreage reduced marginally from "Without berm" acreage because a portion of this project element lies within the architectural berm boundary

[7] The water supply pipeline interconnection and pit are located outside of the main facility at the interconnection site at the corner of Dawn Road and Sierra Highway but are included in the Main Facility and Permanent Access roads disturbance calculations (the water supply pipeline is approximately 0.1 acre of the total 88.6-acre disturbance).

Figure 2: Project Facility and Site Location

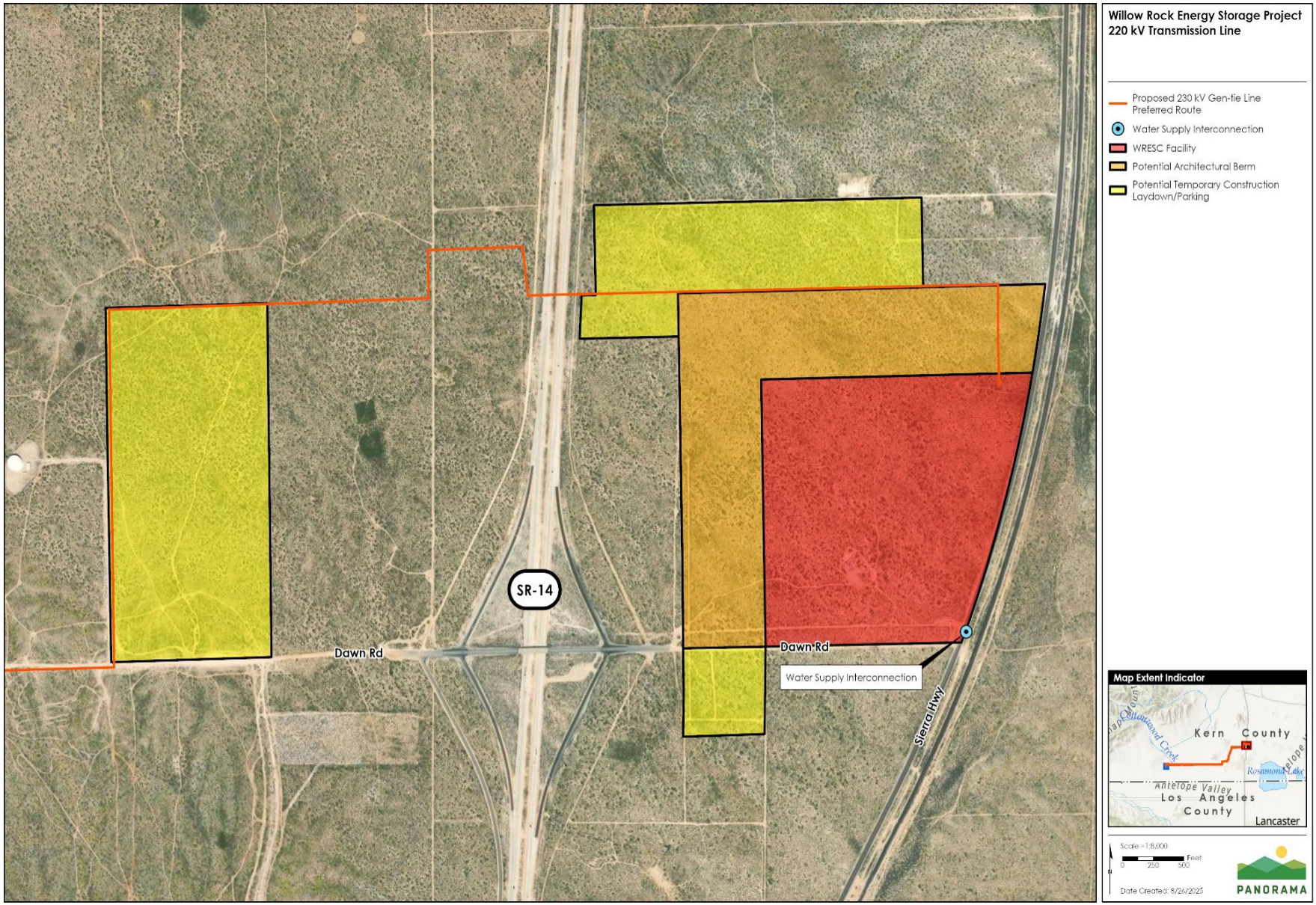
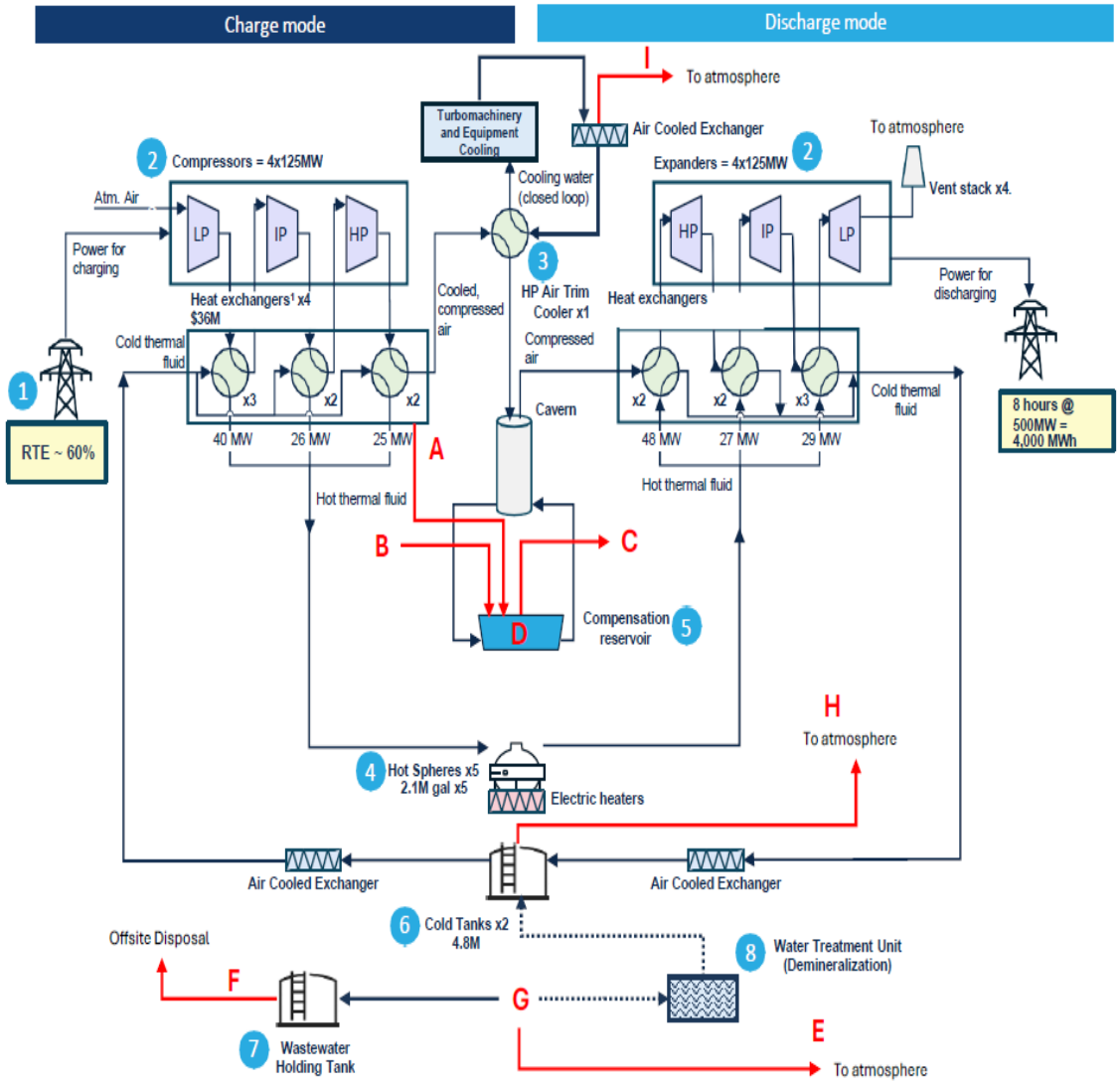


Figure 3: Process Flow Diagram (water balance)



Legend for Water Streams		Typical Flows (USG/year)
A	Condensate/Produced Water	3,190,000
B	Precipitation	4,260,000*
C	Evaporation	5,310,000**
D	Net Annual Change in Reservoir Volume	1,890,000***
E	Plant Equipment Washdown Losses (Evaporative)	10,000
F	Wastewater to Offsite Disposal	250,000
G	Water from AVEK Pipeline	490,000
H	Evaporative Tank Losses	50,000
I	Spray Cooler Losses to Atmosphere (Evaporative)	430,000

* Precipitation case is based on an average year of precipitation using data over the past 30 years.

** Evaporation is reduced using an evaporation reduction cover.

*** The reservoir is designed to handle changes in its volume and the operational plan will include reservoir management.

2.1.2 Hydrostatically Compensating Surface Reservoir

An approximately 600-acre-foot surface reservoir will be excavated, and the excavated material will be used as fill on the site. The surface reservoir will be approximately 21.5 acres with an average depth of 45 feet. The reservoir will maintain constant underground air storage pressure, with a minimum freeboard of about 4 feet at full state of charge. The reservoir will feature an engineered liner on the bottom to prevent percolation and a floating cover to minimize evaporative water loss. Water will be obtained from AVEK and manually managed as part of facility operations.

2.1.3 Underground Energy Storage Infrastructure

An underground storage cavern will be constructed for storing compressed air will be constructed in bedrock to a target depth of approximately 2,000 to 2,500 feet below ground surface (bgs) (Figure 4). Up to two rotary drilled blind-bored air shafts, each approximately 4-feet in diameter, will be constructed for use as air shafts during A-CAES operations. These air shafts will be used to convey compressed air between the cavern and aboveground process trains during A-CAES operations.

Compensation water is a component of hydrostatic compensation and is used to maintain the system at near-constant pressure during operation. A water shaft will be used to convey compensation water between the cavern and topside compensation reservoir during A-CAES operations. The lower end of the water shaft will extend into a sump below the cavern floor to ensure that a water seal will be maintained at all times during operation.

2.1.4 Gen-tie Line

The WRESC will connect to the SCE electrical grid via a 230-kV predominantly overhead single-circuit gen-tie line that will run approximately 19 miles from the SCE Whirlwind Substation to the WRESC Site (Figure 1). The 230-kV line will terminate at a dead-end tower before the proposed main power transformers within the WRESC substation, which will step down the voltage to 13.8-kV and 5-kV for distribution within the WRESC. The gen-tie line will be sited within Kern County's Mojave Tropico Road right-of-way. There are expected to be a small number of short underground gen-tie line segments (totaling up to 0.7 acres of temporary disturbance) to allow for crossing of a Los Angeles Department of Water and Power high-voltage transmission corridor and in other locations where the transmission corridor is congested with preexisting facilities or based on landowner requirements.

2.1.5 Ancillary Support Facilities

Ancillary support facilities associated with the WRESC facility include an office and control room; warehouse and maintenance area; a parking area with electric vehicle charging stations; fire water pumps and storage tank; oil and water separators; main switchyard; unlined stormwater pond; substation; facility instrumentation; reclaimed condensate collection and tank; potable water tank, demineralized water treatment; facility fencing; and access roads. These facilities will be constructed within the proposed Project footprint as outlined in Table 1 and shown on Figure 2.

2.2 Project Construction

The proposed WRESC facility is located on undeveloped private land west of Edwards Air Force Base, bordered by the Sierra Highway and a Union Pacific railway to the east, and Dawn Road to the south, approximately 1,800 feet east of its junction with SR 14. The area is zoned for limited agricultural use, and a zoning change application to general agriculture was approved in February 2025 (see Appendix B). WRESC components, including facilities, utilities, access roads, parking areas, laydown areas, and security fencing, will be confined to the Project area. The water pipeline interconnection is located approximately 300 feet east of the WRESC site adjacent to Sierra Highway (Figure 2). The water pipeline

will cross Sierra Highway and enter the WRESC site using horizontal directional drilling. The gen-tie line connects WRESC to the Whirlwind Substation, approximately 19 miles west of the WRESC site (Figure 1). Additional security fencing will be added to laydown and parking facilities during construction as needed.

Figure 5 shows the Project layout during the construction phase. Access to the WRESC facility will primarily be from Dawn Road, with two entry/exit points for heavy load traffic. Temporary construction access will be provided via crushed rock driveways from both Dawn Road and Sierra Highway, with the potential for the Dawn Road access road to become permanent. Permanent entrances and roads within the WRESC site will be surfaced with crushed rock for internal access to all project facilities and onsite buildings. Personnel parking, electric vehicle charging stations, and landscaping will comply with Kern County zoning requirements. Areas around equipment will be surfaced with crushed rock. After construction, temporary disturbance areas will be reclaimed according to a CEC-approved restoration plan.

The Project construction will be overseen by a quality management team consisting of construction managers, engineers, and contractors chosen for their expertise in similar projects. They will develop and implement a Quality Management Plan (QMP) and a Quality Assurance/Quality Control (QA/QC) program to ensure compliance with regulations, permits, and safety standards. During the expected 60 months of construction, the expected average construction workforce will be 273 workers with a peak workforce estimated at 749 workers. A comprehensive list of discretionary permits and corresponding approvals are included in Appendix B. During construction, the team will ensure adherence to the QMP and QA/QC program, verify proper installation of facilities and equipment, and conduct initial testing.

2.2.1 Energy Generation and Storage Facility

The energy generation and storage facility will be constructed in accordance with the final, permitted plans within the boundaries of the site. The equipment and components are listed in Section 2.1 and the major components are described in Sections 2.2.2 and 2.2.3. The Project would comply with the existing Low-Threat Waste Discharge Requirements and associated best management practices (BMPs) during construction.

Ancillary features (tanks, utility towers, etc.) will be designed and constructed in accordance with their respective design standards consistent with the standard of practice.

2.2.2 Hydrostatically Compensating Surface Reservoir

The hydrostatically compensating surface reservoir will be constructed in the northwest corner of the site. The reservoir will have a capacity of about 600 acre-feet. The reservoir will be lined to prevent percolation and equipped with a floating cover to minimize water loss.

Figure 4: Cavern Construction Design

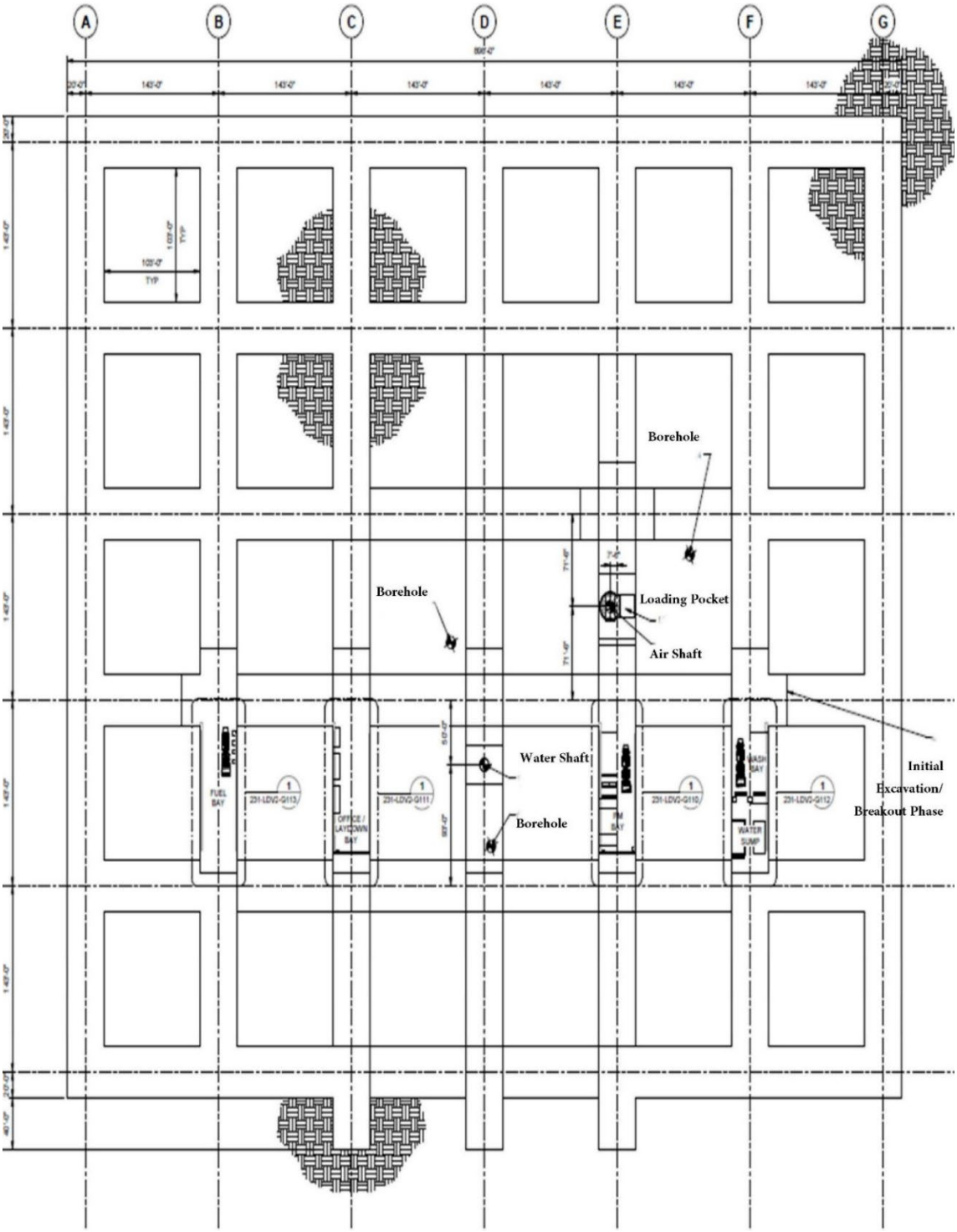
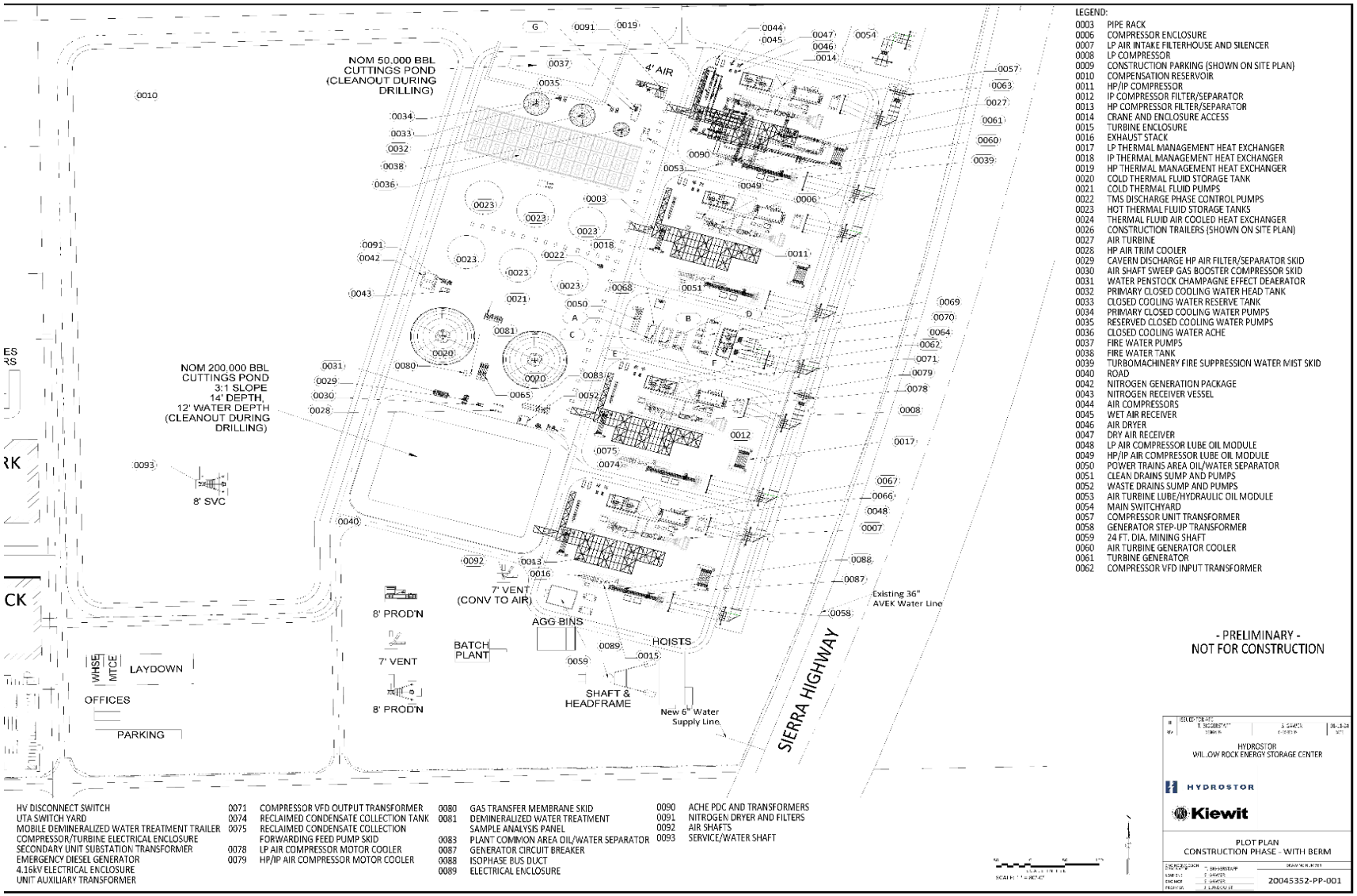


Figure 5: Project Layout During Construction Phase



2.2.3 Underground Energy Storage Infrastructure

The WRESC will utilize underground energy storage infrastructure consisting of one underground, constructed cavern for storing compressed air, and multiple shafts for conveying air and water between the cavern and the aboveground portions of the facility. Initial access to the cavern depth ("cavern access") for mobilization of the construction equipment and crews will be accomplished either by constructing a large-diameter, conventionally sunk shaft (Figure 6), or by constructing several rotary drilled (blind bore) shafts (Figure 7). Regardless of the initial access technique employed, the cavern will be excavated using the same mining approach and techniques. The cavern construction techniques associated with each of these approaches are described below.

2.2.3.1 Cavern

The storage cavern will be constructed in bedrock to a target depth of approximately 2,000 to 2,500 feet bgs. Construction of the cavern, including the initial access shafts plus full cavern excavation, will take approximately 30 months. The cavern will be constructed by conventional mining methods including drilling and controlled detonation over a duration of approximately 3 years. Detonation would occur up to twice a day and would last approximately 3 seconds per detonation. The size and shape of the excavated openings will be finalized during detailed engineering and will not materially influence the overall volume of the cavern or rock excavated.

After completion of the cavern access shafts (2.2.3.2), cavern excavation will begin using a combination of conventional controlled detonation methods and physical/mechanical excavation. Cavern excavation will continue 24 hours a day, 7 days a week until excavation is complete (approximately 23 months). The following are the typical steps included in the normal full-scale mining cycle:

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

During underground construction, twice-daily short and controlled detonation episodes will occur at the beginning of each shift. Early in the cavern excavation process, personnel will clear the underground area and remain aboveground during the detonation sequence. Once the cavern is large enough, personnel will remain underground during the detonation sequence. During full-scale cavern excavation, explosives will be placed in closely spaced locations and detonated remotely.

For cavern gallery construction, a permanent top heading will be initially driven, and roof support will be installed as the excavation progresses. Successive benches will then be excavated to develop the cavern opening to full height. Waste material will be crushed underground and brought to the surface via a shaft skip. Cavern floors will be graded to drain toward a water sump and shaft. Roofs will be sloped where possible to naturally vent into the air shaft to prevent trapped air pockets. Upon completion, unused construction shafts will be filled and sealed.

Figure 6: Conventionally Sunk Shaft Illustration

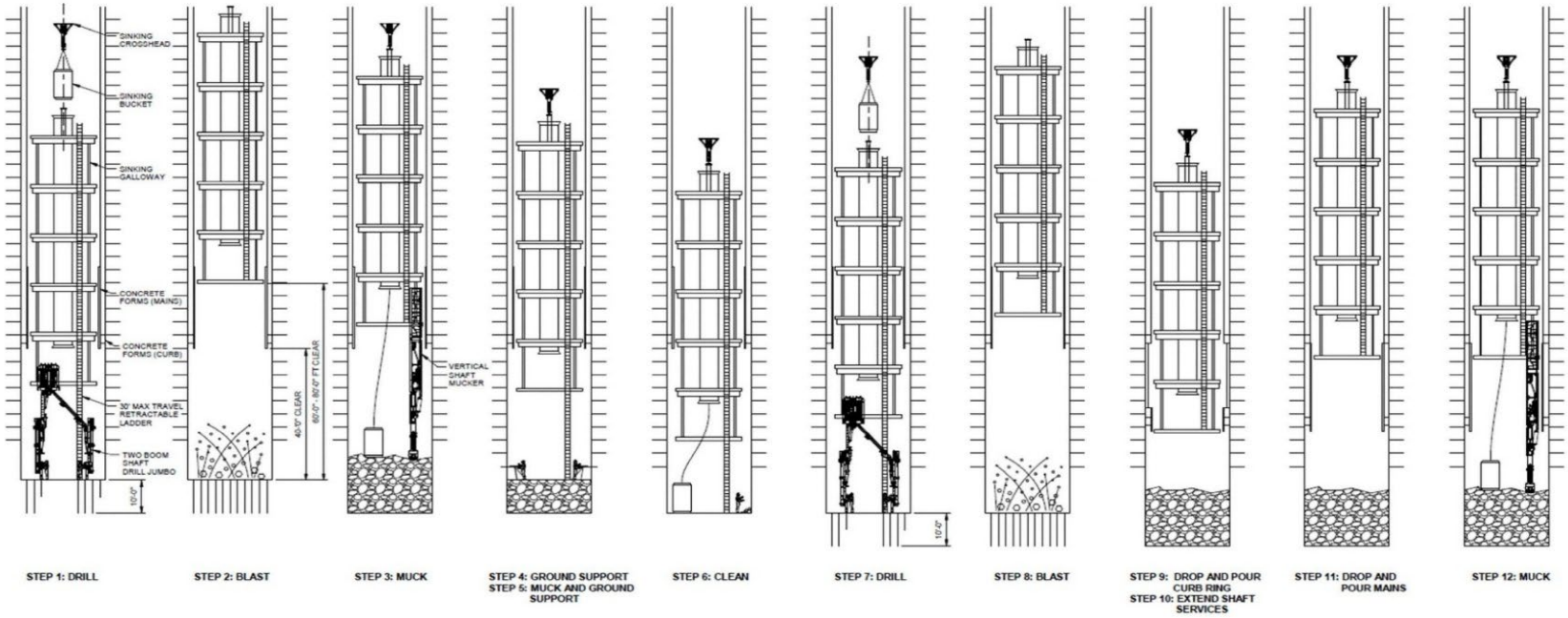
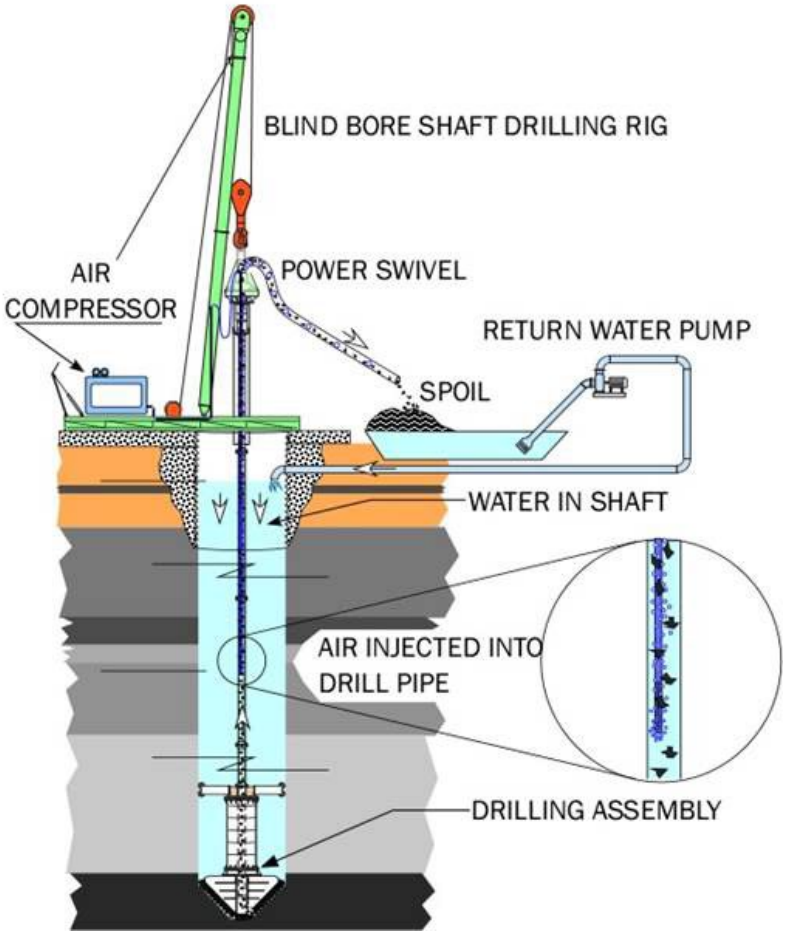


Figure 7: Blind Bore Shaft Illustration



2.2.3.2 Access Shaft

Two options for cavern construction access shafts are proposed: Conventionally Sunk Shaft and Rotary Drilled Shafts. For the purposes of the analysis, it is assumed that the conventionally sunk shaft approach would be used as it would have a greater environmental effect due to the controlled detonation (Figure 6).

The conventionally sunk shaft will have a 24-foot inside diameter and be equipped with a double-drum hoist, service hoist, dual ventilation ducts, and utilities for cavern construction. Controlled detonations will occur from the top of the bedrock surface to approximately 2,000 to 2,500 feet bgs during access shaft excavation and cavern construction, with one or two detonations per day expected for an expected duration of 3 years. The shaft sinking rate is estimated to be 5 to 8 feet per day, with an overall construction duration of approximately 12 to 14 months. Once completed, the shaft will support hauling, ventilation, equipment, and personnel. If rotary drilled shafts are used, five 8-foot diameter shafts will be constructed for operations. No surface-level controlled detonations will occur. One shaft will provide equipment and personnel access, two for material movement, and two for ventilation. A lined pond will be constructed to hold drill cuttings during boring operations, sized for three times the shaft volume in water. After completion, the pond will be emptied, and surplus material will be used to backfill the excavation. Drilling water will be repurposed for reservoir fill or disposed of offsite.

2.2.3.3 Water Shaft

One large-diameter water shaft will be built for water conveyance during A-CAES operations using blind bore or conventionally sunk methods. If blind bored, the shaft will be approximately 8-feet in diameter; if conventionally sunk, it will be 24-feet in diameter. Depending on the cavern access method, it will either be a converted construction shaft or purposely built. The shaft will convey compensation water between the cavern and topside reservoir, lined and cemented to keep the water isolated within the shaft. Its lower end will extend into a sump below the cavern floor to maintain a water seal.

2.2.3.4 Air Shaft

Up to two blind-bored air shafts, each approximately 4-feet in diameter, will be constructed during cavern construction for use as air shafts during A-CAES operations. The air shafts will be lined and cemented in-place to isolate them from the surrounding rock formation. These air shafts will be used to convey compressed air between the cavern and topside process trains during A-CAES operations. The lower end of the air shaft will be located at a high point in the roof of the cavern so that it is never submerged during operation.

2.2.4 Gen-tie Line

The gen-tie will mainly be overhead, consisting of approximately 186 steel transmission poles spanning 19 miles, each approximately 100 feet tall. Standard transmission line construction techniques will be used for the overhead sections. A small number of short underground segments may be required for crossing a Los Angeles Department of Water and Power corridor or congested areas with existing facilities, utilizing open trenching and/or horizontal directional drilling.

Surge arrestors at the point of interconnection will protect against disturbances caused by potential lightning strikes or system disruptions. The 230-kV line will terminate at a dead-end tower before the main power transformers, which will step down the voltage to 13.8-kV and 5-kV for distribution within the WRESC, with the grid connection capable of power import and export, adaptable to all operating scenarios.

2.2.5 Ancillary Support Facilities

Construction of most ancillary support facilities will require the use of light and heavy equipment to clear vegetation, grade surfaces, and excavate and compact soils for engineered cement foundation and pad sites. Facilities that will be installed include an office and control room; warehouse and maintenance area; parking area; fire water storage tank; oil and water separators; main switchyard; unlined stormwater pond; substation; facility instrumentation; reclaimed condensate collection and tank; potable water tank, demineralized water treatment; facility fencing; and access roads. Prefabricated metal material, insulated metal plates, metal siding, and natural material will be utilized for these ancillary support facilities.

2.2.6 Optional Aboveground Architectural Berm

Approximately 1.3 million cubic yards (mcy) of crushed rock (accounting for swell and void space) will be extracted during construction of the cavern. Adaptive re-use options for managing the extracted rock that may be implemented alone or in any combination, including (a) permanent on-site storage in the form of an architectural berm around portions of the WRESC; (b) off-taker transport for commercial use; and (c) off-taker transport for permanent off-site storage. There are three potential cavern rock offtake and beneficial reuse options under negotiations: Holliday Rock in Kern County, Robertson's Ready Mix in Los Angeles County, and Vulcan Materials in Los Angeles County. Each option is currently feasible for beneficial reuse of the cavern rock material in the concrete aggregate market, but if they become infeasible during construction of the project then an onsite architectural berm (Figure 2) may be the final location of the material. The berm is not essential for facility operation; its purpose would solely be for the

disposal of cavern rock material if necessary. If there is no need for the berm because the cavern rock can be hauled offsite, then that area will be a temporary disturbance instead of a permanent impact.

2.2.7 Temporary Construction Facilities

2.2.7.1 Concrete Batch Plant

A temporary portable concrete batch plant will be located in the south-center portion of the site (Figure 5). The concrete batch plant is expected to operate onsite for approximately 12 to 15 months. Construction is expected to require up to 80 cubic yards per day of finished concrete. The facility will be capable of operating from a locally provided power feed or using one 500-horsepower diesel-fired engine generator meeting U.S. Environmental Protection Agency (USEPA) Tier 4 emission standards. The entire facility will be certified by the California Air Resources Board (CARB) under the Portable Equipment Registration Program.

2.2.7.2 Temporary Construction Rock Crushing Facility

A temporary rock crushing facility will operate in the southwest portion of the site for up to 10 hours per day, 7 days a week, over 22 months, starting approximately month 25 after the start of construction. It will process up to 350 tons per hour, including a primary jaw crusher, secondary cone crusher, screens, three conveyors, and two stackers. Dust and particulate emissions will be controlled using water sprays and a baghouse, and power will be supplied locally or by two 779-horsepower diesel-fired engine generators meeting USEPA Tier 4 standards. The facility will be CARB-certified under the Portable Equipment Registration Program. The quantity of rock to be crushed in the temporary facility will vary depending on whether an architectural berm is built on-site or excavated cavern rock is hauled off-site for beneficial reuse. If an architectural berm is built on-site using excavated cavern rock, it is estimated that only 25 percent of excavated rock will be crushed onsite, while if rock is hauled off-site, then it is assumed up to 100% will be crushed to meet offtake specifications.

2.2.8 Project Schedule

The construction of the WRESC from site preparation and grading to full-scale operation and construction closure is expected to take approximately 60 months. Table 2 lists of the discretionary permits required prior to construction, and the Project schedule is presented in Table 3. Construction is anticipated to begin in July 2026 and the Project is anticipated to be operational by 2030.

Table 2: Required Permits and Approvals

Name of Permit/Approval	Date Obtained or Anticipated
Local Permits	
East Kern APCD Final Determination of Compliance	May 14, 2024
Kern County Zone Change	February 11, 2025
State Permit and California Environmental Quality Act (CEQA) Public Review	
California Energy Commission Power Plant License	December 19, 2025
Federal Permits and National Environmental Policy Act (NEPA)	
National Environmental Policy Act	June 2026
Section 106 of the National Historic Preservation Act	June 2026
Section 7 of the Endangered Species Act	August 15, 2025
USEPA Underground Injection Control Class V Authorization by Rule	July 2026

Table 3: Project Schedule

Facility	Year 1	Year 2	Year 3	Year 4	Year 5
Site Preparation and Mobilization	Month 1 to 3				
Grading	Month 2	Month 13			
Hydrostatically Compensating Surface Reservoir Excavation	Month 3	Month 13			
Shaft Drilling (Ventilation and Process Connections)	Month 10		Month 35		
Access Shaft Excavation	Month 11	Month 23			
Topside Equipment Installation		Month 15		Month 45	
Gen-tie Line Construction		Month 24		Month 39	
Cavern Construction (and Cavern Rock Crushing and Hauling)		Month 24		Month 47	
Topside Equipment Commissioning				Month 40	Month 52
Subsurface Commissioning				Month 47	Month 52
Full Plant Commissioning					Month 52 to 55
Startup					Month 55 to 60
Construction Demobilization					Month59 to 60
Commercial Operation					Month 61

Source: Hydrostor 2025

2.3 Project Operation

The WRESC will be operated 24 hours a day, 7 days a week year-round. Approximately 40 full-time staff will operate the facility, including control room operators (24 hours per day, 7 days per week) and roving operators in the field conducting general rounds at least twice per 12-hour shift. Grid regulation-required operations, such as generator transfer trips or special protection schemes, may be operated remotely. Field checks will be done twice per 12-hour shift and additionally as needed for maintenance activity, upsets, or other general operations requirements. A plant operation and maintenance program will be implemented prior to initial plant startup to control operation and maintenance quality.

2.3.1 Energy Storage Process

The energy storage and production system has three operating states: charge cycle, discharge cycle, and standby/idle mode (Table 4, Figure 8). The following subsections generally describe the facility process and equipment use throughout each operating state.

Table 4: Energy Storage Process Steps

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

2.3.2 Energy Storage Facility Charge Mode Cycle

During charge mode, the system draws electricity from the grid to power four air compression drivetrains, totaling 520-MW gross load. Each drivetrain includes a low-pressure (LP) compressor feeding into an intermediate-pressure (IP)/high-pressure (HP) compressor. The high-pressure discharge is cooled in an air-to-water heat exchanger before entering the air storage cavern. Eight synchronous motors, powered by unit transformers and started with a variable frequency drive (VFD) soft start system, handle the facility's full charging capacity.

As compressed air enters the cavern, it will displace compensation water, raising the reservoir's water level. Hot air from each compression section is cooled by boiler-grade water in LP, IP, and HP heat exchangers. The heated water is stored in hot-water tanks under vapor pressure to prevent vaporization, using self-pressurization with water vapor inside the tank.

2.3.3 Energy Storage Facility Generation/Discharge Mode

During the discharge cycle, the plant will respond to a grid signal by activating electrical equipment and turbine generators. Reheated high-pressure air from the storage cavern will drive the turbine generators, syncing them to the grid and increasing electrical output. As the air passes through three turbine sections, the surface water reservoir level will decrease while compensation water in the cavern increases, maintaining cavern pressure. Heat exchangers will reverse their function, using stored hot water to prevent air temperature drop during expansion through the turbine. A secondary water-based cooling system will adjust water temperature as needed for the next charge cycle.

2.3.4 Energy Storage Facility Standby/Idle Mode

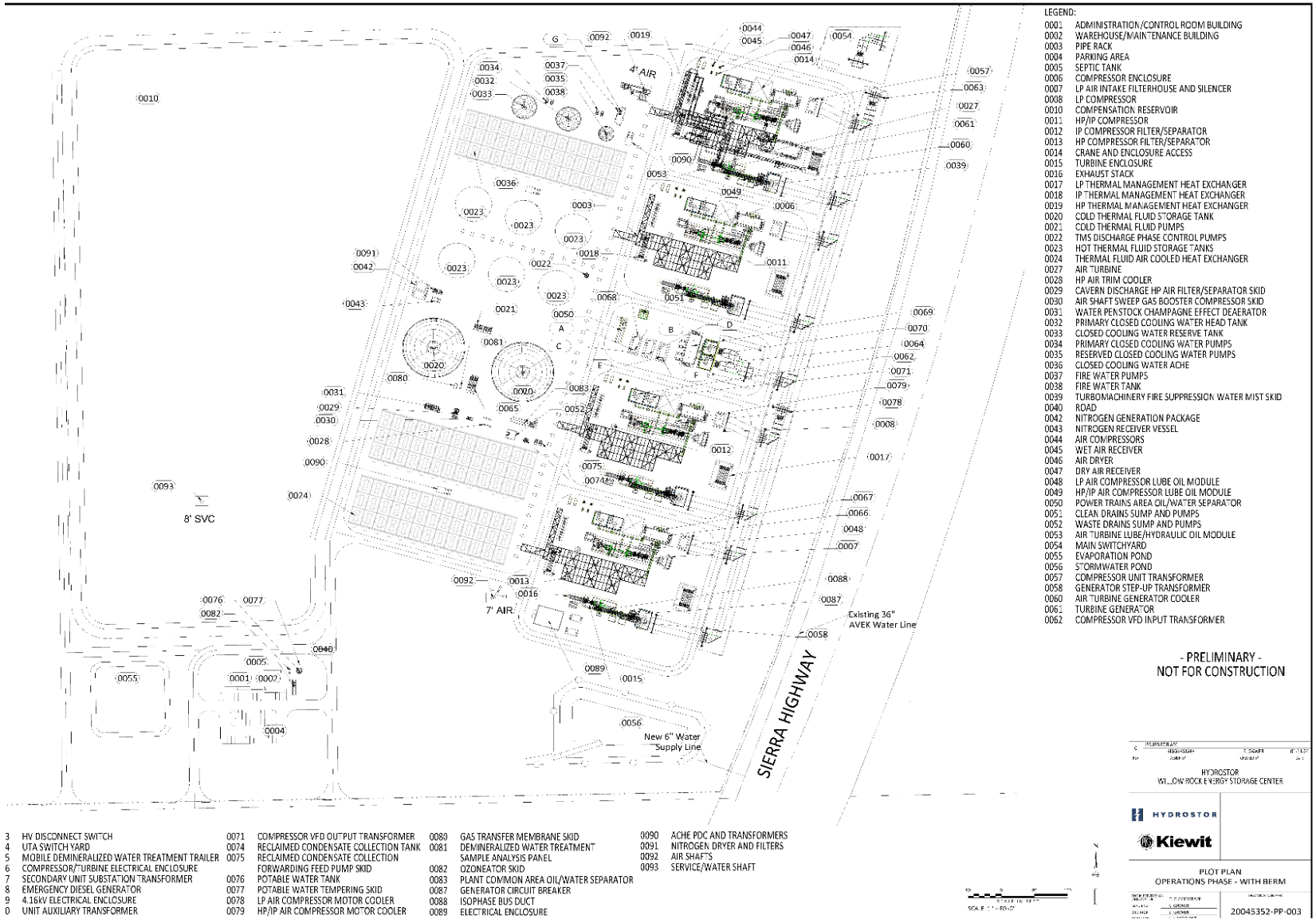
When not actively charging or discharging, the plant enters standby/idle mode. This can occur after a charge cycle, when the plant is ready to operate as a power generator, or after a discharge cycle, when power generation is not needed. During standby/idle, the facility's electrical draw is minimal, primarily for pumps, heaters, and coolers.

If standby/idle follows a charge cycle, the cavern contains maximum air at high pressure, and thermal energy is stored in insulated hot-water tanks. Equipment including air compressors and turbine generators would remain idle but warmed up for quick activation.

After a discharge cycle, the cavern holds minimum air and is mostly filled with compensation water. The hot-water tanks contain minimal water, and cooled water is stored in the cold thermal storage tank. Equipment remains idle but warmed up for potential use. Immersion heaters in the tanks counteract temperature and pressure drops.

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

Figure 8: Project Layout During Operation



2.4 CEC Conditions of Certification

The CEC Committee adopted COCs, which were prepared to avoid or minimizing potential impacts from the Project in compliance with CEQA. The COCs were incorporated into Project design and are considered part of the proposed Project in this EA. The COCs apply to all construction and site preparation activities including, but not limited to, ground disturbance, site preparation, excavation, controlled detonations, and permanent structure construction.

The CEC Committee adopted final COCs for the following resources: air quality; biological resources; cultural resources including Native American interests; efficiency and energy; geologic hazards; paleontological resources; mineral resources; hazardous waste and materials; land use; noise; public health and safety; socioeconomics; solid waste; transmission line safety; transportation; visual resources; and water resources.

Of the 165 COCs identified by CEC Staff, 50 of them are relevant to ensure the Project would not have significant impacts under NEPA (Table 5).

Table 5: Relevant CEC Staff Conditions of Certification

Resource Topic	COCs Most Relevant to Level of Impacts under NEPA
Cultural Resources	CUL/TRI-1, CUL/TRI-3, CUL/TRI-4, CUL/TRI-5, CUL/TRI-6
Water Resources	WATER-1, WATER-2, WATER-3, WATER-7
Air Quality	AQ-SC3, AQ-SC5, AQ-4, AQ-6, AQ-11, AQ-17, AQ-18
Transportation	TRANS-1, TRANS-4
Visual Resources	VIS-1, VIS-3
Biological Resources	BIO-5, BIO-7, BIO-8, BIO-9, BIO-11, BIO-12, BIO-16, BIO-17, BIO-18
Noise	NOISE-1, NOISE-2, NOISE-3, NOISE-5, NOISE-6
Health and Safety	PH-1, WORKER SAFETY-1, WORKER SAFETY-2, WORKER SAFETY-5. WORKER SAFETY-7, WORKER SAFETY-8
Waste Management	SOLID WASTE-1, HAZ-1, HAZ-6. HAZ-8
Geologic Hazards	GEO-1, GEO-2, GEO-3, GEN-1, CIVIL-1, STRUC-1

Source: CEC 2025b, see https://efiling.energy.ca.gov/GetDocument.aspx?tn=268093&DocumentContentId=105109

3. ENVIRONMENTAL CONSEQUENCES

3.1 Introduction

In each of the following sections, potential impacts on the specific resource areas are assessed with both qualitative and, where applicable, quantitative information to concisely describe the nature and characteristics of the resource that may be affected by the Project, as well as the potential impacts on that resource from the Project given proposed Project controls.

For the purposes of this analysis, “project area” refers to the areas that would be subject to permanent or temporary ground disturbance plus a 50-foot buffer. The term “study area” refers to the project site plus a 1,000-foot buffer around the WRESC site and a 500-foot buffer around the gen-tie alignment. The architectural berm is assumed to be included in each resource analysis except in instances for which the no berm scenario would have greater impacts.

3.2 Cultural Resources

The term “cultural resources” broadly encompasses sites, objects, or practices of archaeological, historical, cultural, and religious significance. Cultural resources that are listed in or eligible for listing in the National Register of Historic Places (NRHP) require consideration under Section 106 of the National Historic Preservation Act of 1966 (NHPA) (54 U.S.C. 306108) and its implementing regulations (36 CFR Part 800), which require federal agencies to consider the effects of their undertakings on historic properties prior to approving the undertaking. Section 106 review includes consultation with stakeholders to identify historic properties, which often includes a cultural resource inventory survey and an evaluation of the NRHP eligibility of identified resources, an assessment of effects on historic properties, and consultation to resolve any adverse effects.

As defined in the Section 106 regulations (36 CFR Part 800.16[d]), the area of potential effects (APE) is “the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist.” The APE was determined in consultation with the California State Historic Preservation Office (SHPO) and consulting parties and includes the Project construction footprint plus the area within specific distance buffers surrounding the Project that define the survey areas for identifying cultural resources. Together, these survey areas comprise the APE. The survey area for historic built environment resources includes a 0.5-mile buffer surrounding both the WRESC site and the gen-tie line to account for potential visual or other non-physical effects resulting from the Project. The survey area for archaeological resources includes the Project footprint plus the area within a 200-foot buffer around the WRESC site and within a 50-foot buffer around the linear features of the gen-tie line to account for potential physical effects resulting from construction.

3.2.1 Historic Built Environment

An architectural survey of built environment resources (WSP 2024a) within the APE identified 63 historic built environment resources located in the APE along the alignment of the preferred gen-tie route. A total of 61 of the identified resources were recommended as not eligible for the NRHP, and therefore no further assessment or management of those cultural resources is required under Section 106. The remaining two (2) identified resources include a contributor to a NRHP-listed historic district and an unevaluated residence. Both resources are within the 0.5-mile survey area surrounding the gen-tie line. No historic built environmental resources were identified within or near the facility site; therefore, construction and operation of the facility would not result in impacts to historic built environment resources.

The segment of the Vincent 220 kV Transmission Line is listed as contributing to the NRHP-listed Big Creek Hydroelectric Historic District (NRHP# 16000468), which transects the Project approximately 0.25 miles west of the terminus of the proposed gen-tie line. The construction and operation of the gen-tie line would visibly intrude on the setting of this historic resource; however, the new gen-tie line would appear

visually similar to adjacent gen-tie and transmission lines, and given the 224-mile extent of the entire historic district, the visual effects to a 1.75-mile segment of the line would not constitute an adverse visual effect to the NRHP-listed historic district as a whole.

The McKee House was unable to be evaluated for NRHP eligibility because it is not visible from the gen-tie line or from the public road right-of-way; it is therefore recommended that the NRHP eligibility of the McKee House remain "undetermined" and the resource be addressed as a potential historic property for the purpose of assessing Project effects. It is located approximately 0.3 miles southeast of the gen-tie line. The proposed gen-tie line is not in the property's primary south-facing view and it is not anticipated that construction of the Project would cause any atmospheric, auditory, or vibratory effects on the property given the distance of the resource from the Project. The construction and operation of the gen-tie line would not diminish the integrity of any features that would convey the resource's potential historic significance. Therefore, the Project would not adversely affect any built environment historic properties.

3.2.2 Archaeological Resources

A Phase I Cultural Resources Survey Report (WSP 2024a) was prepared in 2024 that included background research, a pedestrian survey, and consultation with Native American Indian Tribes (Tribes) and representatives. A total of 13 sites were identified as potentially eligible for inclusion in the NRHP, pending the completion of additional evaluative testing. Phase II testing was then completed in 2025 (WSP 2025) and evaluated ten of the 13 recorded sites. Three of these sites were avoided by the finalized gen-tie route and were excluded from Phase II testing. Further, the Phase II testing work on the ten sites resulted in the revision of several site boundaries, including the merging of two smaller sites into one large site, reducing the total number of evaluated sites to nine. Of the nine sites evaluated, the authors concluded that five of the sites are not eligible for the NRHP and four sites remained recommended eligible for inclusion in the NRHP under Criterion D due to the potential for the untested portions of these sites to yield additional data significant to the understanding of the pre-contact history of Antelope Valley.

DOE consulted the California SHPO on July 16, 2025. The SHPO provided comments on September 2, 2025, disagreeing with the determinations of eligibility for the archaeological sites and requesting additional clarifying analysis and information regarding them. Following review of SHPO's comments and further consideration of the record developed through the Project's archaeological and historical investigations and Tribal consultations, DOE agreed with SHPO's assessment and determined that the identified archaeological resources are not eligible for inclusion in the NRHP. On June 5, 2026, DOE responded to SHPO's comments acknowledging SHPO's observations and revising the NRHP eligibility determinations and finding of effect. The gen-tie line has been designed to avoid any resources that are potentially eligible for inclusion in the NRHP; therefore, no effects to NRHP-listed or eligible archaeological resources are anticipated from construction and operation of the gen-tie line. The archaeological resources in the facility footprint are not eligible for the NRHP. Therefore, DOE concluded that that the Project will have no adverse effect on historic properties.

In addition to those resources that were recorded and evaluated within the WRESC site, Project ground disturbing activities for the WRESC site development and gen-tie line construction have the potential to encounter and adversely affect buried, pre-contact archaeological resources. The CEC COC's include measures to avoid, minimize, or mitigate such potential unanticipated discoveries of and/or effects on cultural resources. A cultural resource specialist will be present during any ground disturbance, the Applicant will provide cultural resources WEAP training, and controls will be in place in the event of a discovery to halt construction and consult with SHPO and interested Native American Tribes regarding treatment and/or disposition of any discoveries.

3.2.3 Native American Interests

As part of its Section 106 review process, DOE EDF sent letters on June 25, 2024 and July 26, 2024 to seven federally recognized Tribes and five state recognized Tribes to gauge their interest in consulting on the Project, to gather information on nearby cultural resources, and to solicit any comments or concerns on the potential for those resources to be affected by the Project. DOE also sent a request to continue Section 106 consultation on July 16, 2025 to the federally recognized Tribes who had responded affirmatively to the prior invitation to consult. Tribal consultation is summarized in Appendix A.

The Big Pine Paiute Tribe of the Owens Valley, Yuhaaviatam of San Manuel Nation, and Fort Independence Indian Community of Paiute Indians of the Fort Independence Reservation, California expressed an interest in the Project. DOE EDF requested that the Tribal Historic Preservation Officer (THPO) from the Fort Independence Indian Community of Paiute Indians of the Fort Independence Reservation be included as a Tribal monitor throughout the cultural resource identification process. Additional details regarding tribal correspondence are included in Appendix A.

Project ground disturbing activities for the WRESC site development and gen-tie line construction have the potential to encounter and adversely affect buried, pre-contact archaeological resources. A cultural resource specialist will be present during any ground disturbance, the Applicant will provide cultural resources WEAP training, and controls will be in place to halt construction in the event of a discovery. The MOA would also stipulate measures to minimize or mitigate impacts on Tribal interests. Operation of the facility and gen-tie line would not result in impacts to Native American interests. Impacts on Native American interests resulting from the Project would not be significant.

3.3 Water Resources

3.3.1 Hydrologic Setting

The Project area is approximately 2,540 to 2,600 feet above mean sea level and the Project valley slopes gradually to the southeast. The Project site is within the Mojave Desert geomorphic province of California (CGS 2002). The Mojave Desert province is a broad region of isolated mountain ranges separated by desert plains. The area has a warm, dry semiarid climate. The average annual precipitation is approximately seven inches (Western Regional Climate Center [WRCC], n.d.). Most of the annual precipitation occurs from November through April. The mean summer temperature is 78 degrees Fahrenheit and mean daily summer temperatures range from 63 to 93 degrees Fahrenheit. The mean winter temperature is 45 degrees Fahrenheit and mean daily winter temperatures range from 34 to 57 degrees Fahrenheit.

The WRESC site is located within the Gloster subwatershed of the Antelope Valley Watershed, which is part of the larger Antelope-Fremont Valleys watershed. The Antelope-Fremont Valleys watershed is a closed basin in which runoff from storm events primarily feeds ephemeral streams that discharge to dry lake beds or playas, where it either infiltrates or evaporates. The closest streams to the Project site are Oak Creek, located approximately nine miles to the west, and Cache Creek, located approximately 13 miles to the north. Surface water does not provide a direct drinking water source within the Gloster subwatershed.

The Project site is within the southern portion of the Fremont Valley Groundwater Basin, which covers a surface area of approximately 523 square miles and is situated in the high desert between 1,180 to 4,000 feet above mean sea level. It is bound on the northwest by the El Paso Mountains and the Sierra Nevada Mountains; on the east by crystalline rocks of the Summit Range, Red Mountains, Castle Butte, Bissell Hills, and Rosamond Hills; and on the southwest by the Antelope Valley Groundwater Basin. Precipitation to the valley floor and percolation of runoff from mountains and neighboring watersheds naturally recharge the basin, with losses occurring via evaporation and transpiration. The Fremont Valley Groundwater Basin also receives subsurface flow from the Antelope Valley Groundwater Basin.

Groundwater in the Fremont Valley Groundwater Basin is primarily used for public and domestic water supply and irrigation.

3.3.2 Water Supply

Onsite groundwater production is not anticipated during the construction and operations of the WRESC and gen-tie line. Limited groundwater may be extracted/dewatered if encountered during construction of deep borings/shaft and stored in a temporary drilling pond onsite or transported off site. The shaft excavations would extend up to 2,500 feet bgs. Based on wells in the area and publicly available information from nearby sites, the depth to groundwater is estimated to be 30 to 68 feet bgs. Cavern excavations would be within rock with limited permeability. As a result, the temporary dewatering from the cavern excavation would not adversely affect groundwater supplies in the area. During construction and the initial filling of the surface reservoir, the facility would require approximately 1,400 acre-feet of water. Water would be obtained from AVEK.

AVEK is the third largest State Water Contractor for the State Water Project and operates a water supply line near the eastern border of the WRESC site, and AVEK confirmed that the line has the capacity to support the Project's water needs. AVEK's water supply is provided by State Water Project supplies and groundwater (AVEK 2021). Additional recovery of imported water from AVEK groundwater banks would be available to meet demand over multiple dry years, and AVEK's groundwater and storage are reliable in all water year types. The Applicant would record daily water use during construction and operation. Therefore, impacts on groundwater supplies in the area resulting from construction of the facility and gen-tie line would not be significant.

The expected water demand for the facility is less than 2,000 gallons per day during plant operation. Operation of the gen-tie line would not require water and would not impact the area's groundwater supply. Water use during operation of the WRESC facility would not exceed 4 acre-feet per year. Therefore, impacts on groundwater supplies in the area resulting from operation of the WRESC facility and gen-tie line would not be significant.

3.3.3 Surface Water and Groundwater

A desktop assessment (utilizing data from the National Wetlands Inventory and National Hydrography Dataset) and a field-based aquatic delineation were conducted in 2023 to document aquatic resources within the Project area. The survey determined that no wetlands are present in the Project area and that surface water features in the Project area consist of seven ephemeral drainages, none of which meet the criteria for Waters of the United States (WOTUS). USACE issued a letter on October 1, 2024 with a determination that a Department of the Army Permit was not required and the Project would not impact WOTUS (USACE 2024). The low organic content of the soil and lack of hydrophytic or riparian plant species within the drainages indicate that water is present for a small portion of the year, likely associated with rain events.

While there is no known sources of contamination site on the Project site or along the gen-tie route (WSP 2023), the Project has the potential to encounter contaminated sediment or groundwater during dewatering and excavation at the WRESC site and gen-tie foundations. Prior to construction, the Applicant will define procedures for managing any contaminated sediment or groundwater encountered to properly manage any contaminants and avoid adversely effect receiving waters.

The Project would disturb up to 261.2 acres of land during vegetation removal, grading, and construction at the WRESC site, and up to 24.5 acres along the gen-tie line for installation of gen-tie poles. Potential water quality impacts from grading and vegetation removal would be controlled through implementation of a Drainage Erosion and Sedimentation Control Plan (DESCP) that will be developed and approved by the CEC and the Lahontan Regional Water Quality Control Board prior to the start of construction. The DESCP will ensure protection of water quality and soil resources, including provisions for sediment and

stormwater retention, and outline BMPs to be implemented during site mobilization, excavation, construction, and operating activities. Therefore, impacts to surface and groundwater as a result of construction of the WRESC facility and gen-tie line would not be significant.

During operations, the Applicant would protect surface and groundwater by managing all hazardous liquids either inside the facility, in tanks, or in closed containers stored within secondary containment structures. Potential spills or releases of liquids during delivery would be minimized using the controls described by the Hazardous Materials Business Plan (California Health and Safety Code, Section 25500, et seq., and related regulations in 19 CCR 2620, et seq.) and Spill Prevention and Countermeasures Plan (40 CFR 112). The project would operate in accordance with the UIC Class V Injection well authorization.

As part of the Project, an onsite stormwater pond will be constructed. Stormwater will be collected in the stormwater pond via sheet flow, catch basins, and conveyance piping. The collected stormwater would be retained for future site use, evaporated, or infiltrated. Because of the remaining open space near the facility and the expanded stormwater retention pond that is sized to accommodate the Project, the impact on stormwater infiltration in the vicinity of the Project site would not be significant.

There are minimal surface water resources present, and the Project incorporates design features to minimize risk of water contamination. Therefore, impacts on surface water and groundwater resulting from operation of the facility and gen-tie line would not be significant.

3.3.4 Floodplains

Executive Order 11988— Floodplain Management (May 24, 1977) directs each federal agency to issue or amend existing regulations and procedures to ensure that the potential effects of any action it may take in a floodplain are evaluated and that its planning programs and budget requests reflect consideration of flood hazards and floodplain management. DOE regulation 10 CFR 1022, Compliance with Floodplain and Wetlands Environmental Review Requirements, establishes procedures to ensure the evaluation of any action DOE may take in a floodplain. Per the policy, impacts to the floodplain and to human safety must be avoided or minimized to the extent possible, and construction of structures and facilities must be, at a minimum, in accordance with the Federal Emergency Management Agency (FEMA) National Flood Insurance Program building standards. Alternative actions that may avoid or mitigate adverse floodplain impacts must be identified and evaluated.

The WRESC site is not within Zone A of the FEMA-designated floodplain (1 percent chance flood or 100-year-old flood zone). Therefore, construction and operation at the WRESC site would not impact the floodplains. Approximately 10.89 miles (54 percent) of the approximate 19-mile-long gen-tie line will be constructed within the 100-year floodplain and 5 percent within the 500-year flood zone (Panorama 2025) (Figure 9). The presence of new infrastructure within a floodplain may contribute to flood hazards.

The gen-tie poles will spaced between 600 to 900 feet apart and would not displace or redirect flood flows, modify the floodplain limits, or significantly increase flood hazards. The gen-tie poles are approximately 90 feet tall and will have foundations that would be capable of withstanding the peak 100-year flood flows. The small diameter of the poles and the wide spacing and foundations of each were designed to minimize effects of a 100-year flood on Project property and equipment, and on off-site lives and property. Construction and operation of the gen-tie line would have no impact on the floodplain elevation.

DOE issued a notice of proposed floodplain action on June 12, 2026, and no comments were received during the 15-day public comment period. The floodplain statement of finding concluded that new structure placement will meet local and federal floodplain management requirements. The new structures are designed to not displace or redirect flood flows, significantly increase flood hazards or impact floodplain functionality. Temporary erosion controls will be installed and maintained until the work areas are restored and stabilized. Base flood elevations will not be affected by the Project.

There is no feasible alternative to locating the gen-tie line within the floodplain due to the location of the WRESC site and point of interconnection. The Project would not modify existing floodplain elevations and would not cause long-term impacts to the floodplain or its functionality. Therefore, impacts to floodplains resulting from the construction and operation of the gen-tie line would not be significant.

3.4 Air Quality

The Clean Air Act (CAA) requires the USEPA to set National Ambient Air Quality Standards (NAAQS) for "criteria pollutants" to protect public health and the environment. The six criteria pollutants are ozone (O_3), particulate matter ($PM_{2.5}$ and PM_{10}), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2) and lead (EPA 2023). The USEPA must designate areas as meeting (attainment) or not meeting (nonattainment) the standard, and states must develop USEPA-approved plans called state implementation plans to attain and maintain the standards for each area designated nonattainment.

The Project is located in Kern County, California, within the Mojave Desert air basin, and is under the jurisdiction of the Eastern Kern Air Pollution Control District (EKAPCD). As of July 7, 2023, the USEPA has classified the EKAPCD to be in attainment and/or maintenance for all criteria pollutants except ozone (O_3), for which the area is classified as severe nonattainment for the 2008 8-hour O_3 National Ambient Air Quality Standards NAAQS (EKAPCD 2023b; 2023a). On May 14, 2024, EKAPCD issued a notice of final determination of compliance for the Project (EKAPCD 2024).

Criteria pollutants that have the potential to be emitted from the Project are $PM_{10,}$ $PM_{2.5}$, CO, nitrogen oxides (NO_x), and volatile organic compounds (VOCs) (WSP 2024b). The Project emissions from construction activities were evaluated under two scenarios for managing the cavern rock excavated during construction: with the construction of an architectural berm and without the architectural berm. For the architectural berm scenario, approximately 25 percent of the cavern rock will be processed through the proposed temporary portable onsite crushing/screening plant before being delivered to the architectural berm construction area along with the remaining 75 percent of the cavern rock. The no architectural berm scenario conservatively assumes that virtually all the cavern rock will be processed through the crushing/screening plant and subsequently hauled offsite to an existing materials site.

The construction emissions summary reflects emissions from the highest expected 12-month period and includes both on-site and off-site emissions. Off-site emissions include construction of the gen-tie line as well as worker vehicle trips, equipment delivery and, for the no-berm option, hauling of excavated rock. Project operation would include stationary emissions sources, including three standby emergency generators and a fire pump. The Project would not routinely operate combustion units or emit regulated pollutants to the atmosphere as the emergency standby generators would only be operated during routine maintenance testing (<50 hours per year) or during power outages. Only two of the 2.5 MW generator engines would be required to support critical loads. The third engine would be redundant, and only one engine is assumed to operate at any given time for purposes of maintenance and readiness testing. The maximum annual generator runtime is 200 hours per year for each generator. In addition to the combustion-related engine emissions, there would be an insignificant amount of VOCs and fugitive evaporative emissions from the engine fuel tanks. Table 6 lists Project's annual *potential to emit* (PTE) for all criteria pollutants during both construction and operation of the facility and gen-tie line.

Figure 9: Floodplains

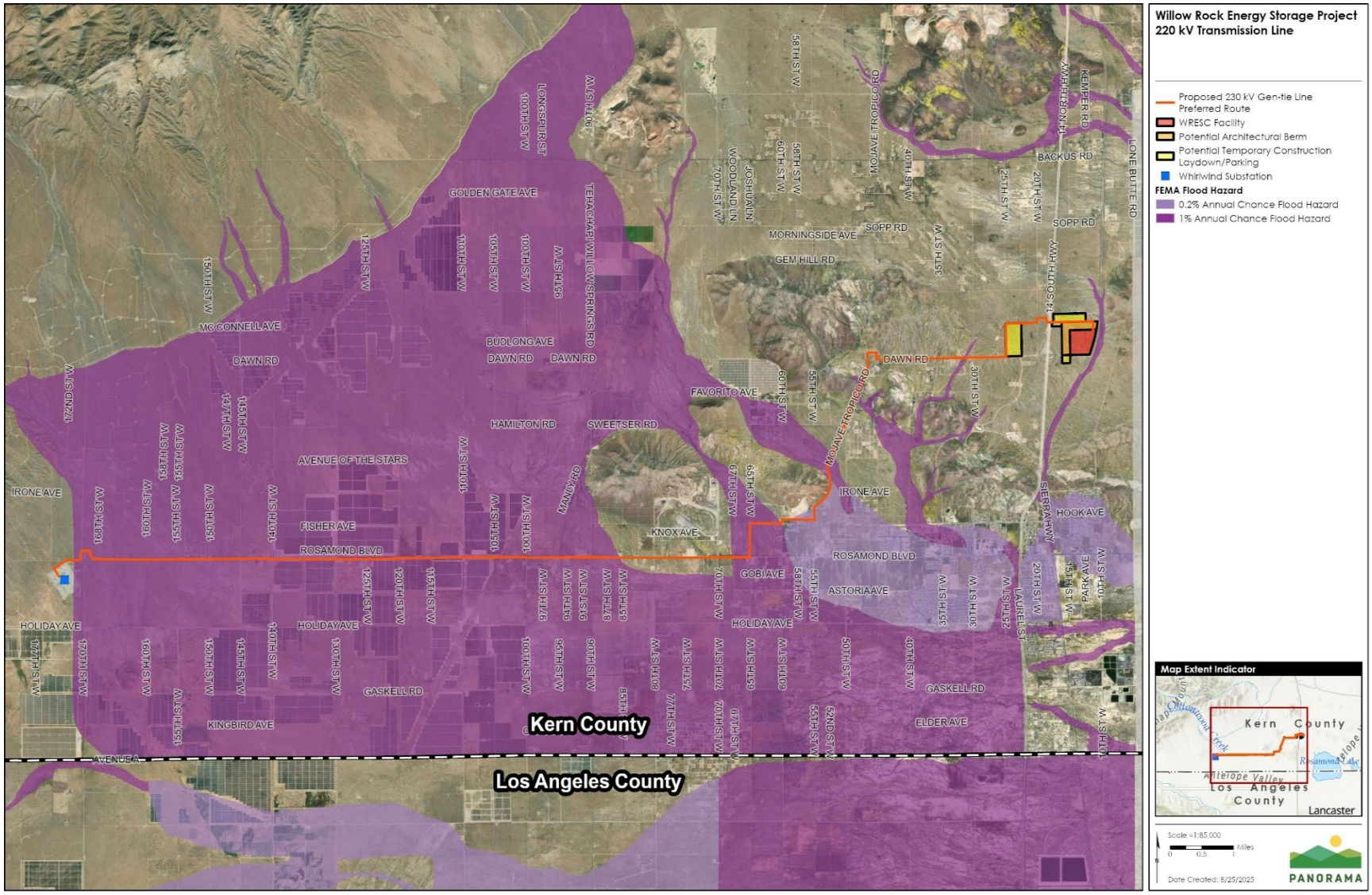


Table 6: Project Potential to Emit

Criteria pollutant	Operation emissions (tpy)	Construction emissions: architectural berm option (tpy)	Construction emissions: no berm option (tpy)	Federal PSD threshold (tpy)
NO_x	1.49	27.13	42.70	250
CO	6.50	32.88	67.03	250
VOCs	0.35	3.37	6.47	250
SO_2	0.013	0.08	0.17	250
PM_{10}	0..063	15.54	14.60	250

PSD = Prevention of Significant Deterioration
tpy = tons per year
Source: (WSP 2024b; EKAPCD 2022)

The Project is not considered a major source under federal nonattainment New Source Review or Prevention of Significant Deterioration (PSD) regulations because the Project's annual PTE for all regulated air emissions are below major source thresholds (Table 6).

Project emissions were also evaluated for general conformity consistent with the requirements of 40 CFR part 93 subpart B. The pollutants of concern for the conformity evaluation are the ozone precursors NOx and VOCs. The applicable federal conformity threshold (FCT) for both NOx and VOCs, according to the *de minimis* tables in 40 CFR section 93.153(b)(1), is 25 tons per year (tpy) (EPA 2024; WSP 2024b).

Total modeled Project emissions of NO_x and VOCs in comparison with the FCTs are presented in Table 7. Emissions from Project construction for both the architectural berm and no berm options exceed the FCT for NO_x but not for VOCs. Therefore, a conformity determination (i.e., analysis) is required for the Project for NO_x emissions.

Table 7: Project PTE and Federal Conformity Thresholds for Criteria Pollutants of Concern

Criteria pollutant of concern	Federal conformity threshold for severe non-attainment area for ozone (tpy)	Construction emissions: architectural berm option (tpy)	Construction emissions: no berm option (tpy)	Operation emissions (tpy)
VOCs	25	3.37	6.47	0.35
NO_x	25	27.13	42.70	1.49

Source: (WSP 2024b; EPA 2024)

The construction emissions under both the architectural berm and no berm scenarios would exceed the initial screening level for conformity for ozone precursor NOx. Conformity can be demonstrated with air quality modeling to demonstrate that the annual increases in net emissions would meet conformity requirements in that emissions would not cause or contribute to a new NAAQS violation and would not increase the frequency or severity of the area's existing NAAQS violation or delay timely attainment or maintenance of the NAAQS within the area (40 CFR part 93 subpart B; eCFR, n.d.).

Air quality modeling was completed to evaluate whether the Project would exceed NAAQS ambient concentrations for ozone precursors NO_2. The construction NO_2 impact assessments were conducted with a Tier 3 analysis and included the use of hourly ozone data with the USEPA-approved *ozone limiting method* along with the use of seasonal hour by day background NO_2 and ozone monitoring data. Background NO_2 concentration was determined as outlined in the USEPA's 2011 memorandum "Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO_2 National Ambient Air Quality Standard" (EPA 2011). The modeling assumed implementation of several

best available control technologies (BACT), including use of Tier 4 engines, which is included as COC AQ-SC5 (CEC 2025).

The modeled ambient concentrations of criteria air pollutants during operation for the architectural berm and no-berm scenarios and the NAAQS are presented in Table 8, below. Modeled concentrations of NO_2 for Project construction for both the berm and no-berm scenario including background conditions fall below NAAQS for all criteria pollutants. The Project demonstrates conformity in compliance with 40 CFR part 93 subpart B because Project NO_2 emissions would not result in exceedance of NAAQS for NO_2 for either construction or operation.

The Applicant would limit the total hours of operation to 200 hours per year without prior District approval, require California ultra-low sulfur diesel (15 parts per million) to be used for the backup generators and fire pump, limit PM to 0.1 grains/ft^3, and outline maximum emission rates of each air contaminant from each generator and from the fire pump. Based on these Project design features, and because Project construction and operation would not exceed any NAAQS thresholds, there would be no significant impacts on air quality.

Table 8: Project Modeled Ambient Concentrations of Criteria Pollutants

Pollutant	Averaging time	Project area background (µg/m^3)	Maximum concentration including background: architectural berm option (µg/m^3)	Maximum concentration including background: no berm option (µg/m^3)	NAAQS
NO_2	1-hour (98th percentile)	--	157.41	174.59	188
NO_2	Annual maximum	15.7	7.54	13.77	100

Source: (WSP 2024c)

3.5 Noise

The WRESC will be constructed on a currently undeveloped site on agricultural lands and adjacent to agricultural and undeveloped lands. The nearest sensitive receptor to the WRESC site is a residence located over 1,000 feet northeast of the WRESC site. Existing noise sources in the area consist primarily of transportation noise on State Route 14, Sierra Highway, local roads, and railroads. The Project area is also in proximity to Edwards Air Force Base and Rosamond Skypark is subject to aircraft noise. Baseline ambient noise levels in the Project vicinity range from an average of 39 to 52 A-weighted decibels (dBA) day-night average sound level (Ldn). Noise levels during construction and operation of the WRESC were modeled as described in the CEC Final Staff Assessment (CEC 2025).

Construction activities for the facility and gen-tie will utilize equipment that would generate noise, such as rollers, cranes, telehandlers, front-end loader, hopper, and pile driver hammer. Construction equipment typically produces noise levels between 64 dBA (i.e., conveyor) and 128 dBA (pile driver hammer) at 50 feet. The loudest construction activities would take place during the drill and excavation of shafts, and above ground equipment installation construction phases. The daytime construction noise during these phases would involve various types of heavy machinery, such as pile drivers and excavators. In contrast, nighttime construction noise would be significantly reduced, as only essential equipment would operate to support 24-hour cavern work. Explosives would generate noise during detonation within the cavern shafts. The general construction noise at the WRESC site would not be discernible at the nearest receptors.

Noise levels during construction would reach 46 dBA at the nearest receptor during daytime hours. This noise level is below the average ambient daytime noise level of 50 dBA Leq at that receptor and the Kern County noise standard of 65 dBA Ldn. Nighttime construction noise would reach 33 dBA at the nearest receptor, which is less than the ambient nighttime noise level of 49 dBA Leq at the receptor.

Controlled detonation events would produce a maximum noise level of 130 dBA at ground surface at a distance of 3 feet during access shaft excavation and cavern construction. Predicted noise levels from detonation events at the closest residence 5,400 feet away would be approximately 65 dBA. This is 15 dBA above the ambient noise level of 50 dBA Leq during daytime hours (when a controlled detonation would occur). The controlled detonation noise would last a few seconds and would occur up to twice per day during daytime hours. The detonation noise would not exceed the Kern County daytime noise standard of 65 dBA Ldn and would be very short in duration (CEC 2025). The Applicant would notify residences within one mile of the Project site and gen-tie line prior to the start of ground disturbance and would document, investigate, and attempt to resolve all Project-related noise complaints. Therefore, noise impacts as a result of construction of the facility would not be significant.

Operation of the WRESC would generate noise from operating equipment. The noise generated from the WRESC would be typical of power plants where equipment is located indoors. Concurrent operation of all major noise-producing equipment, including low-pressure compressors, transformers, and pump motors, would result in a combined operational noise level of 50 dBA at the nearest receptor. This would not exceed the daytime ambient noise level of 50 dBA Leq but exceeds the nighttime ambient noise level of 49 dBA Leq by 1 dBA (not discernible). The operational noise level of 50 dBA at the nearest receptor would also be below the General Plan's threshold of 65 dBA for daytime and 55 dBA for nighttime. While the operation is not anticipated to generate a substantial increase in noise or exceed noise standards the Project includes measurement and verification of operational noise. Therefore, noise impacts as a result of operation of the facility would not be significant.

The gen-tie line would be constructed mostly within existing road rights-of-way and partially overland across agriculture zoned land. The gen-tie line would be located adjacent to residential receptors along the route and the Tropico Middle School is less than 1,000 feet from the gen-tie line. Gen-tie line construction would involve increased noise levels for a few days at each pole location. Heavy equipment operation during construction of the gen-tie line within 1,000 feet of any occupied residential dwelling would be restricted. Therefore, impacts on noise as a result of gen-tie line construction would not be significant. Operation of the gen-tie line is not anticipated to have noise related impacts.

3.6 Transportation

The Project would be constructed near SR-14, Sierra Highway, and local County roadways. Dawn Road provides access to the WRESC site. A traffic study was prepared for the Project and includes existing traffic volumes on highways and roads in proximity to the Project as well as the projected increase in traffic from Project construction and operation (WSP 2024d). The traffic study used the no berm scenario in the analysis as it would generate a greater number of truck trips and thus is the more impactful approach compared to the architectural berm scenario.

The no berm scenario would require 1.3 mcy of rock to be transported offsite. Construction of the Project would generate traffic from an additional 749 workers in personal cars traveling to the Project site each morning and leaving each evening. In addition, the Project construction would generate traffic from two water trucks, and 180 haul trucks per day. As indicated in the traffic analysis/modeling, WRESC facility and gen-tie line construction would not result in substantial delays at any intersection or roadway segment and the impact on transportation would not be significant (WSP 2024d). The Project would include construction of two crushed rock driveways from Dawn Road to the WRESC. Construction access to the gen-tie line would occur on paved roads and 1.75 miles on unpaved roads. The Project driveways and access roads would be constructed in accordance with federal and state of California standards and would not create any traffic hazards. Therefore, impacts on transportation resulting from construction of the WRESC facility would not be significant.

During gen-tie line construction, the Project may require localized lane closures for safety. The Project includes a Construction Traffic Management Plan and traffic control plans for any roadway or lane closures to ensure traffic safety and requires the Applicant to comply with limitations imposed by Caltrans

and other relevant jurisdictions on vehicle sizes, weights, driver licensing, and truck routes. Due to proper transportation management, the impact on transportation during gen-tie construction would not be significant.

During operations, the WRESC facility would generate traffic from employee travel to and from the WRESC site (Table 9). The Project would require approximately 40 workers per day (generating 80 one-way trips). Operational traffic would slightly increase from existing conditions, as shown.

Table 9: Project Traffic Trips

Traffic type	Existing	New (Operation)	New (Construction)	Total
Cars	5,572	80	1,498	7,150
Trucks	1,636	0	728	2,364

Source: (WSP 2024d)

The Applicant would use three shifts during the operations and maintenance of the proposed WRESC facility; therefore, worker traffic would be split during the day and would not occur at one time. Operations would generate less than 50 trips in any peak hour and less than 100 drips per day in total. The total volume of traffic generated would not adversely affect traffic flow. Operation of the gen-tie line would not generate any traffic. Routine inspection and maintenance of the gen-tie line would require two worker vehicles for the days that inspection and maintenance activities are conducted but would not generate traffic on a routine basis.

Because the Project would not deteriorate operation of any roadway segment or intersection or otherwise affect transportation conditions and the safe operation of the area roads would be maintained, impacts on transportation resulting from operation of the WRESC facility and gen-tie line would not be significant.

3.7 Visual Resources

The Project extends from the WRESC site, approximately 4 miles north of Rosamond, to the SCE Whirlwind Substation approximately 15 miles west of Rosamond. The landscape surrounding the Project area is generally flat and gently sloping upper desert terrain in the Antelope Valley. Surrounding topographic features include small hills, including Rosamond Hills, Tropico Hill, and Soledad Mountain. Views from the WRESC site extend the furthest northwest, north, and northeast (Appendix C). The proposed Project would be constructed on approximately 89 acres of a 112-acre parcel that is relatively flat undeveloped land having desert scrub, grasses, and Western Joshua trees.

The most publicly visible structures at the WRESC site include six spherical hot water tanks (100 feet tall, 87.5-foot-diameter), four low pressure exhaust stacks (100 feet tall), two closed cooling water tanks (75 feet tall, 60-foot-diameter), two air cooled heat exchanger arrays (60 feet tall, 100 feet wide, 395 feet long), one closed cooling water air cooled heat exchanger array (60 feet tall, 100 feet wide, 430 feet long), and two cold water tanks (50 feet tall, 150-foot-diameter). Also, a surface water reservoir (approximately 21.5 acres with earthen berms 6-8 feet tall), a stormwater pond (270 feet long, 195 feet wide), an administration/control room and maintenance building (6,600 square feet approximately), and the potential storage onsite of crush rock resulting from the construction of the underground cavern (approximately 1.3 mcy of crushed rock) being repurposed as an architectural berm (10 feet high, 500 feet wide) will be constructed. The gen-tie poles would be 100 feet tall and span approximately 19 miles (about 186 poles) from the project site to the SCE Whirlwind Substation. Views of the gen-tie line are generally unobstructed in all directions. Representative photos and visual simulations of the Project are provided in Appendix C.

The WRESC site would be visible from SR-14 and the Sierra Highway as well as Rosamond residences to the south and up to approximately 3 miles away. The 90-foot-tall gen-tie poles would be visible within

approximately 5 miles of the line due the flat terrain of the area. However, the poles would be more prominent within the immediate proximity to the pole (Appendix C).

Construction of the Project would result in permanent visual changes through introduction of industrial infrastructure at the WRESC site and may partially change the existing landscape characters for viewers, primarily motorists, where the Project is visible. The new infrastructure at the WRESC site would be primarily observed temporarily by motorists and recreational users on SR-14 and Sierra Highway as well as from local area roads (Appendix C). There are no scenic highways or viewsheds in proximity to the Project and the Project would not be visible from any recreational areas. No local, state, or federal designated scenic resources are located on the Project site or surroundings. The motorists along area roads in proximity to the Project would have a low level of sensitivity to changes in the viewshed as they would be passing through the area and views of the facility would be limited to a few minutes while driving by on the road. The residents near the Project would have a higher level of sensitivity to visual change as they experience the views in the valley for a long duration.

The gen-tie line would be constructed mostly along existing roadways and paralleling existing utility lines starting at the intersection of Sweetser Road and Mojave-Tropico Road to the Whirlwind Substation. The gen-tie poles would be located adjacent to existing electrical poles along area roads and would appear similar but taller than the existing poles (Appendix C). The gen-tie line would be a minor alteration to the existing landscape because the Project components are compatible within the existing landscape character that includes existing transmission lines.

A visual impact assessment was completed for seven key observation points (KOP) representing viewing conditions at 1-year post construction. The KOPs represent publicly accessible locations and visually sensitive areas related to recreational and residential use that would be affected by the Project. The analysis evaluated the potential for Project-related change to the existing visual quality and landscape character. This approach combines both the visual change resulting from the construction of the Project and the visual contrast as it related to a viewer's experience at KOPs. Viewing duration was also considered in the visual impact assessment. Notably, all the KOPs represent a dynamic view from a moving vehicle, on routes ranging from a major highway (SR 14) to a remote dirt road (10th Street West).

The Project would be visually evident to motorists and recreational viewers travelling through the region and represents a minor alteration to the existing landscape that would not degrade the existing visual character or quality of the landscape setting. The WRESC will be consistent with all state and local laws, ordinances, regulations, and standards relating to visual resources and aesthetics, and implementation of the mitigation measures in the COCs ensures that the construction and operation of the WRESC will not result in any impacts. The Applicant would paint the facility to blend in with the landscape and select outdoor lighting that would minimize blue light emissions, be fully shielded, and comply with the applicable adopted outdoor lighting regulations of Kern County (Section 19.81 Outdoor Lighting "Dark Skies Ordinance). There are no designated, protected, or other identified scenic resources on the WRESC site or in its vicinity. Construction and operation of the project would neither eliminate nor obstruct a public view of a scenic resource nor change the visual appearance of it. Therefore, the WRESC facility's effects on the existing visual character of the site and its surrounds would not be significant.

3.8 Biological Resources and Threatened and Endangered Species

3.8.1 Flora and Fauna

The natural vegetation communities present in the Project area and surroundings provide habitat for a variety of wildlife adapted to the dry conditions, including small mammals, small reptiles, and birds. During visits to the Project area, observations of general wildlife or their sign (e.g., scat, bones, tracks, features, burrows, etc.) were recorded. General wildlife species were diverse and abundant, with representative common species including western whiptail (*Aspidoscelis tigris*), side-blotched lizard (*Uta stansburiana*),

common raven (*Corvus corax*), Brewer's sparrow (*Spizella breweri*), turkey vulture (*Cathartes aura*), and desert woodrat (*Neotoma lepida*).

The Project will require up to 163.5 acres of permanent disturbance. With the exception of Joshua tree woodland, the natural vegetation communities occurring within the Project site are common throughout the region.

Multiple field surveys, a literature review, and a habitat assessment conducted March 28, 2023, through October 6, 2023, document the vegetation communities within the survey area, which included the WRESC area and a 1,000-foot buffer around WRESC parcels as well as a 500-foot buffer around the gen-tie line for a total of 3,870.90 acres (WSP 2024a). Natural communities within the survey area include:

- Allscale Scrub (571.36 acres) – dominated by allscale (*Atriplex polycarpa*) and also including other alkaline desert shrub species
- Cheesebush Scrub (114.49 acres) – dominated by cheesebush (*Ambrosia Salsola*)
- Creosote Bush – White Bursage Scrub (1,447.42 acres) – co-dominated by the shrub species creosote bush (*Larrea tridentata*) and white bursage (*Ambrosia dumosa*)
- Creosote Bush Scrub (154.06 acres) – dominated only by creosote bush
- Joshua Tree Woodland (83.82 acres) – dense stands of Joshua trees with little to no other dominant or co-dominant species
- Needleleaf Rabbitbrush Scrub (77.08 acres) – dominated by needleleaf rabbitbrush (*Ericameria teretifolia*)
- Rubber Rabbitbrush Scrub (119.35 acres) – rubber rabbitbrush (*Ericameria nauseosa*) dominates or co-dominates with big sagebrush (*Artemisia tridentata*) or other shrubs
- Tamarisk Thickets (2.21 acres) – tamarisk (*Tamarix ramosissima*) dominates or co-dominates with native species, such as cottonwood (*Populus fremontii*) or willow (*Salix* spp.)
- White Bursage Scrub (80.55 acres) – white bursage dominates or co-dominates with other desert shrub species

Disturbed/developed areas (1,058.75 acres) and non-native grassland and forbs communities (151.49 acres) also occur within the survey area.

Surveys for sensitive plant species were conducted in 2023 during a period of large-scale blooms of annual species. No federally listed plant species were found in the Project area. The Project will bring equipment and materials to the Project site, which have the potential to contain and transport weed seed into the Project area and affect natural plant communities by introducing non-native species that would outcompete the native vegetation occurring in the area. The Applicant would use weed-free products, ensure all construction equipment is clean and free of soil and plant material, and implement a weed eradication plan to control the spread of non-native plant species, integrated weed management at the site, and invasive species management, which would minimize impacts from introduction of invasive species.

State of California listed Joshua tree individuals are present within the WRESC facility site, architectural berm area, and eastern-most temporary construction laydown/parking area across SR-14. The Project includes the relocation of western Joshua trees and payment of mitigation fees to address impacts on individual trees in compliance with the Western Joshua Tree Conservation Act. Therefore, impacts on native vegetation including Joshua tree individuals as a result of the Project would not be significant.

The gen-tie line would not impact any sensitive plant species and will not require removal or relocation of Joshua trees. No impact on sensitive plants would occur from gen-tie construction or operation.

3.8.2 Threatened and Endangered Species

The protection of biological resources is governed by various federal and state laws and local ordinances including:

- The Endangered Species Act (ESA) designates and protects federally listed threatened and endangered plants and animals and their critical habitat. Projects that could result in adverse impacts on any federally listed species are required to consult with and mitigate potential impacts in consultation with the U.S. Fish and Wildlife Service (USFWS).
- The Migratory Bird Treaty Act (MBTA) is a federal law that protects all migratory birds, including their nests and eggs. The Bald and Golden Eagle Protection Act is a federal law that protects bald and golden eagles from harm or trade, including parts, of these species.

To determine threatened and endangered species potentially occurring in or near the Project area, records of species occurrences within 10 miles of the Project area were obtained from the USFWS Information for Planning and Consultation (IPaC) database, the California Natural Diversity Database (CNDDB), and the California Native Plant Society Electronic Inventory. The USFWS IPaC tool identified the following five federally listed threatened, endangered, and candidate species possibly occurring near the Project site:

- California condor (*Gymnogyps californianus*), endangered
- Western snowy plover (*Charadrius nivosus nivosus)*, threatened
- Desert tortoise (*Gopherus agassizii*), threatened
- Northwestern pond turtle (*Actinemys marmorata*), proposed threatened
- Monarch butterfly (*Danaus Plexippus*), candidate

An ESA Section 7 biological assessment addressing potential Project impacts on the above-listed species was submitted to USFWS on July 16, 2025. USFWS concurred with EDF's findings on August 15, 2025. A summary of findings and effects determinations is provided below.

There is no critical habitat for federally-listed species in or adjacent to the Project site including the WRESC site and gen-tie line. A habitat evaluation determined that there is no habitat in the Project area for western snowy plover, northwestern pond turtle, or monarch butterfly, so there is no potential for the project to affect these species.

Although the potential for presence of desert tortoise in the project area is low based on surveys at the Project and buffer area in 2023 and 2024, there is desert tortoise habitat in this area so their presence cannot be ruled out entirely. Conservation measures were identified through consultation with USFWS, including a permanent exclusion fence, pre-construction clearance surveys, biological monitoring when working outside of fenced exclusion zones (e.g., gen-tie construction), and a Raven Management Plan. The conservation measures would apply to both construction within the WRESC site and the gen-tie line. These conservation measures are also included as Project COCs. As a result, the Project is not likely to adversely affect desert tortoise.

Habitat evaluations determined there is no potential for California condor to nest in the Project area and low potential for it to forage within the Project area due to a lack of key prey items and distance from suitable nesting habitat (approximately 16 miles away). In the unlikely event that a California condor was present in the Project area, conservation measures were identified to address roadkill animals and require collision avoidance and minimization for the gen-tie line per the Avian Power Line Interaction Committee guidelines. As a result, the Project is not likely to adversely affect California condor.

In addition to the federally listed species, 42 special status wildlife species were identified in CNDDB records within 10 miles of the Project site and 26 were determined to have either no potential to occur in the Project area based on a lack of habitat and distance from known occurrences or a low potential to

occur due to limited habitat in the area (WSP 2024b). Focused surveys were performed for Swainson's hawk (*Buteo swainsoni*), burrowing owl (*Athene cunicularia*), Crotch's bumble bee (*Bombus crotchii*), and Mohave ground squirrel (*Xerospermophilus mohavensis*) (WSP 2024b; WSP 2024a). Mohave ground squirrel was determined absent from the Project area based on results of the focused survey. Golden eagle was considered to be absent from the Project area due to a lack of nesting habitat onsite and a lack of observations during protocol-level surveys for other species conducted in 2023. Based on the results of the habitat evaluation and focused surveys, species that are protected by the state (California Department of Fish and Wildlife [CDFW]) and the MBTA and have a potential to occur in the Project area include:

- long-eared owl (*Asio otus*; state special concern, MBTA)
- California horned lark (*Eremophila alpestris actia*; MBTA)
- San Joaquin pocket mouse (*Perognathus inornatus*; CDFW imperiled)
- burrowing owl (under consideration as candidate for state listing)
- merlin (*Falco columbarius*; MBTA)
- prairie falcon (*Falco mexicanus*; MBTA)
- Townsend's big-eared bat (*Corynorhinus townsendii*; state special concern)

In addition, six state-listed or candidate species were observed within the Project area and immediate vicinity:

- Crotch's bumble bee (state candidate)
- Swainson's hawk (state threatened)
- loggerhead shrike (*Lanius ludovicianus*; state special concern, MBTA)
- LeConte's thrasher (*Toxostoma lecontei*; state special concern, MBTA)
- desert kit fox (*Vulpes macrotis arsipus*; CDFW sensitive species)
- American badger (*Taxidea taxus*; state special concern).

Project activities including grading, vegetation removal, noise, and dust generation activities could impact state and MBTA protected species. Tree and shrub habitat is present within the Project area and provides nesting habitat for migratory birds. Removal of nesting habitat has the potential to impact birds protected under the MBTA and state regulations. The Project would require WEAP training, general avoidance measures, nesting bird avoidance and minimization, avian collision reduction, burrowing owl avoidance and minimization, Swainson hawk avoidance and minimization, Mohave ground squirrel impact avoidance and minimization, and American badger, desert kitfox, and ringtail avoidance and minimization. Therefore, the Project is not expected to result in significant impact to state and MBTA protected species.

All Project-related vegetation removal and initial ground disturbance should avoid the nesting bird season, which is generally from February to September, but can vary based on weather conditions. Should construction occur during nesting season, pre-construction clearance surveys and biological monitoring protocols would be implemented. Most species may be impacted indirectly through habitat loss, alteration, or fragmentation. Due to the small scale of development and location of the gen-tie line adjacent to roads and other existing infrastructure, the Project is not expected to result in significant impacts to state-listed or candidate species. Biological monitoring would be implemented to further reduce the risk of impacting sensitive species in or near the Project. Therefore, impacts to biological resources, including threatened and endangered species, resulting from the construction and operation of the facility and gen-tie line would not be significant.

3.9 Socioeconomics

The Project site is located in unincorporated Kern County, California, in a relatively undeveloped area, in proximity to the Kern-Los Angeles County line. The Project is located near the community of Rosamond and south of Mojave, California and the nearest incorporated community is the city of Lancaster, California, located in Los Angeles County, approximately 9 miles south of the Project site.

Beneficial socioeconomic impacts would occur from the construction and operation of the WRESC facility and gen-tie lie from increased employment opportunities, tax revenue generation, and direct and indirect spending in the local economy. The average workforce over the 60-month construction period is expected to be approximately 275 workers and would commute to the Project site. Project operations at the WRESC site would require 40 full-time employees over the Project lifespan of 50 years or more. The gen-tie line would not generate any permanent employment. The Applicant expects to use available workers from the local and regional area who would commute from surrounding communities.

Given the jobs that would be created during construction and operation of the facility and gen-tie line and the availability of housing and public services available in the area, no significant adverse socioeconomic impacts are anticipated.

3.10 Health and Safety

A Phase I Environmental Site Assessment conducted in February 2023 for the WRESC site, Assessor Parcel Number 431-022-13 (WSP 2023). The Phase I report concluded that there is no evidence of recognized hazardous environmental conditions in connection with the Project location or property (WSP 2023). In addition, a limited Phase I Environmental Site Assessment was conducted along the gen-tie corridor (CEC 2025). This report examined the potential for existing recognized environmental conditions along the preferred 19-mile route by examining the Phase I Environmental Site Assessments prepared for other industrial/commercial properties along the route for any indication of environmental contamination. It found none existed.

3.10.1 Worker Safety Hazards

Hazards to worker health and safety anticipated during construction and operation of the WRESC facility include motor vehicle and heavy equipment use, forklift operation, working at elevated locations, using cranes and derricks, working with flammable and combustible liquids, hot work, working on electrical equipment and systems, exposure to hazardous waste, confined space entry, construction and testing of high-pressure steam and air systems, use of explosives, underground excavation activities, shaft drilling, working outdoors and in a remote location, and working near water. The hazards posed by these activities, generally, include injury from collisions with equipment, falls from elevations, falling loads, loose wall rock falls, use of hand a portable power tools, contact with hazardous energy sources, and fire; exposure to hazardous gases, vapors, dusts, and fumes, ultraviolet radiation, contaminated soil, groundwater, debris, occupational noise; heat and cold stress; slips trips and falls; and lightning strikes when working outdoors.

At the WRESC site, construction of the cavern would require drilling and controlled detonation of explosives. Additionally, according to rock samples collected from three core holes drilled at the proposed cavern site, the average quartz content is 26 percent. Worker exposure to respirable crystalline silica is therefore likely to occur. The Project site is in an area known to yield concentrated *Coccidioides ssp.* spores, the pathogen that causes the disease known as valley fever, within the soil that are easily released during construction activities. Workers would therefore be at risk of developing valley fever from exposure to fugitive dust. The Applicant would implement a Valley Fever Management Plan, which would address worker exposure to dust and valley fever. The Applicant would also prepare a Construction Underground Fire Protection Plan to protect workers underground.

Measures for worker safety during detonation of explosives include compliance with all MSHA regulations and preparation of a Construction Controlled Detonation (Plan which includes written notification of all residents or owners of dwellings within a five-mile radius. The Construction Controlled Detonation Plan also includes a signaling system to alert onsite workers of an impending blast and prohibiting controlled detonations during extreme fire danger periods.

Operation of the WRESC facility would involve limited use of construction equipment such as forklifts for materials delivery. Operation would not present a routine hazard to workers. Impacts to worker safety resulting from the construction and operation of the WRESC facility would not be significant.

Construction of the gen-tie line would involve use of heavy equipment and work at heights for work on the towers and installation of the transmission line. The construction would be implemented in accordance with Cal OSHA regulations and only workers with proper safety training for work on electrical lines would be used during electrical line installation. Maintenance of the gen-tie line would also require workers to operate at heights and the maintenance activities would be conducted in accordance with State and federal laws for protection of worker safety. Impacts to worker safety from construction and operation of the gen-tie line would not be significant.

3.10.2 Hazardous Materials

Hazardous materials such as sealants, adhesives, spent welding materials, paint and paint thinner, solvents, detergents, glycols, and refrigerants would be used during construction. Passivating, or cleaning a metal surface by removing contaminants to enhance corrosion resistance, and chemical cleaners and lubricating oil would be used on various mechanical equipment during construction and operation. Hydraulic fluid, motor oil, diesel fuel, and gasoline would also be used on site for motorized equipment and emergency generator use. To power small equipment, lead acid batteries, alkaline batteries, and electrical fuses would be used on the WRESC site. The types of paint required are dictated by the equipment and structures that must be coated and by the service conditions and environment. There would be minor risks associated with use and storage of these materials. Small oil or diesel fuel spills could occur during refueling activities or lubrication of equipment at the WRESC site. The largest potential chemical release incident that could occur on site would be a vehicle accident involving a service or refueling truck, which is considered to be the worst-case scenario for a chemical release.

Most of the hazardous substances that would be stored and used at the WRESC site during operation would be for water treatment. Some hazardous materials, such as lubricating oil and insulating oil, would also be stored for equipment maintenance. Table 10 lists the hazardous materials that would be stored on site during operation. During Project operation, two substances listed in the federal and/or state regulated substance list, ChemTreat BL1280 and ChemTreat BL1559, which would be used in the thermal management system water treatment cycle would be delivered to and stored continuously on site. The quantity stored of ChemTreat BL, which would be used and would be delivered to the Project site as needed for continuous operation, would surpass the state regulated substance threshold quantity, therefore classifying it as a regulated substance. Without proper engineering controls, unlikely event of an accidental release could result in the mixing of incompatible chemicals, generating vapors that could put the public at risk from exposure to harmful vapors. ChemTreat BL 1559, which would be used for thermal management system water treatment is a federally regulated substance and would be the only flammable chemical used on site. Other flammable substances that would be used on site are diesel, lubrication oil, and natural gas.

Table 100: Use and Location of Hazardous Materials

Chemical	Use	Quantity Initial Fill/ Continuous Storage (gallons)	Storage Location	State	Type of Storage
ChemTreat BL 1280	Thermal Management System Water Treatment	70/180	On site	Liquid	Continuously on site
ChemTreat BL 1559	Thermal Management System Water Treatment	30/180	On site, tight, closed container, cool, and locked	Liquid	Continuously on site
ChemTreat CL 2900	Cooling Water Treatment	8,400/660	On site	Liquid	Continuously on site
ChemTreat CL 2150	Slimicide	5,200/660	On site, store locked	Liquid	Continuously on site
Sodium Hypochlorite	Oxidant Wash, Chlorination, Prechlorination	180/180	On site	Liquid	Continuously on site
Diesel Fuel	Vehicle Use and Emergency Generator	11,800/11,800	On site	Liquid	Continuously on site

Source: (WSP 2024b)

Storage and use of hazardous materials at the WRESC site are governed by laws, ordinances, regulations, and standards established and enforced at the federal, state, and local levels. During both construction and operation, the facility would comply with all applicable laws and regulations regarding the handling of hazardous waste. Proper use and storage of hazardous materials would minimize potential for accidental release. Regulated substances used during Project operations would be minimized, stored, and handled per regulations. ChemTreat BL 1559 would be stored in site in tight, closed containers that would be kept cool and locked. The Project would meet California Fire Code (Articles 79 and 80) requirements for safe storage and handling of hazardous materials as well as with regulations outlined in Kern County Fire Code. Project personnel would regularly inspect all hazardous material storage areas for compliance with applicable federal, state, and local regulations and would ensure that any deficiencies are promptly resolved. The Project could also be subjected to inspections by the Kern County Hazardous Materials Program or the Kern County Fire Prevention Office. In the unlikely of a spill or leak that could contaminate soil, the Kern County Public Health Services Department Certified Unified Program Agency program would be notified. All remedial activities, soil storage, and disposal would comply with federal, state, and local ordinances; generated waste would be disposed of within 90 days of generation.

For emergency spills or fire-related incidents, the Kern County Fire Station Number 15, located 8.1 miles southwest of the Project site at 3219 35th Street W in Rosamond, California, would provide first response to the Project site. The Applicant would prepare a Hazardous Materials Business Plan and a Spill Prevention Control and Countermeasure Plan for the WRESC site.

Due to the WRESC site's distance from sensitive receptors, compliance with federal and state standards for storage of hazardous materials, Project design features, and use of engineering controls for storage regulated substances, effects on the environment from use and storage of hazardous materials would not be significant. Compliance with applicable regulations for the transport of hazardous materials and use of approved hazardous material delivery routes would ensure that impacts to health and safety from hazardous material transport would not be significant. Proper containment and management of any

hazardous materials encountered in soil or groundwater during construction as outlined in a Soils Management Plan, as well as compliance with federal, state, and local regulations and standards would ensure that impacts on health and safety resulting from construction and operation of the WRESC facility would not be significant.

Construction and maintenance of the gen-tie line would require use of heavy equipment containing small quantities of fuels, lubricants, etc. in the event of any spills of hazardous materials, the Applicant would cleanup the spill. No hazardous materials would be stored at the work sites for the gen-tie line and no refueling would occur along the gen-tie line during construction and operation. Due to the limited risk of any spill of hazardous materials and proper response to any accidental leaks of hazardous materials the impact from hazardous materials during gen-tie construction and operation would not be significant.

3.11 Waste Management

The Project would generate nonhazardous and hazardous waste during construction and operation. Multiple locations will accept the anticipated waste streams generated by the Project.

Construction of the Project would generate non-hazardous solid wastes, hazardous waste, and wastewater. Non-hazardous solid wastes would include paper, wood, glass, insulation, plastics, concrete, soil, and bedrock. Wastewater would include sanitary waste, excavation water, stormwater, hydrotest water (i.e., water used to test equipment and piping), equipment washdown water, and water from construction dewatering activities. The Applicant would prepare a Construction Waste Management Plan for all wastes generated during construction of the facility and gen-tie line. The gen-tie line is anticipated to produce less than five percent of the total waste generated by Project construction. Hazardous waste would include empty hazardous materials packaging and containers, used oil filters, used oil, oily rags and sorbents used to clean small spills or wipe down oily equipment, solvents, detergents, glycols, and refrigerants including paint and adhesives for construction and startup activities spent lead acid batteries and spent alkaline batteries, and passivating and chemical cleaning waste generated by pipe cleaning and flushing. Hazardous waste would be stored on-site for less than 90 days and disposed of at the California Class I landfills Kettleman Hills Facility and/or Clean Harbors Buttonwillow Landfill. During Project construction, wastewater streams would be generated from sanitary waste, excavation water, stormwater, hydrotest water (water used to test equipment and piping), equipment washdown water, and dewatering activities from general construction activities.

Construction of the cavern would result in the excavation of approximately 1.3 mcy of rock that is expected to be of aggregate quality. Where feasible, subsurface material would be used for grading the Project site or it may be used to construct the architectural berm. Options for disposing and managing the extracted rock under the no berm scenario would include transportation offsite to a regional off-taker for beneficial reuse in the concrete aggregate market.

Operation of the Project is anticipated to generate non-hazardous and hazardous waste at the WRESC site, including non-hazardous wastewater in the form of industrial wastewater and sanitary water from facility bathrooms. Operation of the Project would generate less hazardous waste than during construction. Although the primary waste stream would be non-hazardous, the potential exists for varying quantities of hazardous waste to be generated on a periodic basis. Hazardous waste generated by Project operation would include lubricating oil and insulating oil, lubricating-oil filters, oily rags, oil sorbents, and controlled waste streams such as smoke detectors, instrumentation, and fire extinguishers. The Applicant would prepare an Operation Waste Management Plan for all wastes generated during operation of the WRESC facility. No waste would be generated during operation of the gen-tie line

During Project operation, wastewater streams would be recycled on site by water treatment systems or collected in tanks for ultimate disposal by third-party vendors. Equipment with oily residues would not be washed down, and the site would be developed so that no industrial stormwater is discharged off site. Stormwater produced on the site would be collected and directed to an on-site, unlined stormwater pond.

Oil water separators would be provided to prevent oil from entering the stormwater pond. Sanitary wastewater generated by the Project during construction and operation would be removed by a contracted sanitary service. Industrial wastewater generated during operation would be placed in a holding tank and trucked off site by a privately owned industrial wastewater processor. Hydrotest water generated during construction would be disposed of appropriately off site.

The Applicant would dispose of non-hazardous waste, including construction waste, municipal waste, and operational garbage, at a Class III landfill. Hazardous waste would be stored on-site for less than 90 days and would be transported to a Class I landfill.

Waste generated during construction and operation of the WRESC facility and gen-tie line is not expected to generate quantities of waste such that the surrounding accepting facilities cannot accommodate the additional materials. Therefore, the impact on solid waste recycling, disposal capacity, and hazardous waste disposal as a result of the Project would not be significant.

3.12 Geological Hazards and Resources

3.12.1 Regional Geology, Faulting, and Seismicity

The Project area is in the Mojave Desert geomorphic province of California (CGS 2002). The Mojave Desert province is a broad region of isolated mountain ranges that are separated by desert plains. The western edge of this geomorphic province is wedged between the Garlock Fault and the San Andreas Fault. The Project area is located within the Rosamond 15-minute quadrangle in the Rosamond Hills, which are covered mainly by alluvial gravel and sand of the Quaternary Period. The alluvial deposits within the valley are underlain mostly by a quartz monzonite bedrock (Dibblee Jr 1959).

The tectonic setting of Southern California is complex and made up of numerous fault systems, including strike-slip, oblique, thrust, and blind thrust faults. Any given area is subject to seismic hazards of varying degrees, dependent on the proximity to and the length of nearby active faults, potentially active faults, and the local geologic and topographic conditions. Seismic hazards include primary hazards, such as seismic shaking and ground rupture along the fault trace, and secondary hazards resulting from strong ground shaking, such as liquefaction and lateral spreading. The proposed WRESC site can be characterized as an active seismic area, with the potential for large-magnitude earthquakes to occur.

The California Geological Survey (CGS) Fault Activity Map web application was used to identify major fault zones within 62 miles of the WRESC Site. The active Garlock Fault is approximately 15 miles northwest of the proposed WRESC site, and the active San Andreas Fault Zone is approximately 20 miles southwest of the site (Jennings and Bryant 2010). Both faults are active and have generated major earthquakes. Additionally, the potentially active Willow Springs Fault is approximately 8 miles west/southwest of the proposed WRESC site.

The epicenter locations of historic earthquakes (magnitude 5.0 or greater) occurring from 1796 through 2015 were also identified (CGS 2016). The closest identified earthquake to the WRESC site had a magnitude of 5.9 and occurred approximately 14.5 miles to the southwest. Two earthquakes with magnitude 7.0 or higher occurred within 62 miles of the WRESC site at the Pleito and San Andreas fault zones.

According to the Geologic Map and Sections of the Rosamond Quadrangle, California, map, quartz monzonite covers the extent of the proposed WRESC site (Dibblee Jr 1959; CGS n.d.). However, site-specific geotechnical exploration performed by geologists better delineated the extent of alluvium or quartz monzonite and confirmed there is a fairly thin (less than 10 feet thick) layer of alluvium at the existing ground surface across most of the permanent disturbance areas. Areas north and east of the WRESC site, possibly in portions of the temporary impact areas, can be expected to contain a varying thickness alluvial sands and gravels at the surface overlying the quartz monzonite. Three pre-Quaternary faults are mapped within 1.5 miles of the Project area, the closest within approximately 0.25 mile. A

subsurface geotechnical investigation of the gen-tie line was not performed; however, regional geologic mapping shows that Quaternary alluvium and windblown deposits underlie most of the route (CEC 2025).

3.12.2 Potential Geological Hazards

3.12.2.1 Ground Rupture

The CGS Seismic Hazards Program web application was used to determine the WRESC site's proximity to known Alquist Priolo earthquake fault zones (CGS 2017), which are regulatory zones that encompass the minimum distance for human occupancy from active faults that have the potential for surface rupture. No structures designed for human occupancy can be placed within 50 feet of the fault. The proposed WRESC site and the gen-tie line at the nearest point are approximately 15 miles southwest from the nearest Alquist-Priolo fault zone (Garlock fault zone). Because the likelihood for a ground rupture to occur at the proposed WRESC site and along the gen-tie route is considered low to negligible, impacts to ground rupture resulting from construction and operation of the facility and gen-tie line would not be significant.

3.12.2.2 Seismic Shaking

The WRESC site is in a seismically active region and may experience strong ground motions in the event of an earthquake. The WRESC site is ranked by the CGS Earthquake Shaking Potential Map web application as having low to medium shaking potential (Branum et al. 2016). Site-specific hazard analyses were not been performed, but a cursory assessment with the U.S. Geological Survey Earthquake Hazard Toolbox indicates a peak ground acceleration of 0.40 g (where g represents acceleration due to gravity) and mean earthquake magnitude of 7.09 (U.S. Geological Survey (USGS), n.d.). A site-specific probabilistic and deterministic seismic hazard analysis for the Project area will be completed prior to construction to determine the magnitude and duration of seismic shaking and related impacts. Seismic shaking impacts can be mitigated to not significant if an appropriate seismic hazard analysis is conducted, and WRESC facilities are designed to withstand seismic ground motions in compliance with applicable seismic design codes. Furthermore, advancement of the Project was contingent on identifying sound bedrock that is seismically stable at the depth of the underground cavern. Based on the information by geotechnical exploration of the Project area in 2023, it is expected that the bedrock at the cavern target horizons will be seismically stable. Therefore, adverse impacts from seismic shaking are not anticipated.

The gen-tie line will be designed to meet California and national standards for transmission system design, which includes design of structures and foundations to address earthquake susceptibility. Due to proper design in accordance with State and federal standards, impacts on the gen-tie line from strong seismic shaking would not be significant.

3.12.2.3 Liquefaction

Liquefaction is a phenomenon where the strength and stiffness of a typically loose, cohesionless, saturated soil (e.g., sand) are reduced by earthquake shaking or other rapid or cyclic loading. Liquefaction is a function of the presence of groundwater, which at the WRESC site is likely at least 30 feet bgs. Liquefaction generally occurs in the upper 50 to 60 feet of soil, and if groundwater is deeper than 60 feet, impacts of liquefaction are typically not significant.

Liquefaction zone mapping has not been performed within the proposed WRESC site (CGS 2022), but this does not preclude the possibility of liquefaction potential within the Project area. All five soil units within the WRESC site (Muroc, Cajon, Hi Vista, Torriorthents, and Rosamond Clay Loam) may be susceptible to liquefaction. Furthermore, the subsurface conditions encountered during the geotechnical exploration of the Project area are primarily a 7.5-foot-thick surficial layer of alluvium, portions of which have a loose relative density and may be susceptible to liquefaction. However, the alluvium would not

have the potential for liquefaction unless the groundwater elevation increased significantly. NRCS soil mapping shows that two potentially liquefiable soil types may exist at the architectural berm and temporary laydown sites (CEC 2025), adjacent to the WRESC site. To inform the Project's final design, the Applicant will complete and submit a geotechnical and geohazard report for CEC approval prior to construction that includes final grading and facility design refinements to reduce mitigate, to the extent feasible, hazards from seismically induced ground failure, including liquefaction. The risk of liquefaction resulting from construction and operation of the WRESC facility would not be significant.

The gen-tie line would be located in similar geologic units to the WRESC site where the depth to groundwater is unlikely to result in liquefaction. The geotechnical and geohazard report submitted to the CEC for approval would also address the gen-tie line. The risk of liquefaction from construction and operation of the gen-tie line would not be significant.

3.12.2.4 Mass Wasting

The potential for mass wasting (landsliding) to occur depends on a variety of factors, including slope steepness, geology and soil moisture. Mass wasting susceptibility is characterized by the use of classes, zero (0) through ten (X), which class X having the highest mass wasting potential. The WRESC Project site and gen-tie line area is relatively flat and defined as class 0 (CGS 2010). The Project is not considered to have susceptibility to the propagation of landslides. Therefore, impacts to mass wasting resulting from construction and operation of the WRESC facility and gen-tie line would not be significant.

3.12.2.5 Subsidence

Subsidence is the gradual settling of the ground surface over time due to underground material movement. It is most often caused by the removal of groundwater through pumping activities, hydraulic fracturing activities for oil extraction, or mining of other mineral resources. Soil compaction, sinkhole formation, and earthquakes can also cause subsidence. Construction of the WRESC will involve filling the hydrostatic compensation surface reservoir using water purchased from Antelope Valley East Kern Water Agency and water would not be obtained directly from groundwater wells. Additionally, operation of the WRESC will not involve the installation or use of any onsite wells for any purposes. Therefore, impacts to subsidence resulting from construction and operation of the WRESC facility would not be significant.

Construction and operation of the gen-tie line would not require groundwater withdrawal. The volume of water used for dust control during gen-tie construction would be minimal and would not cause subsidence. Gen-tie construction and operation would have no impact on subsidence.

3.12.2.6 Expansive Soils

Expansive soils have the potential to shrink and swell with variations in moisture, which could cause ground instability in the form of differential settlement and potentially damage shallow foundations. For the WRESC and its features, the presence of expansive soils would only be a possible concern for buildings and foundations. The geotechnical exploration of the site indicated the soils within the permanent impact boundary are considered to have negligible shrink-swell potential. Site-specific conditions have not been evaluated across the locations of temporary disturbance but based on the conditions within the WRESC facility site, and review of the geologic map, it is unlikely that the temporary disturbance locations harbor expansive soils. Additionally, neither buildings nor foundations are proposed within the temporary disturbance areas and the presence of expansive soils would be inconsequential. The gen-tie line may contain expansive soils; however, the Applicant would submit a geotechnical and geohazard report to the CEC for review and approval. The report would include final grading and facility design refinements to mitigate hazards from expansive soils. The Applicant would also submit soils, geotechnical, or foundation investigation reports to the Delegate Chief Building Offical for review and approval as required by the 2022 California Building Code. Therefore, impacts related to expansive soils would not be significant.

3.12.2.7 Permanent Slopes and Embankments

Construction of the WRESC includes permanent embankments for the hydrostatic compensation surface reservoir and potentially permanent slopes should the architectural berm be implemented. The embankment and any other permanent slopes will be analyzed for slope stability and designed to achieve appropriate minimum factors of safety for both statis and seismic conditions in accordance with engineering standards. Impacts related to permanent slopes and embankments would not be significant.

The gen-tie line would not require any permanent slopes and embankments. Construction and operation of the gen-tie line would have no impact related to permanent slopes or embankments

3.12.2.8 Settlement

Potential for settlement of native soils underlying the WRESC site will depend on the thickness and characteristics of the native soil and the loading to which it is subjected. Based on the geotechnical exploration of the permanent disturbance areas, settlement of the 7.5-foot-thick alluvium layer would likely be minor, and settlement of the quartz monzonite is likely negligible. The Applicant would analyze and account for settlement as part of the final design and implement construction and/or earthwork techniques to reduce or eliminate potential impacts. Therefore, impacts related to settlement beneath WRESC features would not be significant. Impacts to settlement as a result of construction and operation of the gen-tie line are not anticipated. The architectural berm, if constructed, would be a permanent feature and would not be sensitive to minor amounts of settlement. Impacts related to settlement caused by temporary disturbance activities during construction would not be significant.

3.12.2.9 Collapse of Below-Grade Features

Construction of the WRESC will include the excavation of deep vertical shafts and an underground cavern. The collapse of either or both below-grade features may result in surface settlement and subsidence. The potential impacts related to possible collapse would depend on their design and the site-specific subsurface conditions. However, the weathered quartz monzonite and fresh quarts monzonite encountered at the site are not considered susceptible to collapse (Yeh and Associates, Inc. 2024). The pressurized air storage will increase the stability of the cavern walls, as the existing in-situ horizontal stresses acting inwards into the cavern is greater than the compressed air storage pressures. The storage pressure will provide confinement to the rock mass surrounding the cavern opening spaces, thereby enhancing the stability and safety factors of the cavern. The Applicant would design and construct the proposed underground structures with appropriate civil and structural design criteria and would conduct inspections and maintenance and below-grade features will be properly closed. Therefore, impacts related to collapse of below-grade features during construction and operation of the WRESC facility would not be significant.

Construction and operation of the gen-tie line do not have collapsable characteristics due to the shallow below-grade features of the underground segments; therefore, no impacts related to collapse of below-grade features would occur from construction or operation of the gen-tie line.

3.12.2.10 Reservoir-Induced Seismicity

Reservoir-induced seismicity can be triggered by rising water levels through one of two mechanisms: the adaptation of the foundation rock to changes in stress due to water weight or reservoir seepage that reaches active faults located underneath or adjacent to the reservoir (Dojchinovski et al. 2012). The first mechanism may occur if specific conditions, such as cavities, voids or potentially open discontinuities, are present at the WRESC site. Even if such conditions did exist, this mechanism tends to result in small-magnitude events that would be less than the design earthquake that is selected per the outcome of the seismic hazard analysis and used for the design of the WRESC. Conditions necessary for the second mechanism to occur would not be present at the WRESC site due to the proposed reservoir being

shallow and lined with an engineered low permeability liner; additionally, there are no known active seismogenic structures near the WRESC site. Therefore, impacts related to reservoir-induced seismicity resulting from construction and operation of the facility would not be significant.

The gen-tie line construction and operation would not involve any activities that could cause reservoir induced seismicity, thus no impact related to reservoir induced seismicity would occur from gen-tie construction or operation.

3.12.2.11 Compressed Air Induced Seismicity

Potential impacts related to compressed air or water induced seismicity would be considered credible if the vertical shafts and/or underground cavern of the proposed WRESC intersected an active fault, but, because there are no known active faults near the proposed WRESC facility site, no impacts to compressed air induced seismicity resulting from construction or operation of the facility would occur.

The gen-tie line would not involve use of compressed air. No impacts related to compressed air induced seismicity would occur from gen-tie construction or operation.

4. FINDING OF NO SIGNIFICANT IMPACT

Based on this EA, DOE EDF has determined that providing a federal loan guarantee to Hydrostor, Inc to construct and operate the WRESC site and gen-tie line (together, the Project) would not have a significant effect on the human environment. Preparation of an environmental impact statement is not required, and DOE is issuing this Finding of No Significant Impact

This Finding of No Significant Impact should not be construed as a final decision about issuance of a loan guarantee.

TODD STRIBLEY Digitally signed by TODD STRIBLEY Date: 2026.06.30 12:59:33 -06'00'

June 30, 2026

Todd Stribley
Director, Environmental Programs
DOE Energy Dominance Financing

Date

5. LIST OF AGENCIES CONTACTED

5.1 Federal

Department of Defense
Edwards Air Force Base
Federal Aviation Administration
U.S. Army Corps of Engineers
U.S. Bureau of Land Management
U.S. Environmental Protection Agency, Region 9
U.S Fish and Wildlife Service

5.2 State

California Air Resources Board
California Department of Conservation
California Department of Fish and Wildlife
California Department of Water Resources, Division of Safety of Dams
California Energy Commission
California Environmental Protection Agency
California Governor's Office of Planning and Research
California Native American Heritage Commission
California Office of Historic Preservation
CalTrans
California Water Resources Control Board
Lahontan Regional Water Quality Control Board

5.3 Local

Antelope Valley East Kern Water Agency
East Kern County Air Pollution Control District
Kern County Assessor
Kern County Auditors Office
Kern County Fire Department
Kern County Planning and Natural Resources Department
Kern County Public Health Services Department – Hazardous Materials Program
Kern County Public Works
Kern County Sheriffs Department
Kern County Treasurer – Tax Collector

5.4 Native American Tribes

Big Pine Paiute Tribe of the Owens Valley
Coastal Band of the Chumash Nation
Fernandeno Tataviam Band of Mission Indians
Fort Independence Indian Community of Paiute Indians of the Fort Independence Reservation, California
Kern Valley Indian Community
Kitanemuk & Yowlumne Tejon Indians
Quechan Tribe of the Fort Yuma Reservation
San Fernando Band of Mission Indians

Tejon Indian Tribe
Te-Moak Tribe of Western Shoshone Indians of Nevada
Tule River Indian Tribe
Yuhaaviatam of San Manual Nation

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APPENDIX A AGENCY AND TRIBAL CORRESPONDENCE

Organization	Contact Date(s)	Summary of Contact
Appendix A1 – Notice of Intent to Prepare an Environmental Assessment and NEPA Reinitiation Letter		
Interested Parties including: ■ California Governor's Office of Planning and Research ■ Federal Aviation Administration ■ U.S. Bureau of Land Management ■ Edwards Air Force Base ■ U.S. Army Corps of Engineers ■ U.S. Fish and Wildlife Service ■ U.S. Environmental Protection Agency, Region 9 ■ California Native American Heritage Commission ■ California Energy Commission ■ California Air Resources Board ■ California Department of Fish and Wildlife ■ California Governor's Office of Planning and Research ■ Lahontan Regional Water Quality Control Board ■ California Water Resources Control Board ■ California Department of Conservation ■ California Environmental Protection Agency ■ Caltrans ■ California Office of Historic Preservation ■ California Department of Water Resources, Division of Safety of Dams ■ Kern County Planning and Natural Resources Department ■ Kern County Fire Department ■ Kern County Public Works ■ East Kern Air Pollution Control District ■ Kern County Public Health Services Department - Hazardous Materials Program ■ Antelope Valley East Kern Water Agency ■ Kern County Treasurer – Tax Collector ■ Kern County Auditor's Office ■ Kern County Assessor ■ Kern County Sheriff's Department ■ Adams Broadwell Joseph & Cardozo*	June 25, 2024	Notification Letter to Interested Parties to Prepare an Environmental Assessment.
	October 7, 2024	EDF Letter to Interested Parties pausing the preparation of the Environmental Assessment.
	July 16, 2025	EDF sent a NEPA reinitiation letter to Interested Parties.

*Adams Broadwell Joseph & Cardozo were added to the Interested Parties distribution list on 10/3/2024 and received the 10/7/2024 and 7/16/2025 letters.

Organization	Contact Date(s)	Summary of Contact
Appendix A2 – Tribal Consultations		
Tribal Consultations: ■ Big Pine Paiute Tribe of the Owens Valley[1] ■ Quechan Tribe of the Fort Yuma Reservation ■ Yuhaaviatam of San Manual Nation[1] ■ Tejon Indian Tribe ■ Tule River Indian Tribe ■ Fort Independence Indian Community of Paiute Indians of the Fort Independence Reservation, California[1, 2] ■ Te-Moak Tribe of Western Shoshone Indians of Nevada[2] ■ Coastal Band of the Chumash Nation ■ Fernandeno Tataviam Band of Mission Indians ■ Kern Valley Indian Community ■ Kitanemuk & Yowlumne Tejon Indians ■ San Fernando Band of Mission Indians	June 25, 2024	Notification Letter to Tribes of Federal Project (NEPA) per NHPA Section 106 and Request for Level of Interest.
	October 7, 2024	EDF Letter to Tribes pausing the preparation of the Environmental Assessment but NHPA coordination ongoing.
	July 16, 2025	EDF sent a NEPA reinitiation letter to Tribes.
	July 16, 2025	Notification Letter from EDF to Big Pine Paiute Tribe of the Owens Valley, Yuhaaviatam of San manual Nation, and Fort Independence Indian Community of Paiute Indians of the Fort Independence Reservation, California NHPA Section 106 Request for Information and Finding of Adverse Effect.
Appendix A3 – SHPO Section 106 Consultation		
California State Historic Preservation Officer (SHPO)	June 25, 2024	Letter from EDF to SHPO: Section 106 Initiation.
	July 16, 2025	Letter from EDF to SHPO: Request for Finding of Adverse Effect concurrence.
	September 2, 2025	Letter from SHPO to EDF: Comments on determination of eligibility and request or clarification.
	June 5, 2026	Letter from EDF to SHPO: response to comments and request Finding of No Adverse Effect concurrence.
	June 23, 2026	Letter from SHPO to EDF: concurrence with Finding of No Adverse Effect.
Appendix A4 – USACE Jurisdictional Determination		
U.S. Army Corps of Engineers (USACE), Albuquerque District – Southern Colorado Branch	March 26, 2024	Email from Panorama to USACE: Request for Jurisdictional Determination.
	October 1, 2024	Letter from USACE to GEM A-CAES: Determination of Need for Department of the Army Permit.
Appendix A5 – Department of Defense		
Department of Defense (DOD)	January 30, 2024	Email from Hydrostor to DOD: Notification of Project.
Appendix A6 – USFWS Section 7 Consultation		
U.S. Fish and Wildlife Service (USFWS), Indiana Ecological Services Field Office		

[1] Big Pine Paiute Tribe of the Owens Valley, Yuhaaviatam of San manual Nation, and Fort Independence Indian Community of Paiute Indians of the Fort Independence Reservation, California were the Tribes who expressed interest in the Project; therefore, they were the only Tribes sent the 7/16/2025 letter.

[2] Fort Independence Indian Community of Paiute Indians of the Fort Independence Reservation, California and Te-Moak Tribe of Western Shoshone Indians of Nevada did not receive the initial notification letter until 7/26/2024.

U.S. Fish and Wildlife Service (USFWS)	July 16, 2025	Letter from EDF to USFWS: Section 7 consultation.
	August 15, 2025	Letter from USFWS to EDF: concurrence with determination that the proposed Project is not likely to adversely affect the Mojave desert tortoise or the California condor. Fulfills Section 7 requirements.

Department of Energy
Washington, DC 20585

June 25, 2024

SUBJECT: The U.S. Department of Energy's intent to Prepare an Environmental Assessment for a proposed Federal Loan Guarantee for the Willow Rock Energy Storage Center in Kern County, California.

Dear Interested Party,

Title XVII of the Energy Policy Act of 2005 (EPAct) established a federal loan guarantee program for certain projects that employ innovative technologies and authorizes the Secretary of Energy to make loan guarantees available for those projects. Hydrostor USA Holdings Inc. (the Applicant) has applied for a loan guarantee pursuant to the U.S. Department of Energy's (DOE's) Renewable Energy and Efficient Energy Projects Solicitation (Solicitation Number: DE-SOL-0007154) under Title XVII, Innovative Energy Loan Guarantee Program, authorized by EPAct, (REEE Projects). DOE is evaluating whether to provide a federal loan guarantee to support the development of the proposed Willow Rock Energy Storage Center (WRESC or the Project) located within unincorporated, southeastern Kern County, California. The decision to prepare an Environmental Assessment (EA) for the Project was made in accordance with the requirements of the National Environmental Policy Act (NEPA), the Council on Environmental Quality regulations for implementing the procedural provisions of NEPA (40 CFR Parts 1500-1508), and DOE's implementing procedures for compliance with NEPA (10 CFR Part 1021).

The purpose and need for agency action is to comply with the DOE mandate under Title XVII of the EPAct to select projects for loan guarantees that are consistent with the goals of the Act. The DOE Loan Programs Office (LPO) has determined that the Project as proposed is eligible pursuant to Section 1703 of EPAct and that it complies with DOE's mandate as defined in the Act. DOE is using the NEPA process to assist in determining whether to issue a loan guarantee to support the development of the Project. A goal of DOE's financial assistance for REEE Projects is to support the construction and startup of projects and facilities located in the United States that employ that employ innovative and renewable or efficient energy technologies that avoid, reduce, or sequester anthropogenic emission of greenhouse gases.

The proposed facility would be situated on up to 163.2 acres of land located immediately north of Dawn Road and between State Route (SR) 14 and Sierra Highway. The WRESC would be designed to charge and discharge up to 520-megawatts (MW) and 4,160 megawatt-hours (MWh) of energy using proprietary, advanced compressed air energy storage (A-CAES) technology. Energy stored at the WRESC would be delivered to Southern California Edison's (SCE) Whirlwind Substation located approximately 19 miles southwest of the WRESC at the intersection of 170th Street W. and Rosamond

Boulevard, via a new 230-kilovolt (kV) generation-tie (gen-tie) line (Figure 1). The proposed facility would consist of transmission systems, cooling systems, operation and maintenance facilities, other ancillary support systems, and temporary construction areas (Figures 2 and 3).

Construction activities would provide additional job opportunities within the local community during the 60 months of construction, ranging from an average construction workforce of 273 workers and peak workforce estimated at 749. During operations, once the facility is ramped to its full output capacity, it would employ 40 full time employees, including engineers, managers, administrative support personnel, technicians, facility and equipment, maintenance workers, factory operators, and logistics personnel.

The DOE NEPA regulations provide for the notification of host states of NEPA determinations and for the opportunity for host states to review EAs prior to DOE approval. This process is intended to improve coordination and to facilitate early and open communication.

If you or your staff would like to receive further information concerning this project or DOE's NEPA process, please contact me in the DOE Loan Programs Office by email at LPO_Environmental@hq.doe.gov or by telephone at 202-586-8716.

Sincerely,

KARA HARRIS Digitally signed by KARA HARRIS Date: 2024.06.25 09:20:55 -04'00'

Kara Harris
Federal NEPA Document Manager
Loan Programs Office

Attachments:
Figure 1: Project Overview
Figure 2: Proposed Willow Rock Energy Storage Center Site with Aerial Imagery
Figure 3: Proposed Willow Rock Energy Storage Center Site with Topographic Basemap

Figure 1 *Project Overview*

Figure 2 *Proposed Willow Rock Energy Storage Center Site with Aerial Imagery*

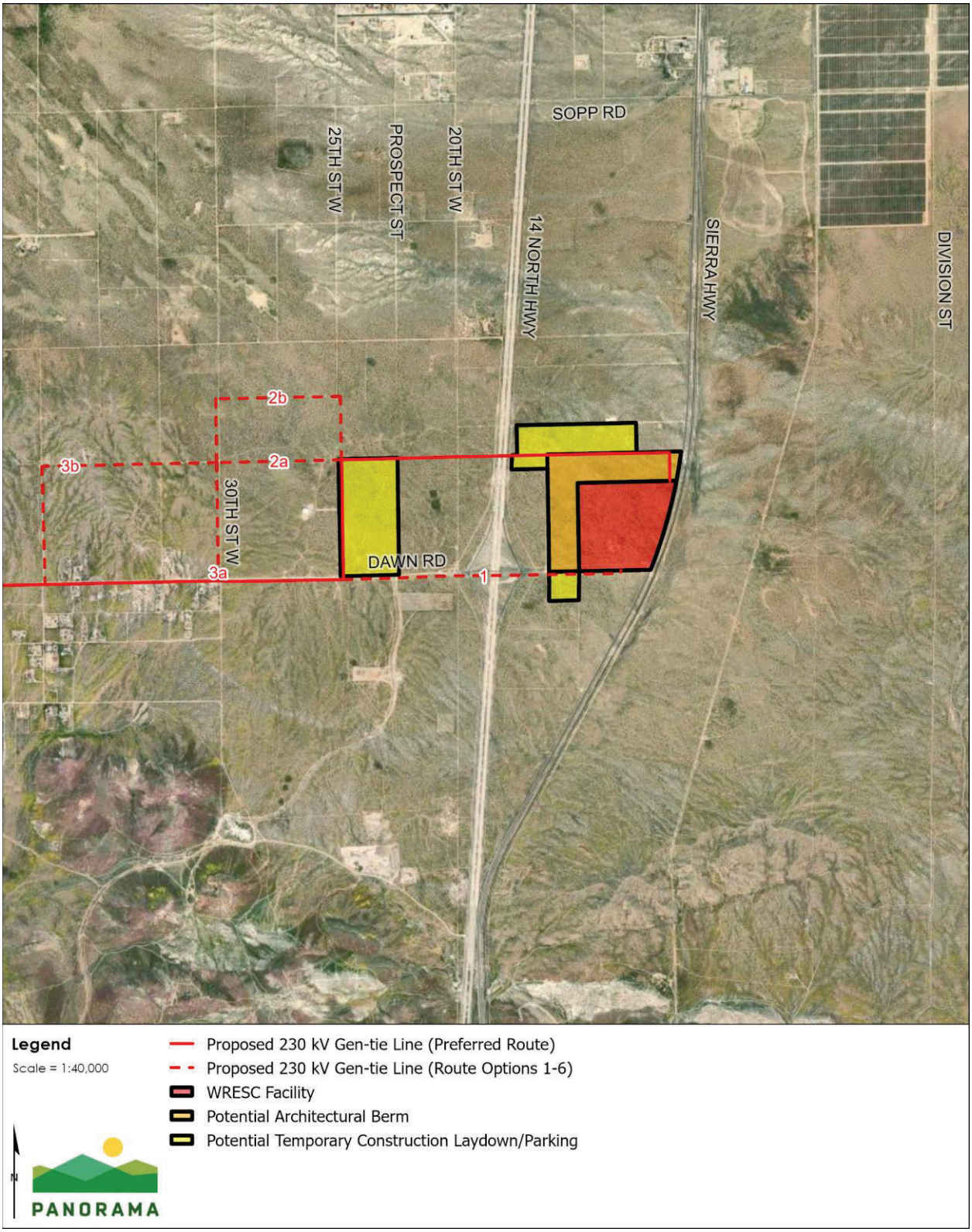
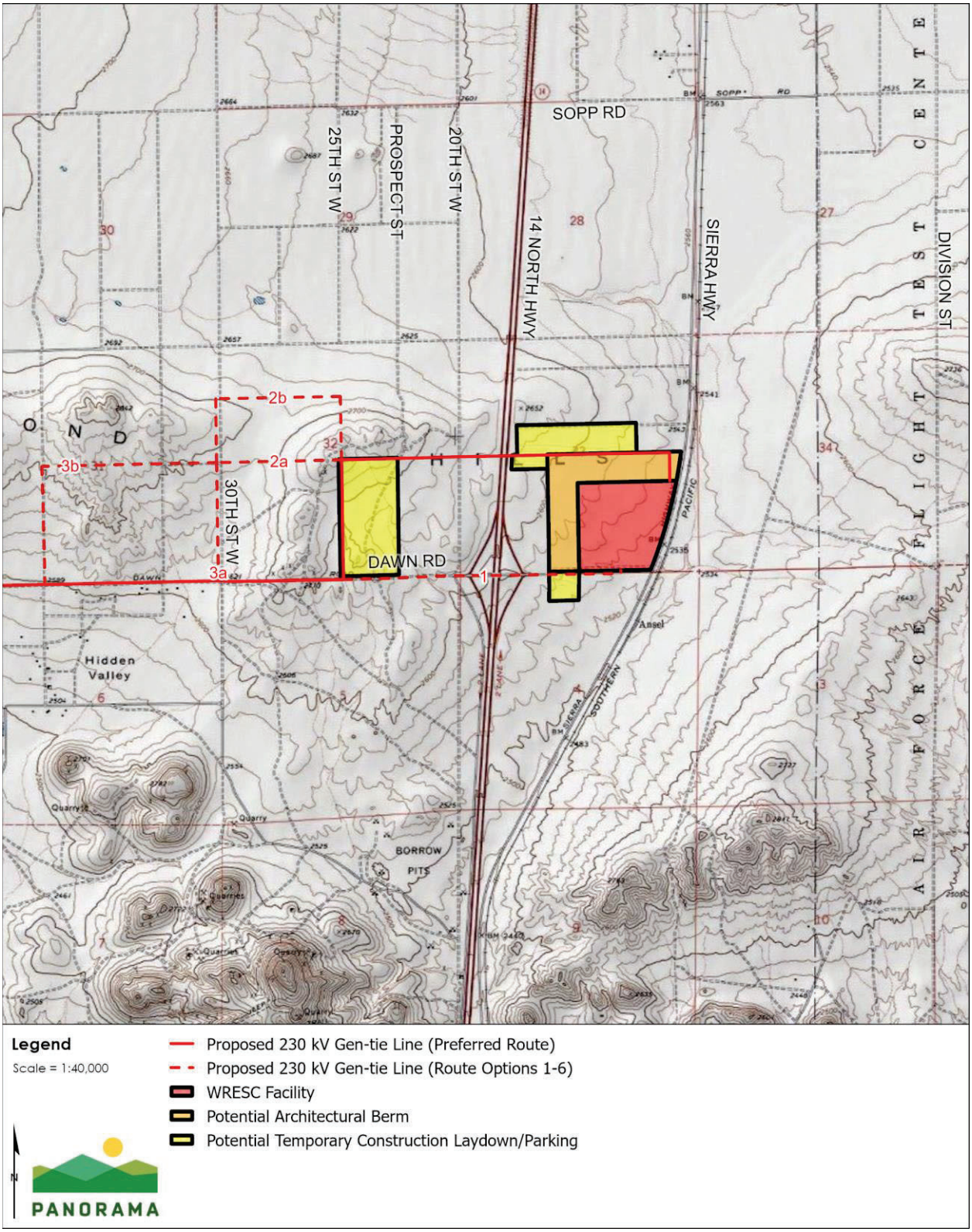


Figure 3 *Proposed Willow Rock Energy Storage Center Site with Topographic Basemap*



Department of Energy
Washington, DC 20585

October 7, 2024

SUBJECT: The U.S. Department of Energy is pausing the preparation of the Environmental Assessment for the Willow Rock Energy Storage Center in Kern County, California.

Dear Interested Party,

On June 25, 2024, the U.S. Department of Energy (DOE) Loan Programs Office (LPO) sent a letter to you regarding its intent to prepare an Environmental Assessment (EA) pursuant to the National Environmental Policy Act (NEPA) for a potential Federal loan guarantee to Hydrostor USA Holdings Inc. (the Applicant) to support construction of the Willow Rock Energy Storage Center in Kern County, California (Project). The decision to prepare an Environmental Assessment (EA) for the Project was made in accordance with the requirements of NEPA, the Council on Environmental Quality regulations for implementing the procedural provisions of NEPA (40 CFR Parts 1500-1508), and DOE's implementing procedures for compliance with NEPA (10 CFR Part 1021).

The California Energy Commission (CEC) is conducting an environmental review of the Project pursuant to the California Environmental Quality Act (CEQA). On September 9, 2024, the CEC issued a Revised Scheduling Order identifying the anticipated environmental review schedule. This letter is to inform you that to keep the NEPA and CEQA processes aligned and in compliance with NEPA §1501.10(b)(1), LPO has paused its NEPA review of the Project. LPO will continue to pursue the required federal agency consultations, including consultation under Section 106 of the National Historic Preservation Act.

If you or your staff have any questions concerning this project or DOE's NEPA process, please contact me in the DOE Loan Programs Office by email at LPO_Environmental@hq.doe.gov or by telephone at 202-586-8716.

Sincerely,

KARA HARRIS Digitally signed by KARA HARRIS
Date: 2024.10.07 10:37:47 -04'00'

Kara Harris
Federal NEPA Document Manager
Loan Programs Office

Department of Energy
Washington, DC 20585

July 16, 2025

SUBJECT: The U.S. Department of Energy is reinitiating the preparation of the Environmental Assessment for the Willow Rock Energy Storage Center in Kern County, California.

Dear Interested Party,

The U.S. Department of Energy (DOE) Loan Programs Office (LPO) is preparing an Environmental Assessment (EA) pursuant to the National Environmental Policy Act (NEPA) of 1969 (42 United States Code [U.S.C] 4321-4347) for a potential Federal loan guarantee to Hydrostor USA Holdings Inc. (Applicant) to support construction of the Willow Rock Energy Storage Center in Kern County, California (Project). On October 7, 2024, a letter was sent regarding the pause in preparation of the EA for the Project. This letter is to inform you that LPO is reinitiating the NEPA review of the Project and will continue preparation of the EA. This EA is being prepared in accordance with the NEPA statute (42 U.S.C. 4321-4347), DOE's NEPA regulations (10 CFR Part 1021), and DOE's NEPA implementing procedures published on June 30, 2025.

The proposed facility would be situated on up to 163.5 acres of land located immediately north of Dawn Road and between State Route (SR) 14 and Sierra Highway. The Willow Rock Energy Storage Center (WRESC) would be designed to charge and discharge up to 520-megawatts (MW) and 4,160 megawatt-hours (MWh) of energy using proprietary, advanced compressed air energy storage (A-CAES) technology. Energy stored at the WRESC would be delivered to Southern California Edison's (SCE) Whirlwind Substation located approximately 19 miles west of the WRESC at the intersection of 170th Street W. and Rosamond Boulevard, via a new 230-kilovolt (kV) generation-tie (gen-tie) line (Figure 1). The proposed facility would consist of transmission systems, cooling systems, operation and maintenance facilities, other ancillary support systems, and temporary construction areas (Figure 2).

Construction activities would provide additional job opportunities within the local community during the anticipated 60 months of construction, ranging from an expected average construction workforce of 273 workers and peak workforce estimated at 749. During operations, once the facility is ramped to its full output capacity, it is expected to employ up to 40 full time employees, including engineers, managers, administrative support personnel, technicians, facility and equipment, maintenance workers, factory operators, and logistics personnel.

If you would like to receive further information concerning this project or DOE's NEPA process, or if you have suggestions with respect to an environmental impact for LPO's consideration, please contact me in the DOE Loan Programs Office by email at

LPO_Environmental@hq.doe.gov (please include “Willow Rock” in the subject line) or by telephone at 202-578-4573.

Sincerely,

TODD STRIBLEY
Digitally signed by TODD STRIBLEY
Date: 2025.07.16 11:47:45 -06'00'

Todd Stribley
Director, Environmental Compliance
Loan Programs Office

Attachments:
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Figure 2: Proposed Willow Rock Energy Storage Center Site with Aerial Imagery

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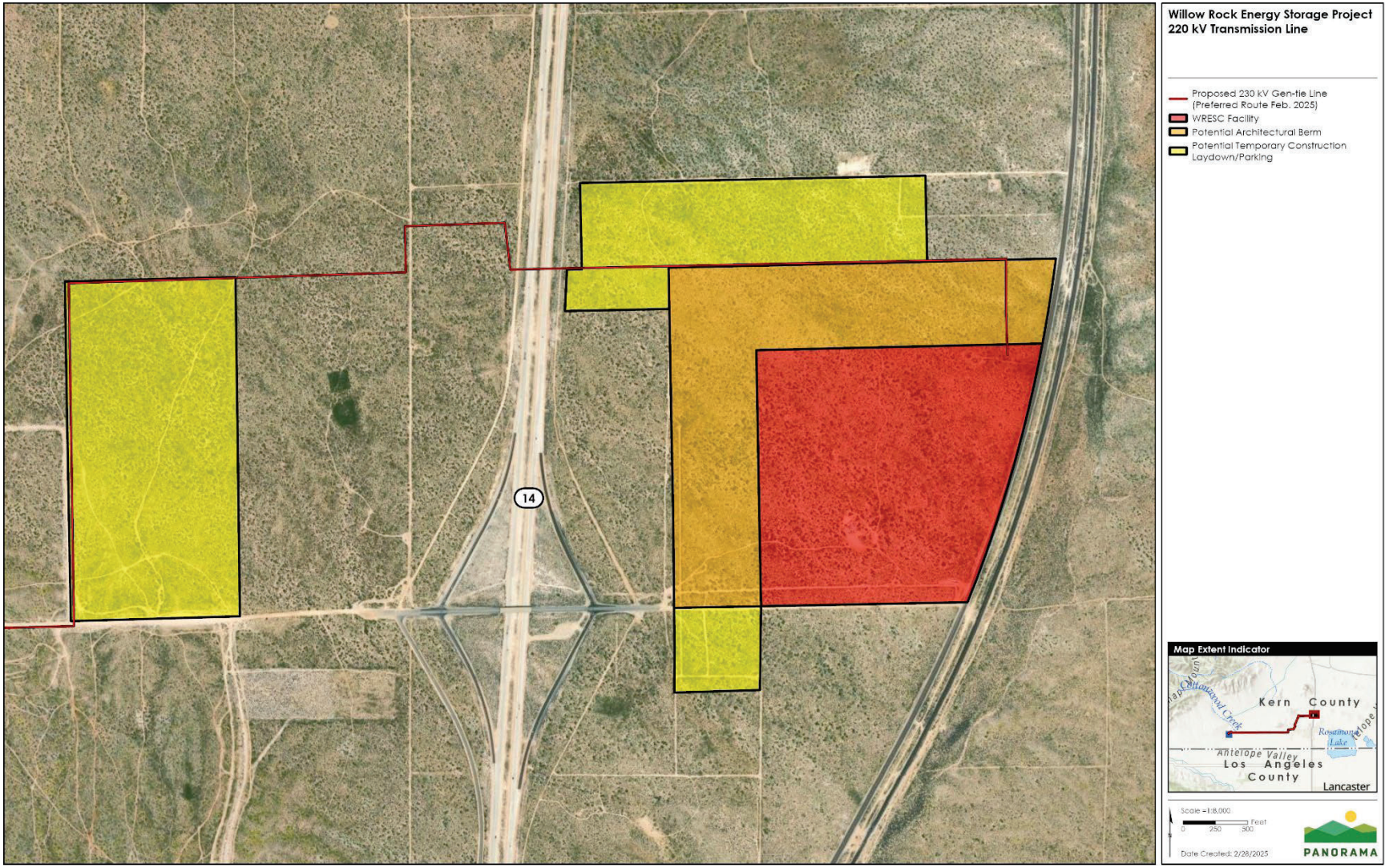

Department of Energy
Washington, DC 20585

June 25, 2024

Chairperson James Rambeau
Big Pine Paiute Tribe of the Owens Valley
P.O. Box 700
Big Pine, CA 93513

SUBJECT: The U.S. Department of Energy's Proposed Federal Loan Guarantee for the Willow Rock Energy Storage Center in Kern County, California; NEPA and NHPA Invitation to Consult

Dear James Rambeau:

The U.S. Department of Energy (DOE) is preparing an Environmental Assessment (EA) pursuant to the National Environmental Policy Act (NEPA) to assist in determining whether to issue a Federal loan guarantee to support the development of the proposed Willow Rock Energy Storage Center (WRESC or the Project). The Project is located within unincorporated, southeastern Kern County, California. DOE has determined that issuance of this loan constitutes an undertaking subject to Section 106 of the National Historic Preservation Act (NHPA). Therefore, as a part of this environmental review process, DOE is also conducting a historic resource review in compliance with Section 106 of the NHPA.

The proposed WRESC facility would be situated on up to 163.2 acres of land located immediately north of Dawn Road and between State Route (SR) 14 and Sierra Highway (Figures 1-3). The WRESC would be designed to charge and discharge up to 520-megawatts (MW) and 4,160 megawatt-hours (MWh) of energy using propriety, advanced compressed air energy storage (A-CAES) technology. Energy stored at the WRESC would be delivered to Southern California Edison's (SCE) Whirlwind Substation located approximately 19 miles southwest of the WRESC at the intersection of 170th Street W. and Rosamond Boulevard, via a new 230-kilovolt (kV) generation-tie (gen-tie) line (Figure 1). The proposed facility would consist of transmission systems, cooling systems, operation and maintenance facilities, other ancillary support systems, and temporary construction areas (Figures 2 and 3).

Construction activities would provide additional job opportunities within the local community during the 60 months of construction, ranging from an average construction workforce of 273 workers and peak workforce estimated at 749. During operations, once the facility is ramped to its full output capacity, it would employ 40 full time employees, including engineers, managers, administrative support personnel, technicians, facility and equipment, maintenance workers, factory operators, and logistics personnel.

PaleoWest previously reached out to your Tribe in 2021 regarding the project located in Kern County. The proposed WRESC facility was subsequently moved to a new location in Kern County (Figure 1). This letter is intended to notify you of the proposed undertaking (a potential loan to support the WRESC), identify if you have an interest in the proposed project site, and provide you with the opportunity to comment and engage DOE in government-to-government consultation on the proposed project. Any comments or concerns you provide will help ensure that DOE considers Tribal interests and complies with its NEPA and NHPA Section 106 responsibilities.

I would greatly appreciate notification if you do or do not have an interest in the project site, as well as any comments or concerns you may have, within thirty (30) days of receipt of this letter. Should you have an interest in the project site, I will provide you with additional information pursuant to NEPA and the NHPA as it becomes available. Please provide your notification of interest and any comments or concerns by email at LPO_Environmental@hq.doe.gov or by telephone at 202-586-8716.

Respectfully,

KARA HARRIS Digitally signed by KARA HARRIS
Date: 2024.06.25 09:20:22 -04'00'

Kara Harris
Federal NEPA Document Manager
Loan Programs Office

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cc: Sally Manning, Environmental Director

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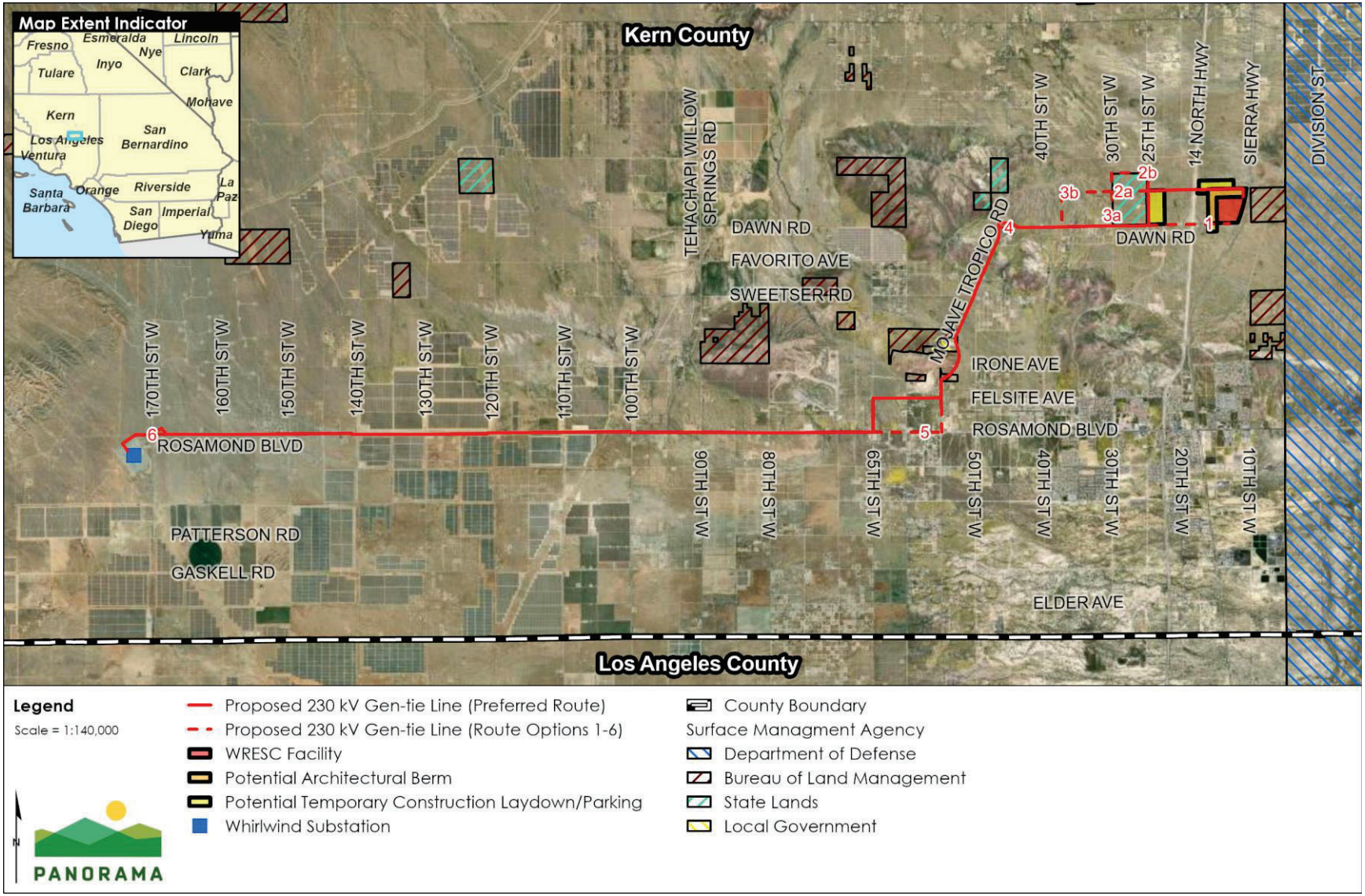

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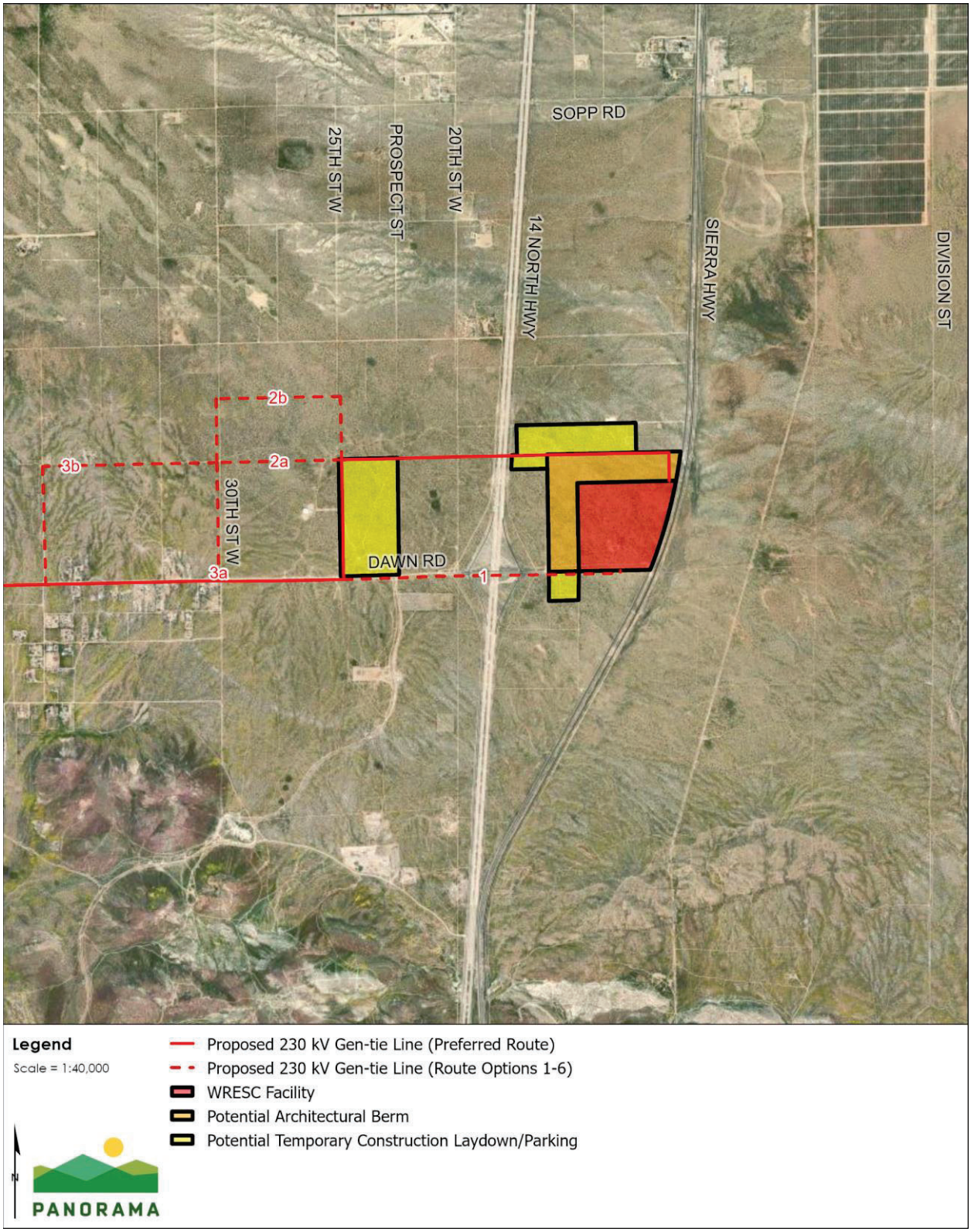

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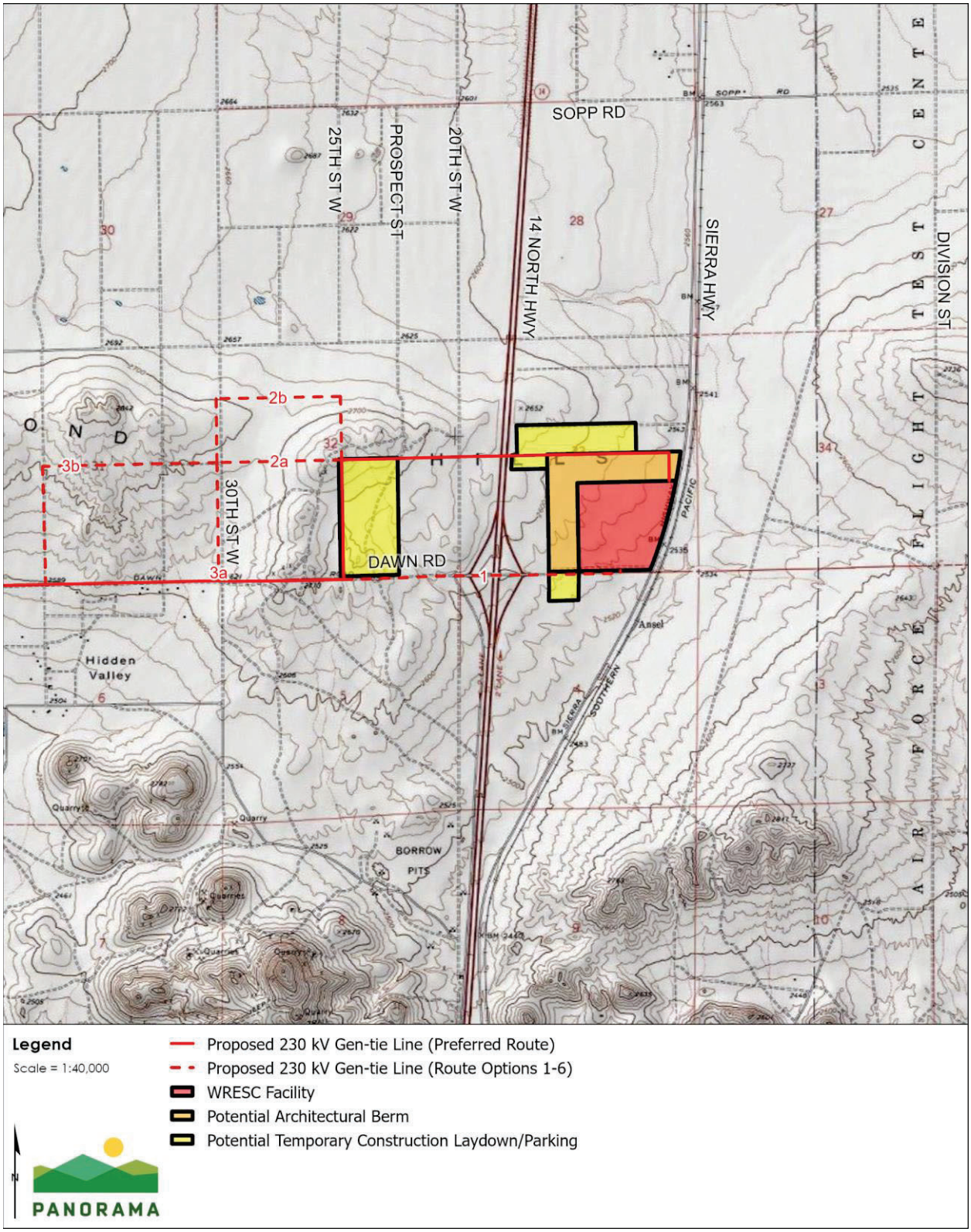

Department of Energy
Washington, DC 20585

October 7, 2024

SUBJECT: The U.S. Department of Energy is pausing the preparation of the Environmental Assessment for the Willow Rock Energy Storage Center in Kern County, California.

Dear Interested Party,

On June 25, 2024, the U.S. Department of Energy (DOE) Loan Programs Office (LPO) sent a letter to you regarding its intent to prepare an Environmental Assessment (EA) pursuant to the National Environmental Policy Act (NEPA) for a potential Federal loan guarantee to Hydrostor USA Holdings Inc. (the Applicant) to support construction of the Willow Rock Energy Storage Center in Kern County, California (Project). The decision to prepare an Environmental Assessment (EA) for the Project was made in accordance with the requirements of NEPA, the Council on Environmental Quality regulations for implementing the procedural provisions of NEPA (40 CFR Parts 1500-1508), and DOE's implementing procedures for compliance with NEPA (10 CFR Part 1021).

The California Energy Commission (CEC) is conducting an environmental review of the Project pursuant to the California Environmental Quality Act (CEQA). On September 9, 2024, the CEC issued a Revised Scheduling Order identifying the anticipated environmental review schedule. This letter is to inform you that to keep the NEPA and CEQA processes aligned and in compliance with NEPA §1501.10(b)(1), LPO has paused its NEPA review of the Project. LPO will continue to pursue the required federal agency consultations, including consultation under Section 106 of the National Historic Preservation Act.

If you or your staff have any questions concerning this project or DOE's NEPA process, please contact me in the DOE Loan Programs Office by email at LPO_Environmental@hq.doe.gov or by telephone at 202-586-8716.

Sincerely,

KARA HARRIS Digitally signed by KARA HARRIS
Date: 2024.10.07 10:37:47 -04'00'

Kara Harris
Federal NEPA Document Manager
Loan Programs Office

Department of Energy
Washington, DC 20585

July 16, 2025

SUBJECT: The U.S. Department of Energy is reinitiating the preparation of the Environmental Assessment for the Willow Rock Energy Storage Center in Kern County, California.

Dear Interested Party,

The U.S. Department of Energy (DOE) Loan Programs Office (LPO) is preparing an Environmental Assessment (EA) pursuant to the National Environmental Policy Act (NEPA) of 1969 (42 United States Code [U.S.C] 4321-4347) for a potential Federal loan guarantee to Hydrostor USA Holdings Inc. (Applicant) to support construction of the Willow Rock Energy Storage Center in Kern County, California (Project). On October 7, 2024, a letter was sent regarding the pause in preparation of the EA for the Project. This letter is to inform you that LPO is reinitiating the NEPA review of the Project and will continue preparation of the EA. This EA is being prepared in accordance with the NEPA statute (42 U.S.C. 4321-4347), DOE's NEPA regulations (10 CFR Part 1021), and DOE's NEPA implementing procedures published on June 30, 2025.

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If you would like to receive further information concerning this project or DOE's NEPA process, or if you have suggestions with respect to an environmental impact for LPO's consideration, please contact me in the DOE Loan Programs Office by email at

LPO_Environmental@hq.doe.gov (please include “Willow Rock” in the subject line) or by telephone at 202-578-4573.

Sincerely,

TODD STRIBLEY
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Todd Stribley
Director, Environmental Compliance
Loan Programs Office

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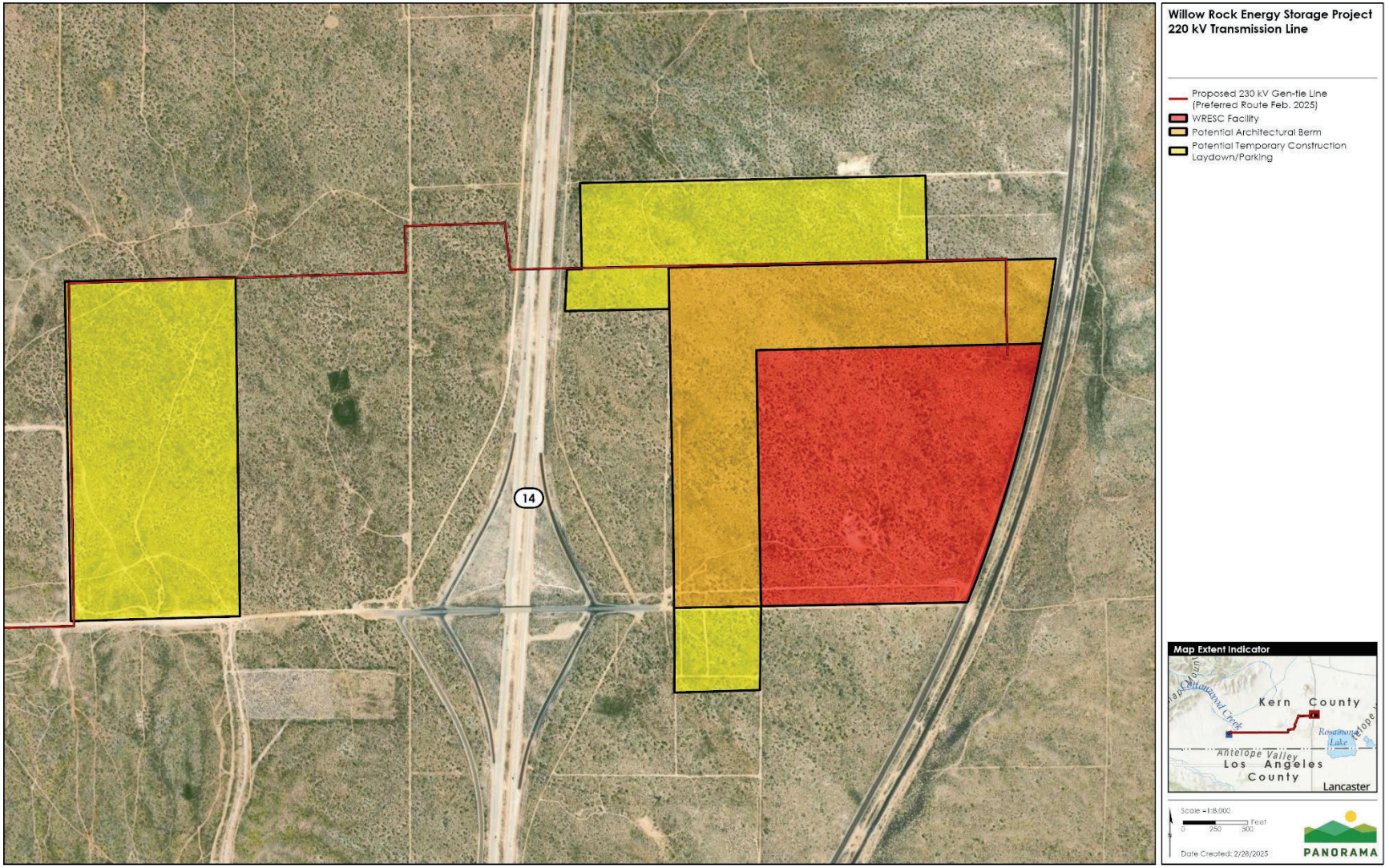


Department of Energy
Washington, DC 20585

July 16, 2025

SUBJECT: U.S. Department of Energy, Loan Programs Office, Section 106 Consultation, Willow Rock Energy Storage Center Project, Kern County, California

Dear Tribal Leader(s),

Pursuant to its authority under Title XVII of the Energy Policy Act of 2005, which established a Federal loan guarantee program, the U.S. Department of Energy (DOE), Loan Programs Office (LPO) is evaluating whether to provide a Federal loan guarantee to Hydrostor USA Holdings Inc. (Hydrostor, or the Applicant) for the development of the proposed Willow Rock Energy Storage Center Project (the Project) in Kern County, California.

In June and July 2024, DOE had previously initiated consultation under Section 106 of the National Historic Preservation Act of 1966, as amended (54 United States Code [U.S.C.] 306108), and its implementing regulations, 36 Code of Federal Regulations (CFR) Part 800.

The purpose of this letter is to continue consultation with your Tribe under Section 106 of the NHPA. This letter presents descriptions of the undertaking, the Area of Potential Effects (APE), the efforts to identify historic properties, the undertaking's effects on historic properties, and DOE LPO's finding of *Adverse Effect* for this undertaking; and solicits information regarding historic properties of religious or cultural significance to your Tribe that may be present in the APE and/or that may be affected by the Project.

Description of the Undertaking

DOE's action is the issuance of a proposed Federal loan guarantee to the Applicant for the undertaking (i.e., the Project), which would involve the proposed construction of the Willow Rock Energy Storage Center (WRESC or Project) located within unincorporated, southeastern Kern County, California. The proposed WRESC facility would be situated on approximately 90 acres of private land immediately north of Dawn Road and between State Route (SR) 14 and Sierra Highway. The WRESC would be designed to charge and discharge up to 520-megawatts (MW) and 4,160 megawatt-hours (MWh) of energy using Hydrostor's proprietary, advanced compressed air energy storage (A-CAES) technology. Energy stored at the WRESC would be delivered to Southern California Edison's (SCE) Whirlwind Substation located approximately 16 miles southwest of the WRESC at the intersection of 170th Street W and Rosamond Boulevard, via a new 230-kilovolt (kV) generation-tie (gen-tie) line. The WRESC will be capable of operating full-time with an approximately 50-year lifespan. Construction of the Project would take approximately 55 months starting in 2025 and continuing through 2029.

Area of Potential Effects

As defined in the Section 106 regulations (36 CFR § 800.16(d)), the APE is the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The dimensions of the APE are influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking. The APE for the Undertaking generally consists of all areas of anticipated ground disturbance during construction, and may apply a distance buffer to account for potential visual and other non-physical effects that may occur beyond the limits of disturbance.

The APE for the proposed Project was determined by DOE in consultation with the California SHPO and includes the Project footprint plus variable distance buffers that define the survey areas for archaeological resources and built environment resources. Within the APE, the archaeological survey area was defined as the Project footprint plus a 200-foot buffer around the WRESC site and a 50-foot buffer around the linear features of the gen-tie line; the built environment resource survey area includes the area within a 0.5-mile buffer of the WRESC site and linear features of the gen-tie line route options.

The APE served as the basis for the reconnaissance/intensive-level survey limits for six gen-tie route options. The total area surveyed for archaeological resources totals 698.5 acres. While the survey report includes results for all six gen-tie route options, the Applicant has chosen the final alignment for the Project to include in its application to DOE LPO. Therefore, while the survey report includes information on identified cultural resources for the five gen-tie alignments that are no longer under consideration, DOE LPO is formally consulting on the findings within the actual APE of the undertaking (e.g., the chosen alignment).

Tribal Outreach

On June 25, 2024, DOE LPO sent a joint NEPA and NHPA initiation letter to the following five (5) Federally recognized Tribes: Big Pine Paiute Tribe of the Owens Valley, Quechan Tribe of the Fort Yuma Reservation, Yuhaaviatam of San Manuel Nation (formerly the San Manuel Band of Mission Indians), Tejon Indian Tribe, and Tule River Indian Tribe. The same initiation letter was distributed to five (5) State recognized Tribes: Coastal Band of the Chumash Nation, Fernandeno Tataviam Band of Mission Indians, Kern Valley Indian Community, Kitanemuk & Yowlumne Tejon Indians, and San Fernando Band of Mission Indians. On July 26, 2024, the initiation letter was sent to an additional two (2) Federally recognized Tribes: Fort Independence Indian Community of Paiute Indians of the Forst Independence Reservation, California, and Te-Moak Tribe of Western Shoshone Indians of Nevada.

Of the twelve (12) Tribes contacted, three (3) confirmed their interest in the Project: Big Pine Paiute Tribe of the Owens Valley, Yuhaaviatam of San Manuel Nation, and Fort Independence Indian Community of Paiute Indians of the Fort Independence Reservation, California. The Fernandeno Tataviam Band of Mission Indians preformed an initial

assessment of the project and confirmed no consultation was required. The remaining eight (8) Tribes did not respond to LPO's initiation letter or follow-up phone calls.

After communication with the Fort Independence Indian Community of Paiute Indians of the Fort Independence Reservation, California Tribal Historic Preservation Officer (THPO), DOE LPO requested that the Applicant and their consultant include the THPO as a Tribal monitor and consult with him throughout their survey work and resource identification process.

Description of Efforts to Identify Historic Properties

As part of the Section 106 identification process, the Applicant prepared a Cultural Resource Report that is included as Attachment 1. The report includes a description of the survey area and the environmental setting, the results of background research, and the methods and results of both archaeological and historic built environment resource surveys.

Archaeological Resources

Previous cultural resource inventories were reviewed to identify previously recorded cultural resources within the survey area and within a 1-mile study area surrounding the Project. The literature review identified 57 previous studies within the 1-mile study area, 41 of which overlap or intersect portions of the current survey area. The records search also found 345 previously recorded archaeological resources in the 1-mile study area, only 25 of which are located within the current survey area. None of these 25 resources have been previously evaluated for eligibility for listing on the National Register of Historic Places (NRHP) and the California Register of Historical Resources (CRHR).

Field surveys were conducted by the Applicant's consultant, WSP, to identify newly recorded cultural resources within the APE (see Attachment 1). WSP's survey resulted in the identification of nine (9) new archaeological sites and a total of 45 isolated finds. The survey also revisited one (1) previously recorded resource, Tropico Gold Mine (15-007591). Records for newly recorded sites and isolates, as well as updates to previously recorded sites revisited, are provided in Appendix C of the survey report on the appropriate DPR Series 523 forms (see Attachment 1).

The 45 isolated finds are not considered eligible for inclusion in the NRHP, and the previously recorded site 15-007591 is recommended not eligible for inclusion in the NRHP. A total of 13 newly recorded sites were assumed NRHP-eligible, pending the completion of additional evaluative testing. These include four (4) sites located within the WRESC Site footprint (field IDs: WRESC-ZEV-PRE-SITE-1; WRESC-ZEV-PRE-SITE-2; WRESC-ZEV-HIST-SITE-1; and WRESC-ZEV-HIST-SITE-2), two (2) sites located within the P1 Staging Area (field IDs: WRESC-P1-PRE-SITE-1 and WRESC-P1-PRE-SITE-2), and four (4) sites located within the Preferred Gen-Tie Route (IDs: P-15-003816/CA-KER-3816; P-15-014902/CA-KER-8324H; P-15-014903/CA-KER-8325H; and P-15-014906/CA-KER-8328H). Three (3) sites that were identified during the

original survey (P-15-003359/CA-KER-3359; P-15-003817/CA-KER-3817; and P-15-008677) are not within the chosen Project alignment and therefore are no longer within the APE.

The Applicant subsequently completed subsurface test excavations to evaluate the NRHP eligibility of the potentially eligible (or assumed eligible) archaeological sites within the APE. The Phase II testing report (Attachment 2) includes updated site descriptions, inventories, evaluations and recommendations of NRHP/CRHR eligibility for the archaeological sites within the APE which may be affected by development of the Project.

Testing and evaluation resulted in the revision of several site boundaries, including the reclassification of WRESC-ZEV-HIST-SITE-1 and WRESC-ZEV-PRE-SITE-1 as a single multicomponent site: WRESC-ZEV-MULTI-SITE-1. Additionally, WRESC-P1-PRE-SITE-1 and WRESC-P1-PRE-SITE-2 were determined to be a single continuous lithic scatter and were combined into a single larger 3.1-acre boundary subsumed as WRESC-P1-PRE-SITE-1. Lastly, an additional new site was identified during the boundary delineation effort, identified as WRESC-ZEV-PRE-SITE-3. Therefore, a total of nine (9) sites were evaluated through archaeological testing.

Based on the findings of subsurface testing and evaluation of the associated data, four (4) sites (WRESC-ZEV-MULTI-SITE-1; WRESC-ZEV-PRE-SITE-2; WRESC-ZEV-PRE-SITE-3; and WRESC-P1-PRE-SITE-1) are recommended eligible for listing on the NRHP under Criterion D and the CRHR under Criterion 4, due to the potential for these sites to yield additional data significant to the understanding of the pre-contact history of the Antelope Valley. Three (3) sites were found to be not eligible for inclusion in the NRHP and the CRHR (WRESC-ZEV-HIST-SITE-2; CA-KER-8325H; and CA-KER-8328H), while two sites (CA-KER-3816H and CA-KER-8324H) were not formally evaluated, as fieldwork determined that construction of the gen-tie route does not have the potential to cause impacts or adverse effects to these two sites.

Historic Built Environment Resources

WSP conducted an architectural survey of built environment resources over 45 years old within the APE. As a result of the survey, WSP documented six previously surveyed resources and 57 newly surveyed resources. All 63 historic built environment resources are located along the alignment of the preferred gen-tie route. All resources accessible from the public Right-of-way were recorded at the intensive level of California DPR Series 523 Forms, which are included in an appendix to the survey report (see Attachment 1).

Of the six previously recorded resources, one is listed as a contributing element to a NRHP-listed historic district (NR# 16000468), one is listed in the CRHR but is recommended not eligible for listing in the NRHP, one is recommended eligible for listing in the CRHR as part of a newly proposed Historic District; however, the district is recommended not eligible for listing in the NRHP, and three are recommended as not eligible for listing in the NRHP.

Of the 57 newly surveyed resources, four are recommended as part of a newly proposed CRHR-eligible historic district but are not eligible for listing in the NRHP, and one is assumed NRHP-eligible for purposes of assessing effects from the current Project. The remaining 52 newly recorded historic built environment resources are recommended as not eligible for inclusion in the NRHP.

Description of the Undertaking's Effects on Historic Properties

The two built environment historic properties in the APE include an NRHP-listed transmission line segment (P-15-017243; Vincent 220 kV Transmission Line; Big Creek Hydroelectric Historic District) and one residence (McKee House) that was inaccessible from the public ROW and thus assumed eligible. No adverse effects are anticipated to these historic properties, as described below.

The segment of the Vincent 220 kV Transmission Line is listed as contributing to the NRHP-listed Big Creek Hydroelectric Historic District, which transects the Project at the far southern terminus of the proposed gen-tie line. The addition of new transmission towers and gen-tie lines would visibly intrude on the viewshed of the historic district; however, given the 224-mile extent of the entire historic district, the visual effects to a 1.75-mile segment of the line would not constitute an adverse visual effect to NRHP-listed historic district as a whole. Furthermore, visual effects caused by the Project would not physically affect the architectural significance of the Vincent 220 kV Transmission Line or the Big Creek Hydroelectric Historic District.

The McKee House is located approximately 0.3 miles from the Project. The proposed gen-tie line is not in the property's primary view, and, given the distance of the resource from the proposed gen-tie line, construction of the Project would not create any atmospheric, auditory, or vibratory effects. Therefore, the Project would not diminish any aspects of integrity that would convey the resource's potential significance, were it to be evaluated and determined eligible.

Given the nature of the proposed Project, the undertaking has the potential to adversely affect subsurface/archaeological historic properties within the APE, as ground disturbing work may physically damage characteristics of archaeological sites that qualify them for the NRHP in a manner that would diminish its integrity. As currently planned, the entirety of the WRESC Site parcel will be subject to vegetation removal and grading, prior to structure development and shaft construction. The P1 staging area will be utilized in its entirety for the staging of waste rock associated with shaft construction, which will be used to develop an architectural berm around the facility. Areas defined as P2 staging area will be used for temporary staging and vehicle parking during project development, and surficial impacts are planned to be minimal. Development of the gen-tie line will require direct boring or excavation to a total depth of 11 feet with a horizontal impact diameter of approximately 6 to 8 feet per each pole. As planned, poles will be spaced 700 feet apart for the extent of the gen-tie route. Portions of the line planned for undergrounding will require

continuous trenching to depths of up to 8 feet and as wide as 6 feet to accommodate lines and associated vaults.

The Phase II archaeological testing effort resulted in four archaeological sites that remain recommended eligible for inclusion in the NRHP that cannot be avoided by the Project. These include sites WRESC-ZEV-MULTI-SITE-1; WRESC-ZEV-PRE-SITE-2; WRESC-ZEV-PRE-SITE-3; and WRESC-P1-PRE-SITE-1. Construction impacts would adversely affect the integrity of these archaeological historic properties. Therefore, DOE LPO seeks to consult with the California SHPO and other consulting parties regarding consensus on the NRHP eligibility determination for these four sites, and to develop a Memorandum of Agreement (MOA) to resolve adverse effects, as appropriate.

Request for Information and Next Steps

Based on DOE's review of the efforts to identify historic properties and conclusions drawn from this information, DOE is issuing a Finding of Adverse Effect, consistent with 36 CFR § 800.5(d)(2). As part of the Section 106 process, DOE has requested the concurrence of the California SHPO on the Finding of Adverse Effect.

DOE requests that you review the attachments to this letter and provide any information you have regarding historic properties of religious or cultural significance to your Tribe that may be present in the APE and/or that may be affected by the Project. DOE also requests that you submit your response providing any comments you may have on the Project **within thirty (30) days of receipt of this letter**.

We look forward to consulting with you throughout the Section 106 process. Once DOE LPO has confirmed the SHPO's concurrence with the Finding of Adverse Effect and the approach to develop a MOA to resolve adverse effects, we anticipate distributing a Draft MOA to solicit comments and input through consultation with consulting parties. If you have any questions or would like to discuss this Project further, please contact me at LPO_Environmental@hq.doe.gov (please include "Willow Rock" in the subject line) or by telephone at 202-578-4573.

Sincerely,

TODD STRIBLEY Digitally signed by TODD STRIBLEY Date: 2025.07.16 12:31:14 -06'00'

Todd Stribley
Director, Environmental Compliance
Loan Programs Office

Attachments:
Attachment 1. Phase I Cultural Resources Survey Report
Attachment 2. Phase II Archaeological Testing Report

Department of Energy
Washington, DC 20585

June 25, 2024

Julianne Polanco
California Office of Historic Preservation
State Historic Preservation Officer
1725 23rd Street, Suite 100
Sacramento, CA 95816

SUBJECT: The U.S. Department of Energy, Willow Rock Energy Storage Center in Kern County, California; Section 106 Invitation

Dear Ms. Polanco:

Title XVII of the Energy Policy Act of 2005 (EPAct) established a federal loan guarantee program for certain projects that employ innovative technologies and authorizes the Secretary of Energy to make loan guarantees available for those projects. Hydrostor USA Holdings Inc. (the Applicant) has applied for a loan guarantee pursuant to the U.S. Department of Energy's (DOE's) Renewable Energy and Efficient Energy Projects Solicitation (Solicitation Number: DE-SOL-0007154) under Title XVII, Innovative Energy Loan Guarantee Program, authorized by EPAct, (REEE Projects). DOE is evaluating whether to provide a federal loan guarantee to support the development of the proposed Willow Rock Energy Storage Center (WRESC or the Project).

The Project is located within unincorporated, southeastern Kern County, California (DOE's proposed action and undertaking). The purpose of this letter is to initiate consultation with the State Historic Preservation Office (SHPO) under Section 106 of the National Historic Preservation Act (NHPA) and its implementing regulations, 36 CFR Part 800, present the DOE undertaking, present the archaeological and architectural areas of potential effects (APEs) and seek your concurrence with these APEs, and present the current activities that DOE is executing pursuant to its Section 106 responsibilities.

DOE Undertaking and APEs

DOE's undertaking is the issuance of the proposed Federal loan guarantee to support development of the WRESC located in Kern County, California. The proposed WRESC facility would be situated on up to 163.2 acres of land located immediately north of Dawn Road and between State Route (SR) 14 and Sierra Highway (Figures 1-3). The WRESC would be designed to charge and discharge up to 520-megawatts (MW) and 4,160 megawatt-hours (MWh) of energy using propriety, advanced compressed air energy storage (A-CAES) technology. Energy stored at the WRESC would be delivered to Southern California Edison's (SCE) Whirlwind Substation located approximately 19

miles southwest of the WRESC at the intersection of 170th Street W. and Rosamond Boulevard, via a new 230-kilovolt (kV) generation-tie (gen-tie) line (Figure 1). The proposed facility would consist of transmission systems, cooling systems, operation and maintenance facilities, other ancillary support systems, and temporary construction areas (Figures 2, 3, and 4).

Construction activities would provide additional job opportunities within the local community during the 60 months of construction, ranging from an average construction workforce of 273 workers and peak workforce estimated at 749. During operations, once the facility is ramped to its full output capacity, it would employ 40 full time employees, including engineers, managers, administrative support personnel, technicians, facility and equipment, maintenance workers, factory operators, and logistics personnel.

The archaeological APE is a total of 698.5 acres, including a 200-foot buffer around the facility site and temporary construction areas, and a 50-foot buffer around the 19-mile-long gen-tie line and 3.7 miles of gen-tie route options (Figures 5a through 5e). The architectural APE includes a 0.5-mile buffer around the facility site, temporary construction areas, and gen-tie line including gen-tie route options (Figures 6a and 6b).

Current DOE Section 106 Activities

PaleoWest previously reached out to several Tribes in 2021 regarding the project located in Kern County. The proposed WRESC facility was subsequently moved to a new location in Kern County (Figure 1). In accordance with Section 106 to identify historic properties and assess adverse effects, the Applicant is completing cultural resource surveys in the proposed APE and DOE will complete and submit archaeological and architectural survey reports, including the identification of historic properties and preliminary assessment of effects, to all interested parties.

Requesting your Concurrence and Next Steps

As part of the Section 106 process, DOE requests your concurrence on the archaeological and architectural APEs as well as any comments you may have on the Project. We look forward to consulting with your office throughout the Section 106 process. Any comments or concerns you provide will help ensure that DOE considers Tribal interests and complies with its NHPA Section 106 responsibilities. If you have any questions or would like to discuss this project further, please contact me in the DOE Loan Programs Office by email at LPO_Environmental@hq.doe.gov or by telephone at 202-586-8716.

Respectfully,

KARA HARRIS Digitally signed by KARA HARRIS Date: 2024.06.25 09:32:27 -04'00'

Karra Harris
Federal NEPA Document Manager
Loan Programs Office

Cc:
Jody Brown, Deputy State Historic Preservation Officer/Tribal Liaison

Attachments:
Figure 1: Project Overview
Figure 2: Proposed Willow Rock Energy Storage Center Site with Aerial Imagery
Figure 3: Proposed Willow Rock Energy Storage Center Site with Topographic Basemap
Figure 4: Proposed Willow Rock Energy Storage Center Site Layout
Figure 5a: Proposed Archaeological Area of Potential Effect (1 of 5)
Figure 5b: Proposed Archaeological Area of Potential Effect (2 of 5)
Figure 5c: Proposed Archaeological Area of Potential Effect (3 of 5)
Figure 5d: Proposed Archaeological Area of Potential Effect (4 of 5)
Figure 5e: Proposed Archaeological Area of Potential Effect (5 of 5)
Figure 6a: Proposed Architectural Area of Potential Effect (1 of 2)
Figure 6b: Proposed Architectural Area of Potential Effect (2 of 2)

Figure 1 Project Overview

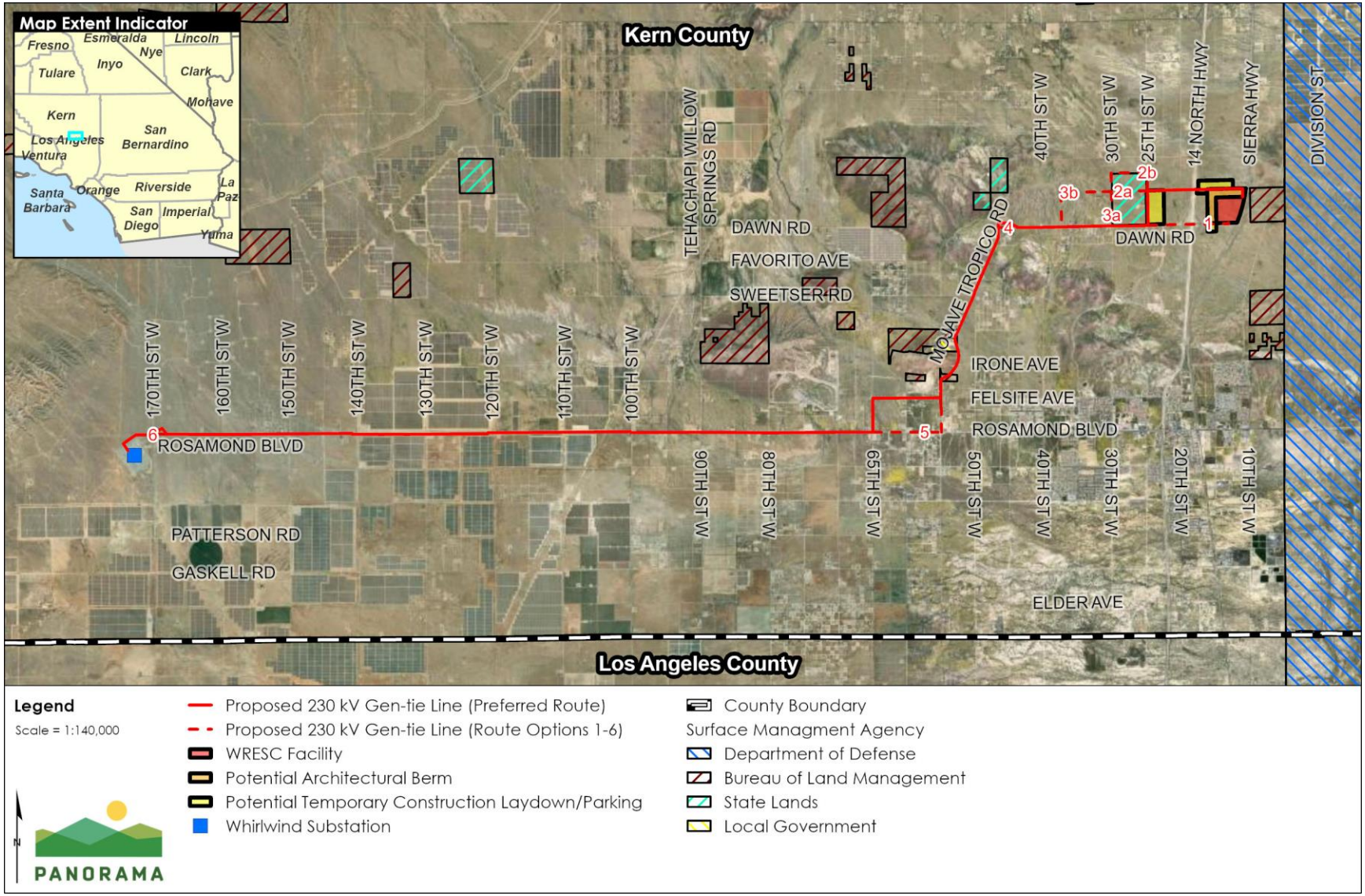


Figure 2 *Proposed Willow Rock Energy Storage Center Site with Aerial Imagery*

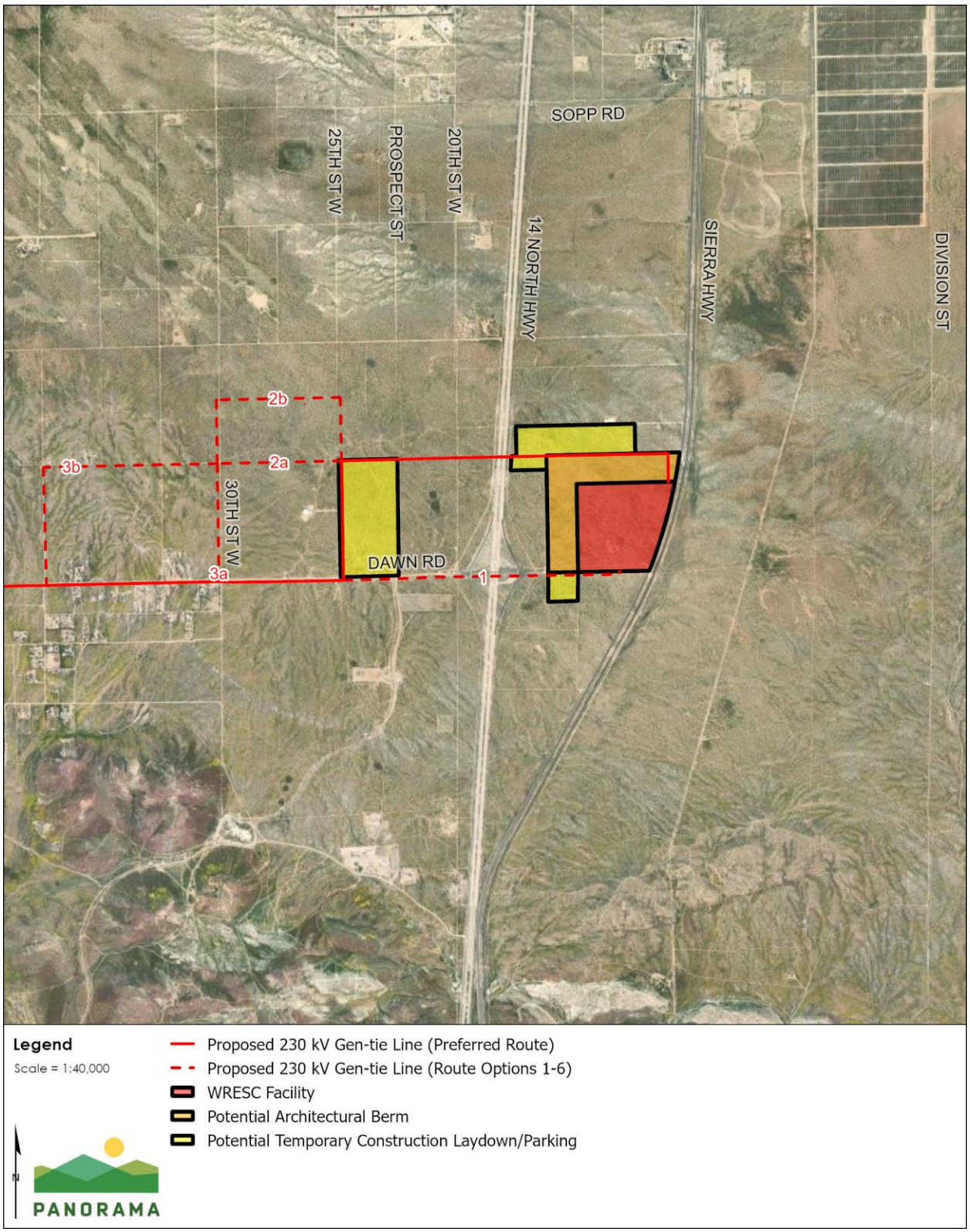


Figure 3 *Proposed Willow Rock Energy Storage Center Site with Topographic Basemap*

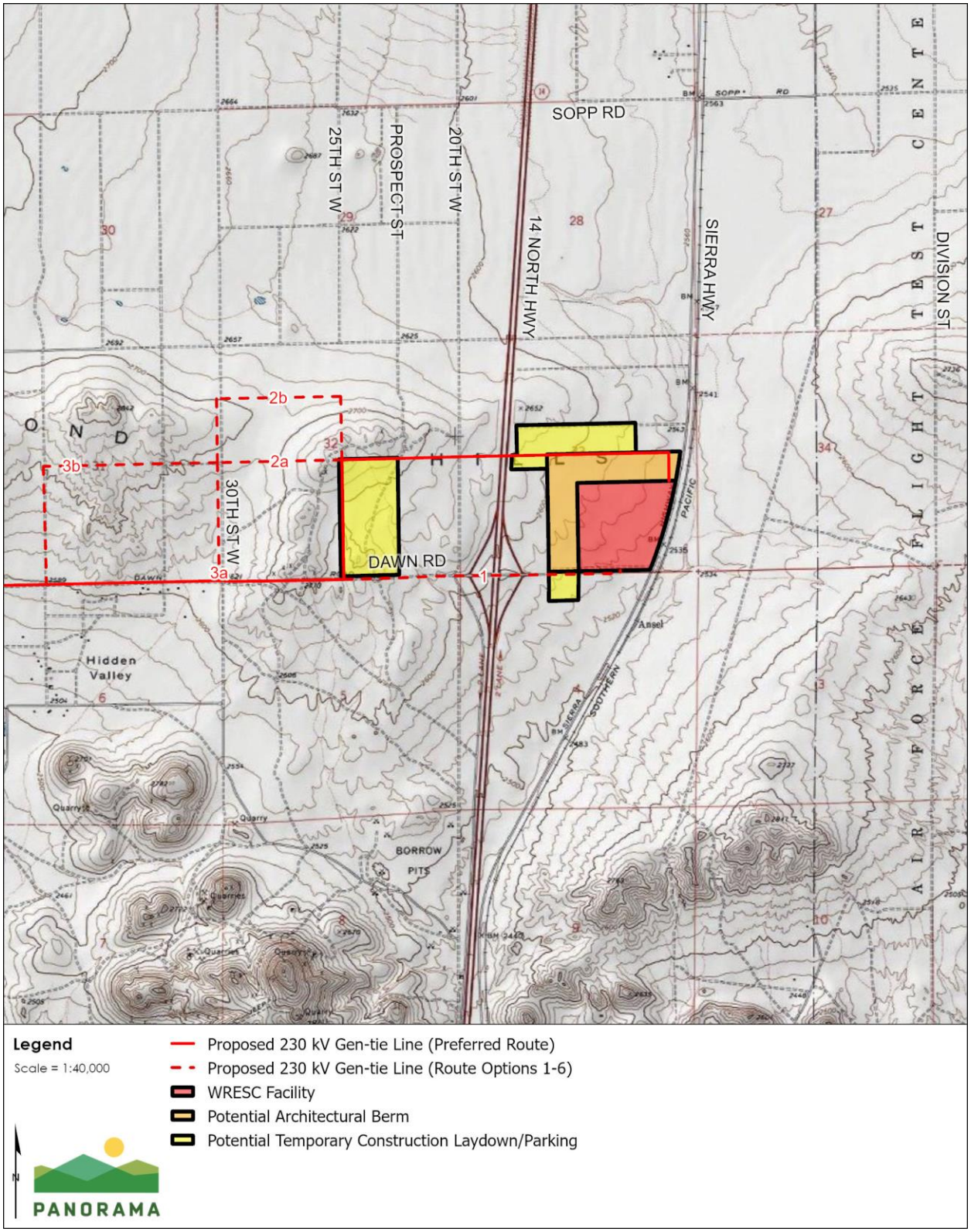


Figure 4 *Proposed Willow Rock Energy Storage Center Site Layout*

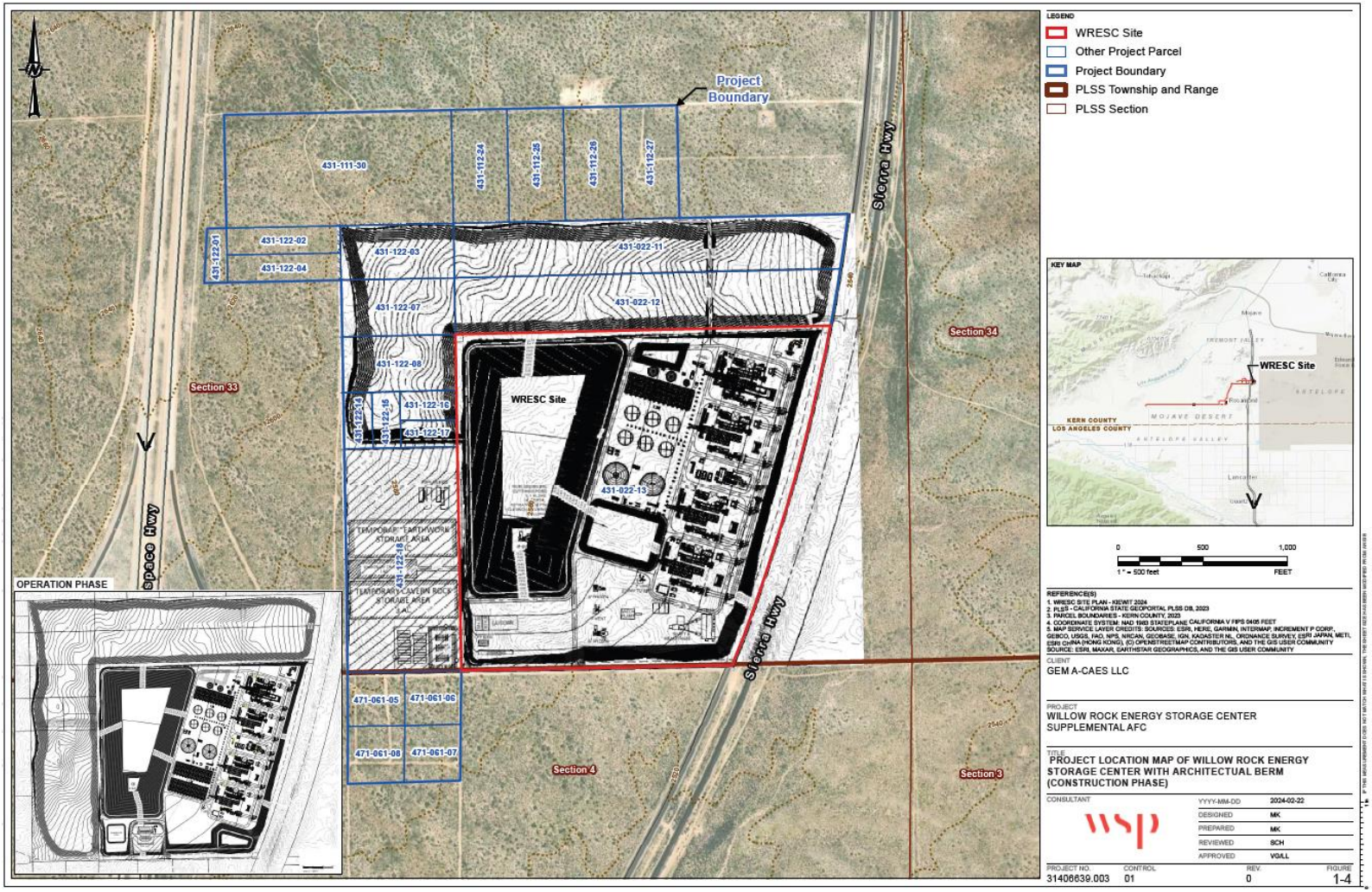
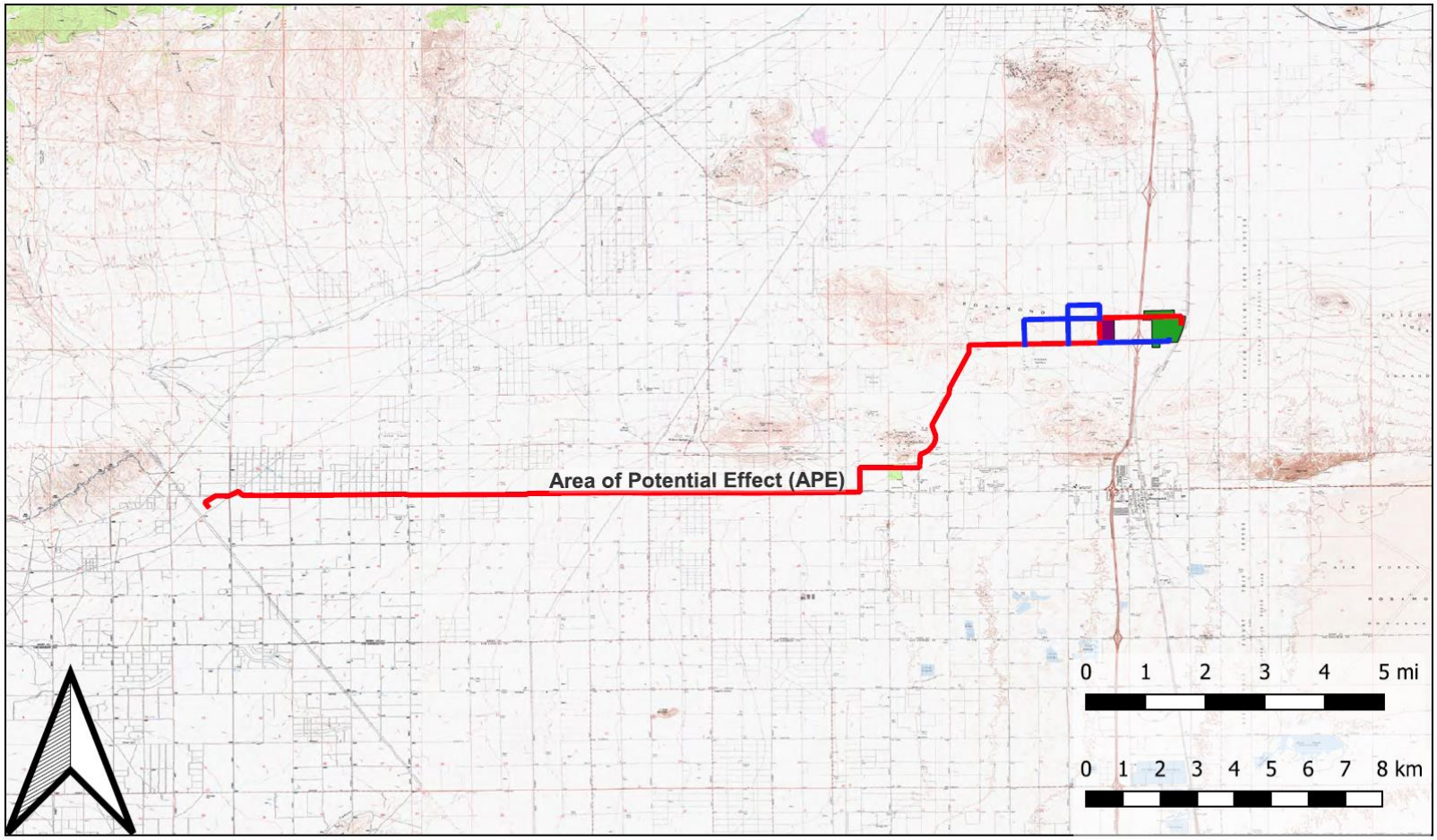
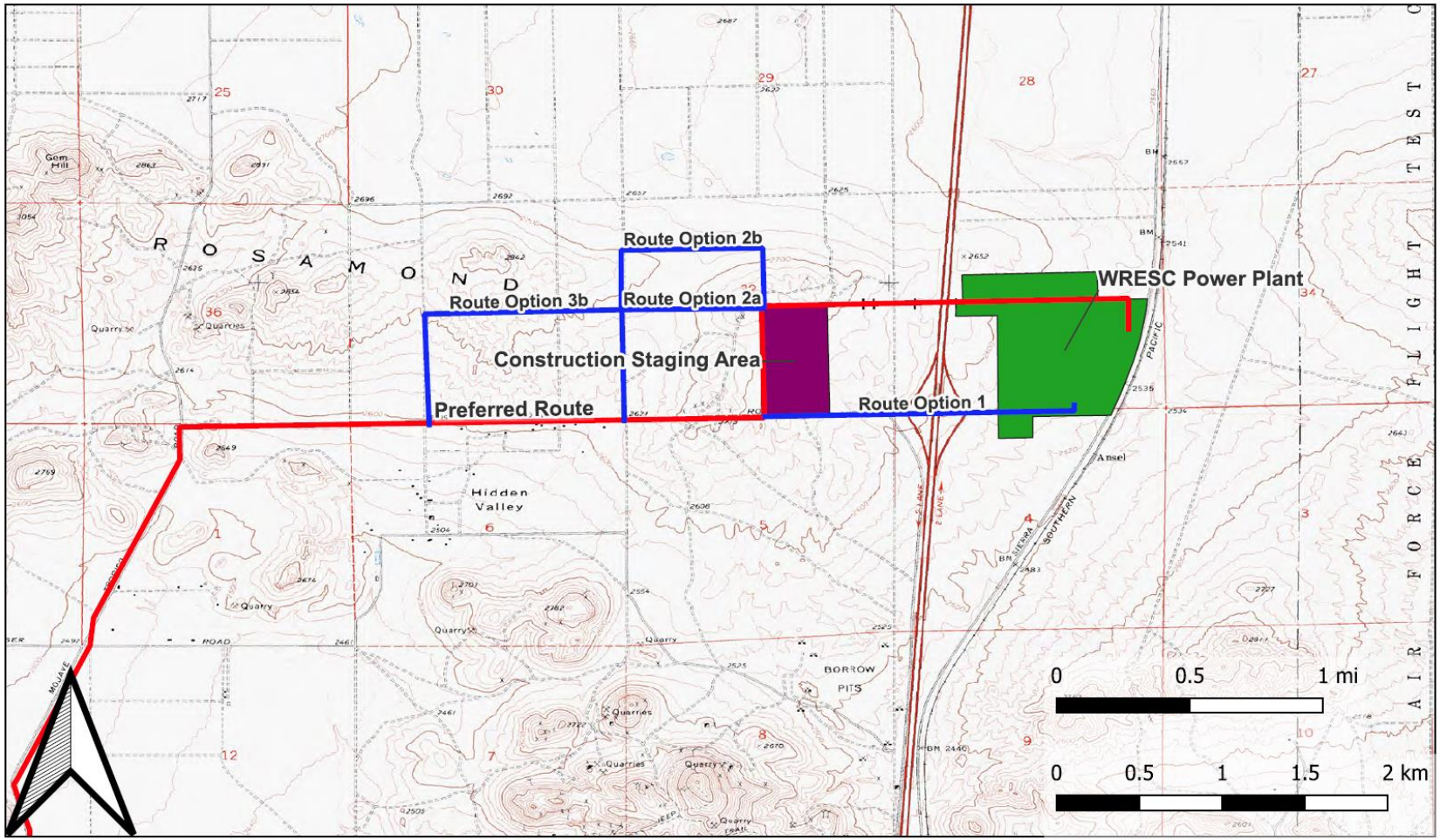


Figure 5a *Proposed Archaeological Area of Potential Effect (1 of 5)*



USGS Topographic Base Map. 1:100,000 Scale.

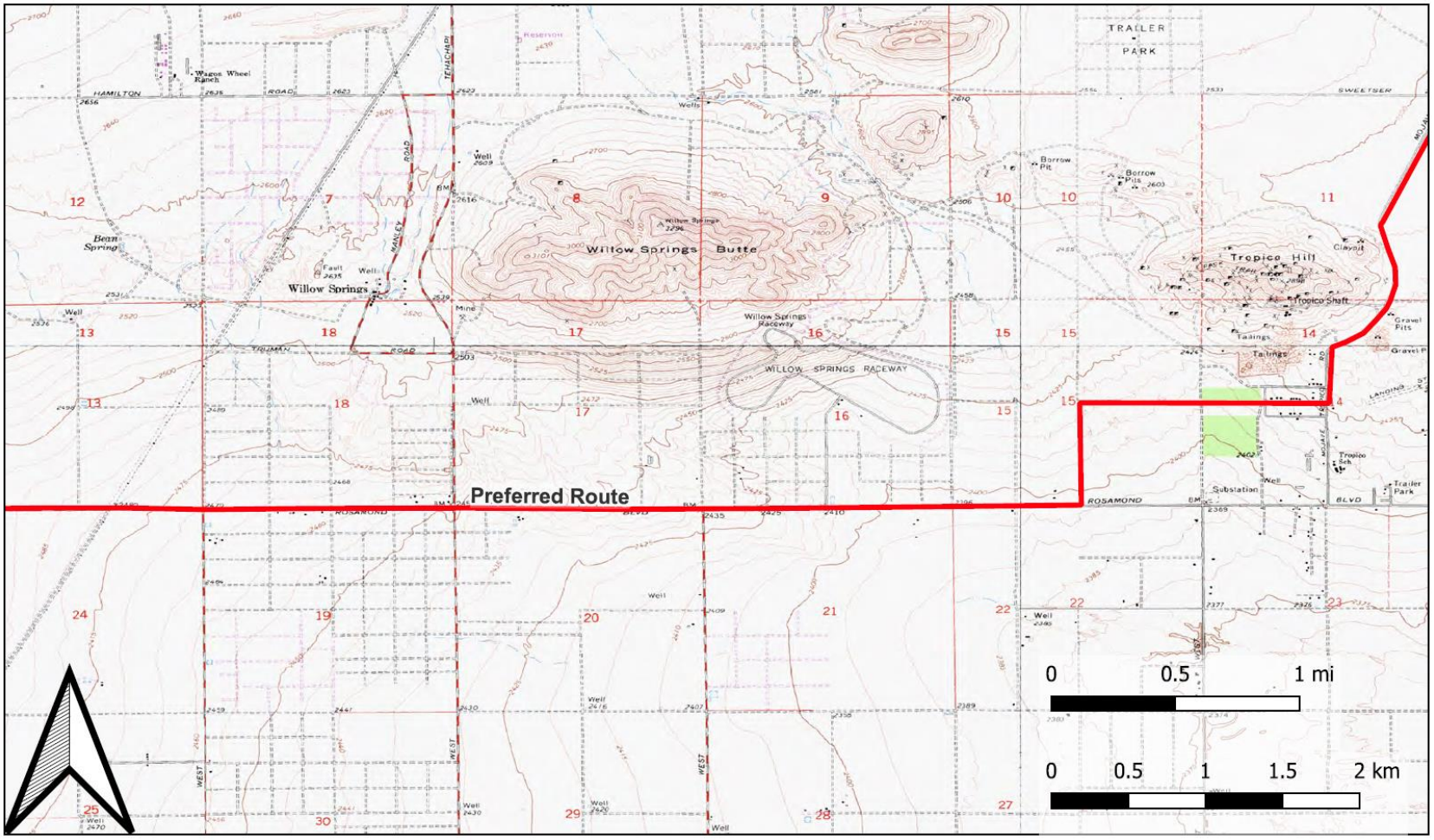
Figure 5b *Proposed Archaeological Area of Potential Effect (2 of 5)*



Proposed 230 kV Gen-tie Line (Route Options 1-6) — Proposed 230 kV Gen-tie Line (Preferred Route) — Staging Area — WRESC Facility

USGS *Soledad Mountain* 7.5-minute Quadrangle. 1:24,000 Scale.

Figure 5c *Proposed Archaeological Area of Potential Effect (3 of 5)*



Proposed 230 kV Gen-tie Line (Preferred Route)

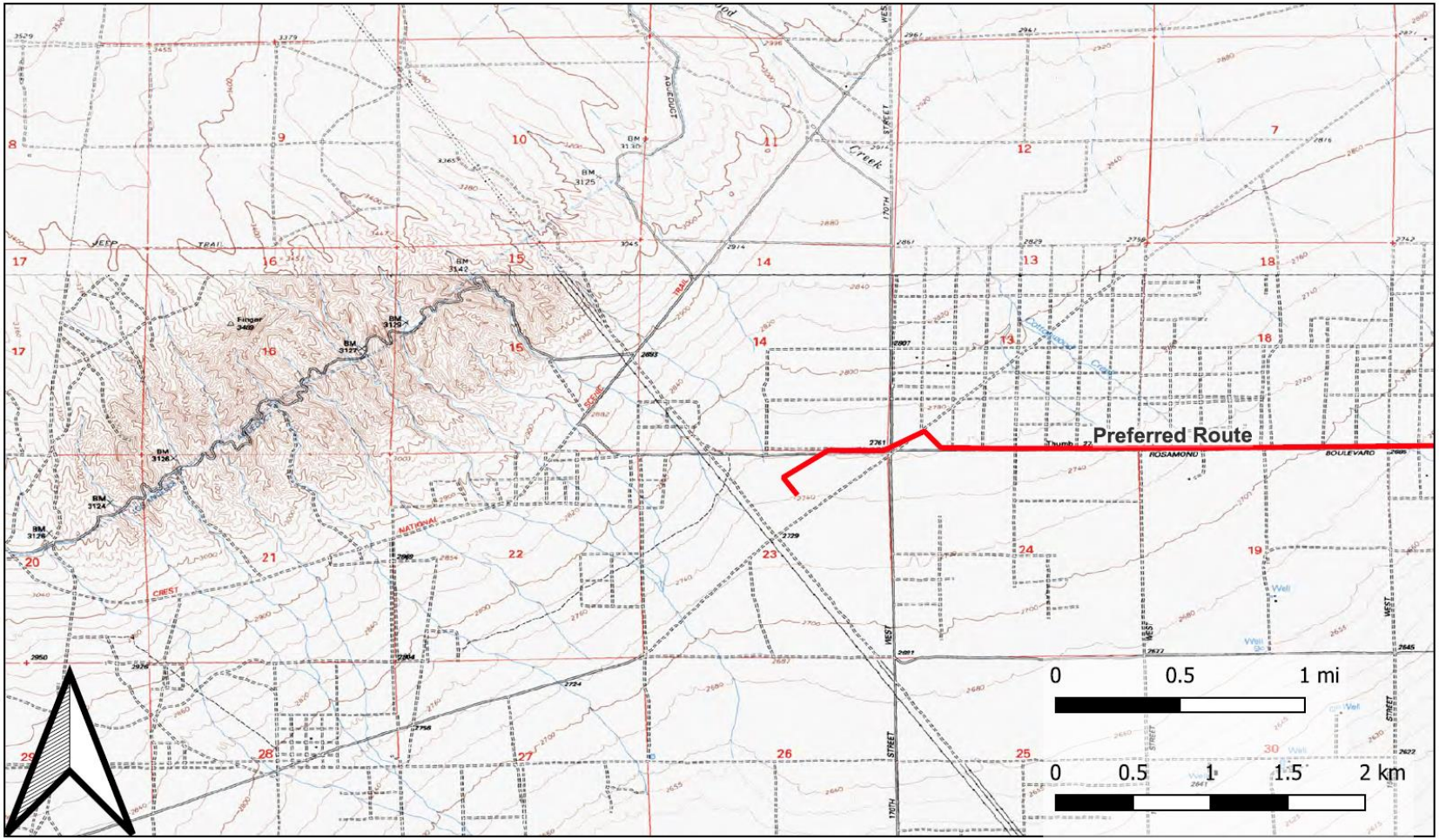
USGS *Soledad Mountain, Rosamond, Willow Springs* and *Little Buttes* 7.5-minute Quadrangles. 1:24,000 Scale.

Figure 5d *Proposed Archaeological Area of Potential Effect (4 of 5)*

Proposed 230 kV Gen-tie Line (Preferred Route)

USGS *Willow Springs, Little Buttes, Tylerhorse Canyon* and *Fairmont Butte* 7.5-minute Quadrangles. 1:24,000 Scale.

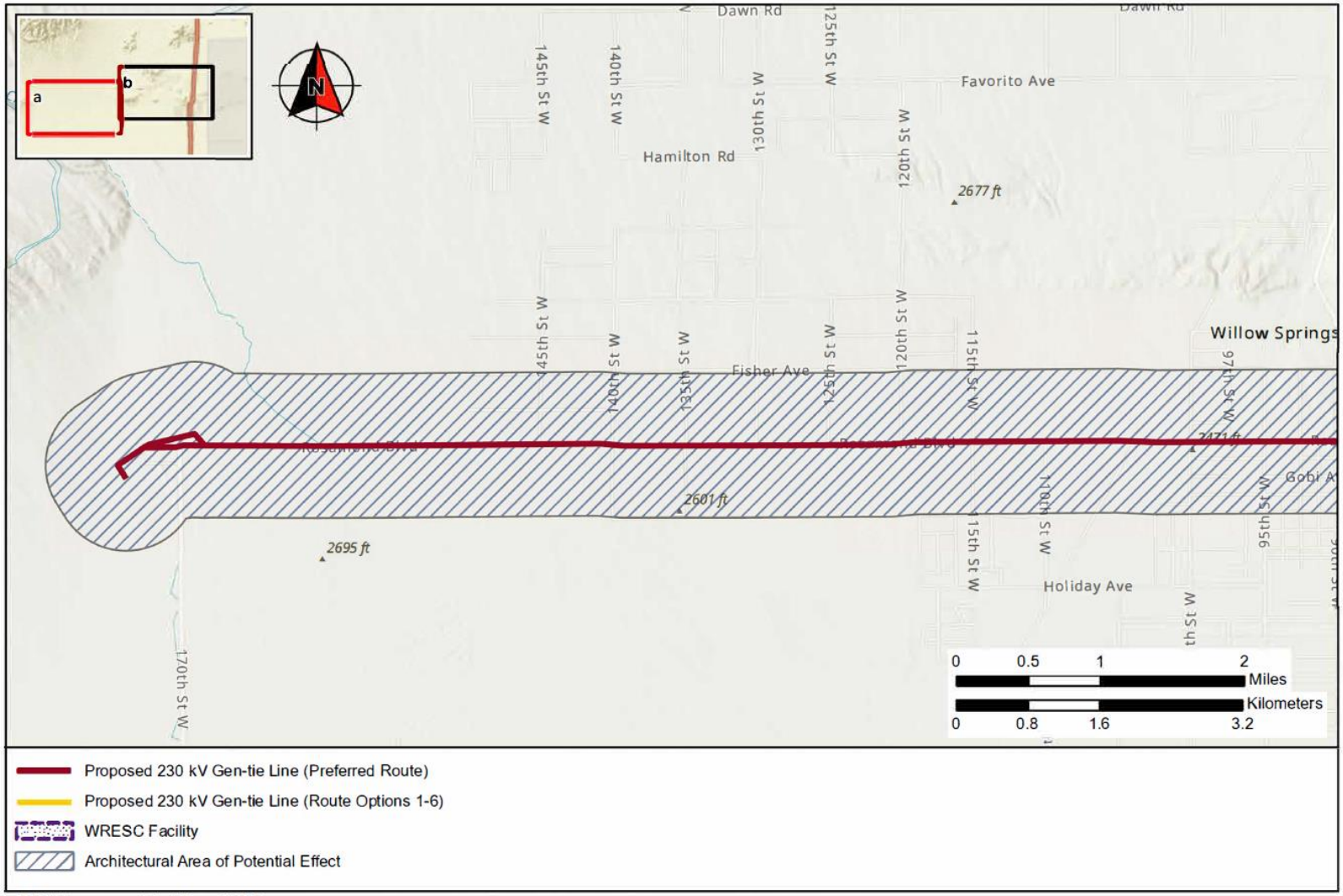
Figure 5e *Proposed Archaeological Area of Potential Effect (5 of 5)*



Proposed 230 kV Gen-tie Line (Preferred Route)

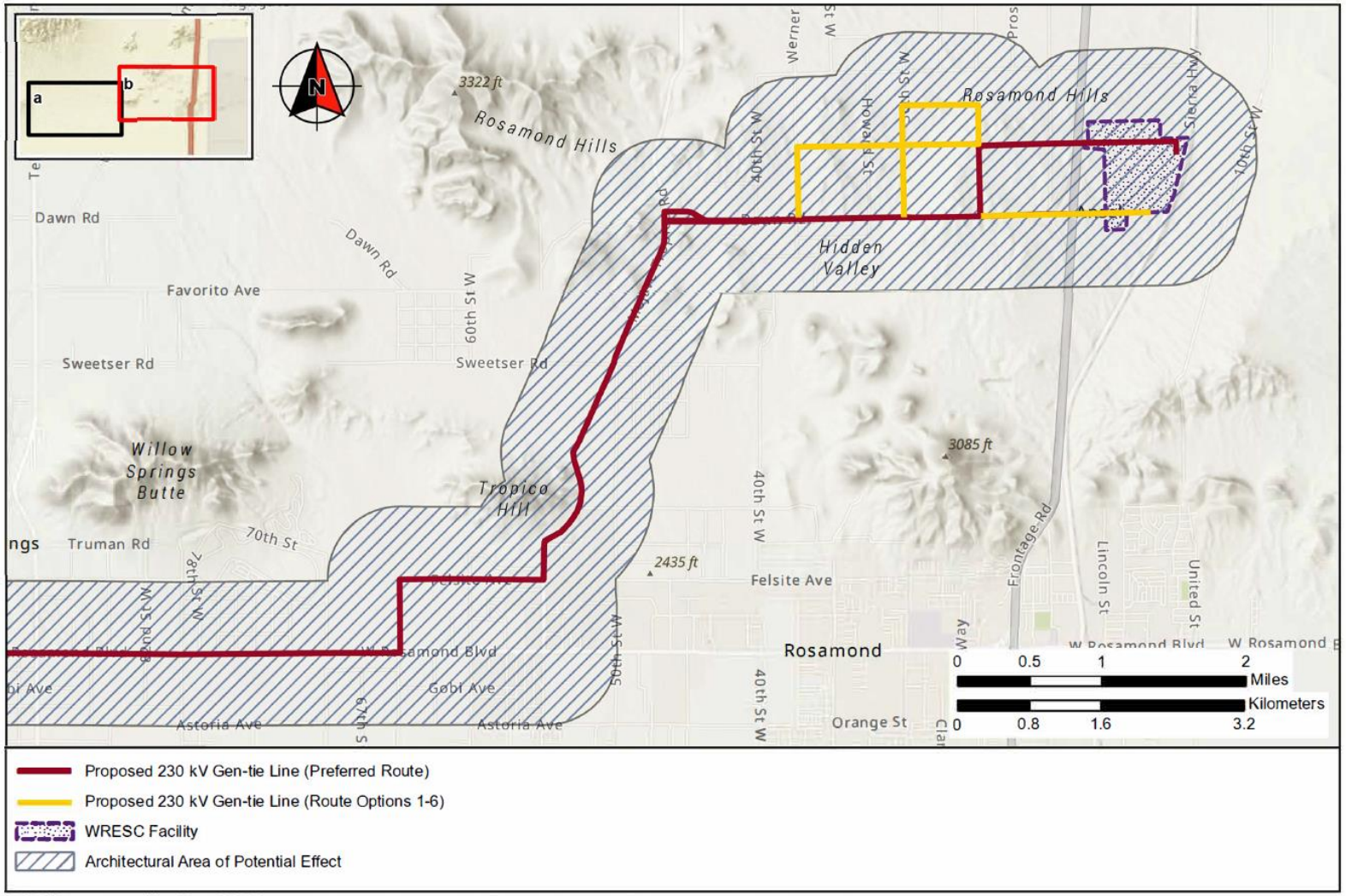
USGS *Tylerhorse Canyon* and *Fairmont Butte* 7.5-minute Quadrangles. 1:24,000 Scale.

Figure 6a *Proposed Architectural Area of Potential Effect (1 of 2)*



ESRI Topographic Map 2024

Figure 6b *Proposed Architectural Area of Potential Effect (2 of 2)*



ESRI Topographic Map 2024

Department of Energy
Washington, DC 20585

July 16, 2025

Julianne Polanco
State Historic Preservation Officer
Office of Historic Preservation
1725 23rd Street, Suite 100
Sacramento, CA 95816

SUBJECT: U.S. Department of Energy, Loan Programs Office, Section 106 Consultation, Willow Rock Energy Storage Center Project, Kern County, California

Dear Ms. Polanco,

Pursuant to its authority under Title XVII of the Energy Policy Act of 2005, which established a Federal loan guarantee program, the U.S. Department of Energy (DOE), Loan Programs Office (LPO) is evaluating whether to provide a Federal loan guarantee to Hydrostor USA Holdings Inc. (Hydrostor, or the Applicant) for the development of the proposed Willow Rock Energy Storage Center Project (the Project) in Kern County, California.

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Whirlwind Substation located approximately 16 miles southwest of the WRESC at the intersection of 170th Street W and Rosamond Boulevard, via a new 230-kilovolt (kV) generation-tie (gen-tie) line. The WRESC will be capable of operating full-time with an approximately 50-year lifespan. Construction of the Project would take approximately 55 months starting in 2025 and continuing through 2029.

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The APE served as the basis for the reconnaissance/intensive-level survey limits for six gen-tie route options. The total area surveyed for archaeological resources totals 698.5 acres. While the survey report includes results for all six gen-tie route options, the Applicant has chosen the final alignment for the Project to include in its application to DOE LPO. Therefore, while the survey report includes information on identified cultural resources for the five gen-tie alignments that are no longer under consideration, DOE LPO is formally consulting on the findings within the actual APE of the undertaking (e.g., the chosen alignment).

Tribal Outreach

On June 25, 2024, DOE LPO sent a joint NEPA and NHPA initiation letter to the following five (5) Federally recognized Tribes: Big Pine Paiute Tribe of the Owens Valley, Quechan Tribe of the Fort Yuma Reservation, Yuhaaviatam of San Manuel Nation (formerly the San Manuel Band of Mission Indians), Tejon Indian Tribe, and Tule River Indian Tribe. The same initiation letter was distributed to five (5) State recognized Tribes: Coastal Band of the Chumash Nation, Fernandeno Tataviam Band of Mission Indians, Kern Valley Indian Community, Kitanemuk & Yowlumne Tejon Indians, and San Fernando Band of Mission Indians. On July 26, 2024, the initiation letter was sent to an additional two (2) Federally recognized Tribes: Fort Independence Indian Community of Paiute Indians of the Forst Independence Reservation, California, and Te-Moak Tribe of Western Shoshone Indians of Nevada.

Of the twelve (12) Tribes contacted, three (3) confirmed their interest in the Project: Big Pine Paiute Tribe of the Owens Valley, Yuhaaviatam of San Manuel Nation, and Fort Independence Indian Community of Paiute Indians of the Fort Independence Reservation, California. The Fernandeno Tataviam Band of Mission Indians preformed an initial assessment of the project and confirmed no consultation was required. The remaining eight (8) Tribes did not respond to LPO's initiation letter or follow-up phone calls.

After communication with the Fort Independence Indian Community of Paiute Indians of the Fort Independence Reservation, California Tribal Historic Preservation Officer (THPO), DOE LPO requested that the Applicant and their consultant include the THPO as a Tribal monitor and consult with him throughout their survey work and resource identification process.

Description of Efforts to Identify Historic Properties

As part of the Section 106 identification process, the Applicant prepared a Cultural Resource Report that is included as Attachment 1. The report includes a description of the survey area and the environmental setting, the results of background research, and the methods and results of both archaeological and historic built environment resource surveys.

Archaeological Resources

Previous cultural resource inventories were reviewed to identify previously recorded cultural resources within the survey area and within a 1-mile study area surrounding the Project. The literature review identified 57 previous studies within the 1-mile study area, 41 of which overlap or intersect portions of the current survey area. The records search also found 345 previously recorded archaeological resources in the 1-mile study area, only 25 of which are located within the current survey area. None of these 25 resources have been previously evaluated for eligibility for listing on the National Register of Historic Places (NRHP) and the California Register of Historical Resources (CRHR).

Field surveys were conducted by the Applicant's consultant, WSP, to identify newly recorded cultural resources within the APE (see Attachment 1). WSP's survey resulted in the identification of nine (9) new archaeological sites and a total of 45 isolated finds. The survey also revisited one (1) previously recorded resource, Tropico Gold Mine (15-007591). Records for newly recorded sites and isolates, as well as updates to previously recorded sites revisited, are provided in Appendix C of the survey report on the appropriate DPR Series 523 forms (see Attachment 1).

The 45 isolated finds are not considered eligible for inclusion in the NRHP, and the previously recorded site 15-007591 is recommended not eligible for inclusion in the NRHP. A total of 13 newly recorded sites were assumed NRHP-eligible, pending the completion of additional evaluative testing. These include four (4) sites located within the WRESC Site footprint (field IDs: WRESC-ZEV-PRE-SITE-1; WRESC-ZEV-PRE-SITE-

2; WRESC-ZEV-HIST-SITE-1; and WRESC-ZEV-HIST-SITE-2), two (2) sites located within the P1 Staging Area (field IDs: WRESC-P1-PRE-SITE-1 and WRESC-P1-PRE-SITE-2), and four (4) sites located within the Preferred Gen-Tie Route (IDs: P-15-003816/CA-KER-3816; P-15-014902/CA-KER-8324H; P-15-014903/CA-KER-8325H; and P-15-014906/CA-KER-8328H). Three (3) sites that were identified during the original survey (P-15-003359/CA-KER-3359; P-15-003817/CA-KER-3817; and P-15-008677) are not within the chosen Project alignment and therefore are no longer within the APE.

The Applicant subsequently completed subsurface test excavations to evaluate the NRHP eligibility of the potentially eligible (or assumed eligible) archaeological sites within the APE. The Phase II testing report (Attachment 2) includes updated site descriptions, inventories, evaluations and recommendations of NRHP/CRHR eligibility for the archaeological sites within the APE which may be affected by development of the Project.

Testing and evaluation resulted in the revision of several site boundaries, including the reclassification of WRESC-ZEV-HIST-SITE-1 and WRESC-ZEV-PRE-SITE-1 as a single multicomponent site: WRESC-ZEV-MULTI-SITE-1. Additionally, WRESC-P1-PRE-SITE-1 and WRESC-P1-PRE-SITE-2 were determined to be a single continuous lithic scatter and were combined into a single larger 3.1-acre boundary subsumed as WRESC-P1-PRE-SITE-1. Lastly, an additional new site was identified during the boundary delineation effort, identified as WRESC-ZEV-PRE-SITE-3. Therefore, a total of nine (9) sites were evaluated through archaeological testing.

Based on the findings of subsurface testing and evaluation of the associated data, four (4) sites (WRESC-ZEV-MULTI-SITE-1; WRESC-ZEV-PRE-SITE-2; WRESC-ZEV-PRE-SITE-3; and WRESC-P1-PRE-SITE-1) are recommended eligible for listing on the NRHP under Criterion D and the CRHR under Criterion 4, due to the potential for these sites to yield additional data significant to the understanding of the pre-contact history of the Antelope Valley. Three (3) sites were found to be not eligible for inclusion in the NRHP and the CRHR (WRESC-ZEV-HIST-SITE-2; CA-KER-8325H; and CA-KER-8328H), while two sites (CA-KER-3816H and CA-KER-8324H) were not formally evaluated, as fieldwork determined that construction of the gen-tie route does not have the potential to cause impacts or adverse effects to these two sites.

Historic Built Environment Resources

WSP conducted an architectural survey of built environment resources over 45 years old within the APE. As a result of the survey, WSP documented six previously surveyed resources and 57 newly surveyed resources. All 63 historic built environment resources are located along the alignment of the preferred gen-tie route. All resources accessible from the public Right-of-way were recorded at the intensive level of California DPR Series 523 Forms, which are included in an appendix to the survey report (see Attachment 1).

Of the six previously recorded resources, one is listed as a contributing element to a NRHP-listed historic district (NR# 16000468), one is listed in the CRHR but is recommended not eligible for listing in the NRHP, one is recommended eligible for listing in the CRHR as part of a newly proposed Historic District; however, the district is recommended not eligible for listing in the NRHP, and three are recommended as not eligible for listing in the NRHP.

Of the 57 newly surveyed resources, four are recommended as part of a newly proposed CRHR-eligible historic district but are not eligible for listing in the NRHP, and one is assumed NRHP-eligible for purposes of assessing effects from the current Project. The remaining 52 newly recorded historic built environment resources are recommended as not eligible for inclusion in the NRHP.

Description of the Undertaking's Effects on Historic Properties

The two built environment historic properties in the APE include an NRHP-listed transmission line segment (P-15-017243; Vincent 220 kV Transmission Line; Big Creek Hydroelectric Historic District) and one residence (McKee House) that was inaccessible from the public ROW and thus assumed eligible. No adverse effects are anticipated to these historic properties, as described below.

The segment of the Vincent 220 kV Transmission Line is listed as contributing to the NRHP-listed Big Creek Hydroelectric Historic District, which transects the Project at the far southern terminus of the proposed gen-tie line. The addition of new transmission towers and gen-tie lines would visibly intrude on the viewshed of the historic district; however, given the 224-mile extent of the entire historic district, the visual effects to a 1.75-mile segment of the line would not constitute an adverse visual effect to NRHP-listed historic district as a whole. Furthermore, visual effects caused by the Project would not physically affect the architectural significance of the Vincent 220 kV Transmission Line or the Big Creek Hydroelectric Historic District.

The McKee House is located approximately 0.3 miles from the Project. The proposed gen-tie line is not in the property's primary view, and, given the distance of the resource from the proposed gen-tie line, construction of the Project would not create any atmospheric, auditory, or vibratory effects. Therefore, the Project would not diminish any aspects of integrity that would convey the resource's potential significance, were it to be evaluated and determined eligible.

Given the nature of the proposed Project, the undertaking has the potential to adversely affect subsurface/archaeological historic properties within the APE, as ground disturbing work may physically damage characteristics of archaeological sites that qualify them for the NRHP in a manner that would diminish its integrity. As currently planned, the entirety of the WRESC Site parcel will be subject to vegetation removal and grading, prior to structure development and shaft construction. The P1 staging area will be utilized in its entirety for the staging of waste rock associated with shaft construction, which will be used to develop an architectural berm around the facility. Areas defined as P2 staging area will

be used for temporary staging and vehicle parking during project development, and surficial impacts are planned to be minimal. Development of the gen-tie line will require direct boring or excavation to a total depth of 11 feet with a horizontal impact diameter of approximately 6 to 8 feet per each pole. As planned, poles will be spaced 700 feet apart for the extent of the gen-tie route. Portions of the line planned for undergrounding will require continuous trenching to depths of up to 8 feet and as wide as 6 feet to accommodate lines and associated vaults.

The Phase II archaeological testing effort resulted in four archaeological sites that remain recommended eligible for inclusion in the NRHP that cannot be avoided by the Project. These include sites WRESC-ZEV-MULTI-SITE-1; WRESC-ZEV-PRE-SITE-2; WRESC-ZEV-PRE-SITE-3; and WRESC-P1-PRE-SITE-1. Construction impacts would adversely affect the integrity of these archaeological historic properties. Therefore, DOE LPO seeks to consult with the California SHPO and other consulting parties regarding consensus on the NRHP eligibility determination for these four sites, and to develop a Memorandum of Agreement (MOA) to resolve adverse effects, as appropriate.

Requesting your Comments and Next Steps

Based on DOE's review of the efforts to identify historic properties and conclusions drawn from this information, DOE is issuing a Finding of Adverse Effect, consistent with 36 CFR § 800.5(d)(2). As part of the Section 106 process, DOE requests the concurrence of the California SHPO on the Finding of Adverse Effect, as well as any comments you may have on the Project **within thirty (30) days of receipt of this letter**.

We look forward to consulting with your office throughout the Section 106 process. Once DOE LPO has confirmed your office concurs with the Finding of Adverse Effect and the approach to develop a MOA to resolve adverse effects, we anticipate distributing a Draft MOA to solicit comments and input through consultation with consulting parties. A version of this letter has been provided to the three (3) Tribes that confirmed their interest in the Project as consulting parties. If you have any questions or would like to discuss this Project further, please contact me at LPO_Environmental@hq.doe.gov (please include "Willow Rock" in the subject line) or by telephone at 202-578-4573.

Sincerely,

TODD STRIBLEY Digitally signed by TODD STRIBLEY Date: 2025.07.16 12:29:47 -06'00'

Todd Stribley
Director, Environmental Compliance
Loan Programs Office

Attachments:
Attachment 1. Phase I Cultural Resources Survey Report
Attachment 2. Phase II Archaeological Testing Report

Department of Energy
Washington, DC 20585

June 5, 2026

Julianne Polanco
State Historic Preservation Officer
California Office of Historic Preservation
1725 23rd Street, Suite 100
Sacramento, CA 95816

SUBJECT: U.S. Department of Energy, Office of Energy Dominance Financing, Section 106 Consultation, Willow Rock Energy Storage Center Project, Kern County, California

Response to SHPO Comments Dated September 2, 2025
Reply in Reference to: DOE_2024_0807_001

Dear Ms. Polanco,

Pursuant to its authority under Title XVII of the Energy Policy Act of 2005, which established a Federal loan guarantee program, the U.S. Department of Energy (DOE), Office of Energy Dominance Financing (EDF), formerly known as the Loan Programs Office (LPO), is evaluating whether to provide a Federal loan guarantee to Hydrostor USA Holdings Inc. (Hydrostor, or the Applicant) for the development of the proposed Willow Rock Energy Storage Center (WRESC) Project (the Project) in Kern County, California.

DOE previously consulted with the California State Historic Preservation Officer (SHPO) under Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended (54 United States Code [U.S.C.] 306108), and its implementing regulations, 36 Code of Federal Regulations (CFR) Part 800, in a letter dated July 16, 2025. DOE appreciates the SHPO's September 2, 2025, correspondence regarding the Project and the ongoing consultation process pursuant to Section 106. DOE's responses to SHPO's September 2, 2025, comments are provided below and summarized in Attachment 1 as a reference.

DOE has reviewed SHPO's comments regarding the Area of Potential Effects (APE), historic property identification, National Register of Historic Places (NRHP) eligibility determinations, tribal consultation, subsurface archaeological sensitivity, and DOE's previously submitted finding of Adverse Effect. Following review of SHPO's comments and further consideration of the archaeological and historical record developed through the Project's investigations, DOE agrees with SHPO's assessment and has determined that the identified archaeological resources are not eligible for inclusion in the NRHP. No archaeological historic properties are present in the APE for the undertaking. Two (2) built environment historic properties remain in the APE and will not be adversely affected by the undertaking. Thus, DOE has revised its previously submitted finding and has recorded a Finding of No Adverse Effect, in accordance with 36 CFR § 800.5(d)(1).

This correspondence is to clarify the evaluation of resources within the final Project APE and associated effects resulting from implementation of the undertaking, as currently proposed. Since the Project has been certified by the California Energy Commission (CEC) as of December 19, 2025, and the Project is finalizing all pre-construction requirements in anticipation of start of construction on July 1, 2026, DOE is requesting expedited feedback and acknowledgement of the Finding of No Adverse Effect for this undertaking.

Description of the Undertaking and Area of Potential Effects

DOE's action is the issuance of a proposed Federal loan guarantee to the Applicant for the undertaking (i.e., the Project), which would involve construction of the WRESC on approximately 90 acres of private land in unincorporated, southeastern Kern County, and a new approximately 19-mile-long 230-kilovolt (kV) generation-tie (gen-tie) line connecting to Southern California Edison's existing Whirlwind Substation located at the intersection of 170th Street W and Rosamond Boulevard. Project maps are included as Attachment 2.

As defined in the Section 106 regulations (36 CFR § 800.16(d)), the APE is the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The dimensions of the APE are influenced by the scale and nature of an undertaking and may be different for different kinds of effects caused by the undertaking.

The APE for the undertaking was determined in consultation with the DOE and the California SHPO. As requested by SHPO, DOE has updated the consultation record to reflect the final APE, which includes the selected gen-tie line alignment and associated Project facilities that constitute the undertaking currently under review. Revised figures depicting the final APE and the locations of identified archaeological resources and historic properties within the APE are included as Attachment 2.

The final APE includes the Project construction footprint plus a 200-foot buffer around the WRESC site and a 50-foot buffer around the linear features of the gen-tie line (i.e., the archaeological survey area, totaling 472.4 acres). The final Project construction footprint where ground disturbance may occur within this area totals 180.3 acres. The APE also includes the area within a 0.5-mile buffer around the WRESC site and the gen-tie line (i.e., the historic built environment survey area, totaling 3,336.4 acres) to account for any potential non-physical effects to historic built environment resources.

Identification of Historic Properties

DOE has reviewed SHPO's request for clarification regarding the archaeological resources within the final APE evaluated for NRHP eligibility as part of the Section 106 process and reached the following determinations:

#	Resource ID	Resource Type	DOE Determination	Basis for Determination
1	WRESC-ZEV-PRE-SITE-2	Lithic scatter	Not Eligible	Lacks demonstrated information potential; no features, intact deposits, or substantial diagnostic assemblages
2	WRESC-ZEV-PRE-SITE-3	Lithic scatter	Not Eligible	Ephemeral low-density scatter (approximately 33 flakes); no features, diagnostics, or evidence of an intact archaeological locus
3	WRESC-P1-PRE-SITE-1	Lithic scatter	Not Eligible	Lacks demonstrated information potential; no features, intact deposits, or substantial diagnostic assemblages
4	WRESC-ZEV-MULTI-SITE-1 (Prehistoric Component)	Lithic scatter	Not Eligible	Lacks demonstrated information potential; no features, intact deposits, or substantial diagnostic assemblages
5	WRESC-ZEV-MULTI-SITE-1 (Historic Component)	Historic homestead/artifact scatter	Not Eligible	Does not meet Criteria A, B, C, or D
6	WRESC-ZEV-HIST-SITE-2	Historic road segment	Not Eligible	Previously evaluated and determined not eligible
7	CA-KER-8325H	Historic resource	Not Eligible	Previously evaluated and determined not eligible
8	CA-KER-8328H	Historic resource	Not Eligible	Previously evaluated and determined not eligible

As noted in the table above, resources WRESC-ZEV-HIST-SITE-2, CA-KER-8325H, and CA-KER-8328H were previously evaluated and determined not eligible for the NRHP. DOE does not recommend any change to these prior NRHP determinations and no further consideration of these resources under Section 106 is warranted.

Per SHPO's comments, the additional resources CA-KER-3816H and CA-KER-8324H included in the prior consultation are physically avoided by the final Project design and thus are outside of the APE and not subject to potential direct or indirect effects from the undertaking. Therefore, no further consideration of these resources under Section 106 is warranted.

As presented below, the remaining evaluated resources within the Project footprint do not meet the criteria for listing in the NRHP and therefore do not constitute historic properties for purposes of Section 106.

Archaeological Reevaluation

The purpose of the Phase II archaeological investigations was to evaluate the significance and integrity of these resources and determine whether they possess information potential sufficient to support their eligibility under NRHP Criterion D. The testing program included approximately 20 Surface Test Units (STUs), 26 Shovel Test Pits (STPs), and two Test Excavation Units (TEUs) distributed among the archaeological sites identified within the APE. The investigations documented low-density lithic scatters consisting primarily of

flakes and lithic debitage. The investigations did not identify cultural features, hearths, house floors, midden deposits, milling features, bedrock features, intact occupation surfaces, datable deposits, substantial diagnostic artifact assemblages, or other archaeological manifestations commonly associated with significant information potential.

DOE acknowledges SHPO's comment that the previous recommendations of eligibility relied in part upon the possibility that additional archaeological information may exist within portions of the sites that were not tested. DOE agrees with SHPO that eligibility under Criterion D must be supported by demonstrated potential to provide unique, uncommon, or significant information to address specific research questions concerning regional prehistory. Thus, in consideration of SHPO's comments, DOE has determined that all archaeological resources identified within the APE are not eligible for inclusion in the NRHP under Criterion D. Additional information regarding the basis for these determinations for each evaluated site is provided below.

1. WRESC-ZEV-PRE-SITE-2

Investigations at WRESC-ZEV-PRE-SITE-2 identified a low-density lithic scatter lacking cultural features, intact deposits, substantial diagnostic materials, or evidence of discrete activity areas. DOE concludes that the available evidence does not demonstrate sufficient information potential to support eligibility under Criterion D.

2. WRESC-ZEV-PRE-SITE-3

WRESC-ZEV-PRE-SITE-3 consists of an ephemeral low-density lithic scatter containing approximately 33 observed flakes distributed across approximately 0.52 acre. No cultural features, tools, diagnostic artifacts, midden deposits, milling features, or other indicators of an intact archaeological locus were identified. Given the sparse and widely dispersed nature of the assemblage, DOE found no reasonable basis to conclude that additional excavation would likely yield information important to understanding regional prehistory. The limited nature of the resource is the basis for concluding that additional testing was not warranted and that the site lacks demonstrated information potential sufficient to support eligibility under Criterion D.

3. WRESC-P1-PRE-SITE-1

Investigations at WRESC-P1-PRE-SITE-1 similarly documented a dispersed lithic scatter lacking features, diagnostic concentrations, or evidence of significant subsurface deposits. DOE concludes that the resource does not possess demonstrated information potential sufficient to support eligibility under Criterion D.

4. WRESC-ZEV-MULTI-SITE-1 (Prehistoric Component)

The prehistoric component of WRESC-ZEV-MULTI-SITE-1 consists of a low-density lithic scatter comparable to other prehistoric resources documented within the Project Area. Investigations did not identify archaeological features, intact occupation surfaces, or

assemblages capable of addressing significant regional research questions. DOE therefore concludes that the prehistoric component of this site lacks demonstrated information potential sufficient to support eligibility under Criterion D.

5. WRESC-ZEV-MULTI-SITE-1 (Historic Component)

In response to SHPO's comments, DOE completed a formal evaluation of the historic-period component of WRESC-ZEV-MULTI-SITE-1. The historic component consists of a limited historic-period artifact scatter associated with a former homestead occupation. Investigations did not identify standing structures, architectural features, foundations, wells, privies, refuse deposits, or other archaeological features commonly associated with significant historical information potential. There is no evidence that the resource is associated with significant historical events, significant persons, distinctive architectural characteristics, or important historical research questions. Accordingly, DOE concludes that the historic component of WRESC-ZEV-MULTI-SITE-1 is not eligible for listing in the NRHP under Criteria A, B, C, or D.

Subsurface Sensitivity

The Project Area is characterized primarily by shallow desert soils, localized historic disturbance, scattered active and intermittent drainage features, and widespread surficial deposits. Review of the geomorphic setting of the Project Area and the data derived from thorough archaeological investigations, including systematic survey and testing results, did not identify buried cultural horizons, stratified archaeological deposits, stable buried landforms, or other indicators commonly associated with deeply buried archaeological resources. The Phase II testing program was designed to evaluate the presence and character of subsurface archaeological deposits associated with identified resources. The investigations did not identify evidence suggesting a high potential for significant buried archaeological deposits beyond those already evaluated. The completed survey and testing program provides an adequate basis for assessing archaeological sensitivity within the Project Area.

Tribal Consultation

DOE consulted with interested Federally recognized Tribes throughout the Section 106 process and incorporated Tribal participation into archaeological investigations. DOE reviewed Tribal consultation records in response to SHPO's comments regarding potential significance under NRHP criteria other than Criterion D. No consulting Tribe identified any cultural resource within the Project Area as a Traditional Cultural Property, sacred site, religious property, or resource possessing significance under NRHP Criteria A, B, or C. Likewise, no consulting Tribe identified information supporting eligibility of the evaluated archaeological resources under criteria beyond that considered under Criterion D as presented above. As part of the CEC's Application for Certification (AFC) and CEQA process, archaeological and Native American monitors are required as part of the Conditions of Certification and will be present on-site during construction of the Project.

In summary, DOE has considered the SHPO's comments and has determined that the evaluated archaeological sites within the APE are not eligible for the NRHP. Therefore, no archaeological historic properties are affected by the undertaking.

Description of the Undertaking's Effects on Historic Properties

As detailed in DOE's consultation letter dated July 16, 2025, a total of 63 historic built environment resources were surveyed within the APE. Of these 63 resources, 61 are not eligible for the NRHP, one is listed on the NRHP, and one remains unevaluated. Thus, for the purpose of this Section 106 consultation, there are two (2) built environment historic properties in the APE: a transmission line segment (P-15-017243; Vincent 220 kV Transmission Line) that is part of an NRHP-listed historic district, and one unevaluated residence (McKee House). The two historic properties are depicted in Attachment 2.

The segment of the Vincent 220 kV Transmission Line in the APE is part of the NRHP-listed Big Creek Hydroelectric Historic District (NR# 16000468). The transmission line transects the Project APE approximately 0.25 miles west of the terminus of the proposed gen-tie line (see Attachment 2). The district is listed under Criterion A in the areas of Industry and Community Planning and Development for its association with the physical development of California and its influence on California's hydroelectric generation industry, and under Criterion C in the area of Engineering. DOE affirms the existing NRHP-listed status of the Big Creek Hydroelectric Historic District, inclusive of the Vincent 220 kV Transmission Line (P-15-017243). As the Project will not physically alter the architectural features of P-15-017243, there is no potential for the undertaking to compromise the resource's significance under NRHP Criterion C. While the addition of the Project's gen-tie line would visibly intrude on the existing setting of P-15-017243, this visibility would not substantively diminish the integrity of any character-defining features that convey the district's historic significance under Criterion A; and given the 224-mile extent of the historic district, the visual effect on an approximately 1.75-mile segment of the line would not constitute an adverse visual effect to NRHP-listed historic district as a whole. Therefore, the undertaking will have no adverse effect on this historic property.

The McKee House, located at 3337 50th Street W, is a 1922 vernacular residence with an ancillary barn and shed. At the time of the historic built environment reconnaissance survey, the property was inaccessible and not visible from the public Right-of-way, and thus is unable to be formally evaluated for NRHP eligibility. While the NRHP status of the resource remains "undetermined", the McKee House is treated as a potential historic property for Section 106 purposes. The property is located approximately 0.3 to 0.5 miles southeast of the Project gen-tie line (see Attachment 2) and is not visible from the Project. The proposed gen-tie line is not in the property's primary south-facing view, and given the distance of the resource from the Project it is not anticipated that construction of the Project would cause any atmospheric, auditory, or vibratory effects on the property. Therefore, the Project would not diminish the integrity of any potential character-defining features that would convey this resource's potential historic significance. DOE recommends that the NRHP eligibility of the McKee House remain "undetermined", and that the undertaking will have no adverse effect on this potential historic property.

Conclusion and Finding of No Adverse Effect

DOE concludes that archaeological resources WRESC-ZEV-PRE-SITE-2, WRESC-ZEV-PRE-SITE-3, WRESC-P1-PRE-SITE-1, WRESC-ZEV-MULTI-SITE-1, WRESC-ZEV-HIST-SITE-2, CA-KER-8325H, and CA-KER-8328H are not eligible for listing in the NRHP, and therefore do not constitute historic properties for purposes of Section 106. Resources CA-KER-3816H and CA-KER-8324H are physically avoided by the Project and are not within the APE of the undertaking and thus do not require further consideration under Section 106. While no treatment measures are required under Section 106 for the archaeological resources within the APE, Project implementation remains subject to the CEC's Conditions of Certification, which include archaeological and Native American monitoring, worker awareness training, inadvertent discovery procedures and consultation requirements, and treatment measures applicable to the discovery of previously unidentified resources during construction.

Two (2) built environment historic properties are present in the APE. Both properties are located within the 0.5-mile buffer area surrounding the Project gen-tie line. The Vincent 220 kV Transmission Line (P-15-017243) is a contributing element to the NRHP-listed Big Creek Hydroelectric Historic District. While the Project would be visible from the segment of P-15-017243 that intersects the APE, the degree of visibility would not diminish the integrity of its setting or other character-defining features, or those that convey the significance of the Big Creek Hydroelectric Historic District overall. The McKee House, which has undetermined NRHP eligibility and is considered a potential historic property for purposes of this review, is not visible from the gen-tie line and any visual changes to the setting resulting from the Project would not occur in the property's primary south-facing view. No atmospheric, auditory, or vibratory effects on these resources are anticipated. Therefore, the undertaking will have no adverse effect on historic properties.

DOE withdraws its previous finding of Adverse Effect and issues a revised finding of No Adverse Effect in accordance with 36 CFR §800.5(d)(1). DOE appreciates SHPO's participation in the consultation process and respectfully requests SHPO's concurrence with the determinations presented herein and requests your expedited feedback and acknowledgement of the Finding of No Adverse Effect.

Sincerely,

Todd Stribley
Director, Environmental Programs
Office of Energy Dominance Financing

Attachments:
Attachment 1. Response to SHPO Comments Summary Table
Attachment 2. Maps of Final APE, Archaeological Resources, and Historic Properties

ATTACHMENT 1
RESPONSE TO SHPO COMMENTS – Summary Table
Willow Rock Energy Storage Center Project
SHPO Reference No.: DOE_2024_0807_001

SHPO Comment (September 2, 2025)	DOE Response
Please provide a description of the final APE and updated APE maps depicting the final Project alignment.	DOE has updated the consultation record to reflect the final Project alignment and enclosed revised APE figures depicting the final undertaking, APE, and identified archaeological resources and historic properties within the APE.
Please clarify whether any portion of the final APE remains unsurveyed and provide surveyed versus unsurveyed acreage.	DOE reviewed the final APE and archaeological survey coverage. The enclosed mapping package identifies surveyed areas and any areas where access limitations were encountered. The Project's APE has been fully investigated and all surveys are deemed adequate. DOE's eligibility and effect determinations are based upon the final APE associated with the selected Project alignment.
Please provide maps showing resource boundaries in relation to the final APE.	DOE has enclosed revised figures illustrating resource boundaries and their relationship to the final APE.
Please provide a clear list of resources for which DOE seeks concurrence regarding NRHP eligibility.	DOE has reevaluated all archaeological resources within the final APE and provides a summary table of eligibility determinations within the response letter.
Please clarify the historic context, significance, and criteria supporting eligibility determinations.	DOE reevaluated the archaeological record and concluded that WRESC-ZEV-PRE-SITE-2, WRESC-ZEV-PRE-SITE-3, WRESC-P1-PRE-SITE-1, and WRESC-ZEV-MULTI-SITE-1 are not eligible for the NRHP.
The eligibility recommendations for WRESC-ZEV-MULTI-SITE-1, WRESC-ZEV-PRE-SITE-2, and WRESC-P1-PRE-SITE-1 lack analysis demonstrating how recovered lithics address specific research questions.	DOE agrees that Criterion D eligibility must be supported by demonstrated information potential. The completed investigations did not identify features, intact occupation surfaces, substantial diagnostic assemblages, or other evidence demonstrating the ability of these resources to address important regional research questions.
Eligibility recommendations appear to rely on the possibility that additional information may exist in untested portions of the sites.	DOE agrees that eligibility must be based upon demonstrated information potential rather than speculative future discoveries. DOE therefore reevaluated the archaeological resources and determined that resources are not eligible under Criterion D.
WRESC-ZEV-PRE-SITE-3 was not tested and its eligibility determination is presently unsubstantiated.	DOE reevaluated WRESC-ZEV-PRE-SITE-3 and determined the site is not eligible due to limited archaeological significance. The resource consists of an ephemeral low-density lithic scatter. No features, diagnostic artifacts, tools, midden deposits, or evidence of an intact archaeological locus were identified. DOE found no reasonable basis to conclude that additional excavation would likely yield information important to regional prehistory and therefore concluded that additional testing was not warranted.

SHPO Comment (September 2, 2025)	DOE Response
DOE did not formally evaluate WRESC-ZEV-HIST-SITE-2, CA-KER-8325H, CA-KER-8328H, and the historic component of WRESC-ZEV-MULTI-SITE-1.	DOE completed a formal evaluation of the historic component of WRESC-ZEV-MULTI-SITE-1 and concluded that it is not eligible under NRHP Criteria A, B, C, or D. DOE also confirms that resources WRESC-ZEV-HIST-SITE-2, CA-KER-8325H, and CA-KER-8328H were previously evaluated and determined not eligible for the NRHP. DOE does not recommend any change to these prior NRHP determinations.
Please clarify how CA-KER-3816H and CA-KER-8324H were treated.	DOE confirms that CA-KER-3816H and CA-KER-8324H are avoided by Project design and are not subject to direct or indirect effects from the undertaking.
Please provide information regarding subsurface sensitivity outside tested areas.	DOE reviewed archaeological survey data, testing results, and geomorphic conditions within the Project Area. The area is characterized primarily by shallow desert soils, localized historic disturbance, scattered drainages, and little evidence of stable buried landforms. Phase II sub-surface investigations were conducted via a total of 48 test units and did not identify buried cultural horizons, stratified archaeological deposits, or other indicators suggesting a high potential for significant buried archaeological resources. DOE concludes that the completed survey and testing program provides an adequate basis for assessing archaeological sensitivity.
Additional identification efforts such as geoarchaeological testing may be necessary depending upon subsurface sensitivity.	Based upon the completed survey program, Phase II investigations, geomorphic observations, and absence of indicators suggesting significant buried archaeological deposits, DOE concludes that additional archaeological identification efforts are not warranted. Residual uncertainty will be addressed through archaeological monitoring, Native American monitoring, worker awareness training, and inadvertent discovery procedures required by the California Energy Commission Conditions of Certification.
DOE appears to have focused only on Criterion D and should consider tribal perspectives regarding other forms of significance.	DOE reviewed Tribal consultation records and consulted with interested Tribes throughout the identification process. No consulting Tribe identified any resource within the Project Area as a Traditional Cultural Property, sacred site, religious property, or resource possessing significance under NRHP Criteria A, B, or C. As part of the CECs AFC and CEQA process, tribal monitors are required and will be present on-site during construction of the project.
SHPO is unable to concur with DOE's previous finding of Adverse Effect.	DOE has reevaluated the archaeological resources within the APE and revised its eligibility determinations. No archaeological historic properties are present within the APE. Based upon this reevaluation, DOE withdraws its previous finding of Adverse Effect and issues a revised finding of No Adverse Effect pursuant to 36 CFR §800.5.

State of California • Natural Resources Agency
Gavin Newsom, *Governor*

DEPARTMENT OF PARKS AND RECREATION
OFFICE OF HISTORIC PRESERVATION
Armando Quintero, *Director*

Julianne Polanco, State Historic Preservation Officer
1725 23rd Street, Suite 100, Sacramento, CA 95816-7100
Telephone: (916) 445-7000 FAX: (916) 445-7053
calshpo.ohp@parks.ca.gov www.ohp.parks.ca.gov

June 23, 2026

Reply in Reference to: DOE_2024_0807_001

Todd Stribley, Director
Environmental Programs
Office of Energy Dominance
Department of Energy
Washington, DC 20585

VIA ELECTRONIC MAIL

Re: Section 106 Consultation for Willow Rock Energy Storage Center, North of Dawn Road and between State Route 14 and Sierra Highway, Kern County
(DOE Award: DE-SOL-0007154)

Dear Mr. Stribley:

The United States Department of Energy (DOE) is continuing consultation with the State Historic Preservation Officer (SHPO) regarding its effort to comply with Section 106 of the National Historic Preservation Act of 1966 (54 U.S.C. 306108), as amended, and its implementing regulation found at 36 CFR Part 800.

Having received the SHPO's September 2, 2025 comments on their proposal to provide funding to Hydrostor USA Holdings Inc. to support the construction of the 163-acre Willow Rock Energy Storage Center in unincorporated Kern County (undertaking), the DOE modified their previous area of potential effects (APE) definition, their historic property identification methodology and NRHP eligibility determinations and finding of effect. After reviewing the DOE's documentation provided in support of a finding of no adverse effect, the SHPO offers the following comments:

APE:

1. The DOE defined the APE as the project's "construction footprint plus a 200-foot buffer around the WRESC site and a 50-foot buffer around the linear features of the gen-tie line (i.e., the archaeological survey area, totaling 472.4 acres). The final Project construction footprint where ground disturbance may occur within this area totals 180.3 acres. The APE also includes the area within a 0.5-mile buffer around the WRESC site and the gen-tie line (i.e., the historic built environment survey area, totaling 3,336.4 acres) to account for any potential non-physical effects to historic built environment resources."

2. The SHPO does not object to the DOE's APE definition.

Historic Property Identification Efforts:

3. It is the SHPO's understanding that consulting Native American tribes did not identify a Traditional Cultural Property or sacred site within the APE.

4. The SHPO concurs with the DOE's determination that the archaeological properties listed below do not meet NRHP eligibility requirements.

   - WRESC-ZEV-PRE-SITE-2
   - WRESC-ZEV-PRE-SITE-3
   - WRESC-P1-PRE-SITE-1
   - WRESC-ZEV-MULTI-SITE-1 (Prehistoric Component)
   - WRESC-ZEV-MULTI-SITE-1 (Historic Component)

5. The DOE further identified the Vincent 220 kV Transmission Line, a contributor to NRHP-listed Big Creek Hydroelectric Historic District (P-15-017243) and the McKee House, constructed in 1922 within the APE.

6. As the undertaking will not affect the McKee House, the DOE requests that its NRHP eligibility status remain "undetermined." It appears the DOE is requesting that the McKee House be assumed eligible for NRHP inclusion as it is not possible to have an undetermined NRHP eligibility for a resource yet also simultaneously reach a conclusive finding of effect.

7. The SHPO has no objection to the proposed assumption of eligibility for the McKee House for the purposes of this undertaking only.

Finding of Effect

8. The SHPO concurs with the DOE's finding of no adverse effect. Be advised that under certain circumstances, such as an unanticipated discovery or a change in project description, the DOE may have future responsibilities for this undertaking under 36 CFR Part 800.

Please notify Ed Carroll, Historian II, at Ed.Carroll@parks.ca.gov or (916) 503-8466 if there are any questions.

Sincerely,

Julianne Polanco
State Historic Preservation Officer

Gmail

Aaron Lui <aaron.lui@panoramaenv.com>

Jurisdictional Delineation Verification for the Willow Rock Energy Storage Project

Aaron Lui <aaron.lui@panoramaenv.com> Wed, Apr 3, 2024 at 7:16 PM
To: "Zdimal-Quarles, Kerrianne L CIV USARMY CESPA (USA)" <Kerrianne.L.Zdimal-Quarles@usace.army.mil>

Hi Kerrianne,

Thank you for your response and the background information. We would like to proceed with the Approved JD review process based on the JD results and the absence of impacts to jurisdictional features.

Please let me know if you need any additional information from us.

Thank you,

Aaron Lui, Senior Manager
Panorama Environmental, Inc.
717 Market Street, Suite 400
San Francisco, CA 94103
o.650.340.4836 | **c.**916.719.0094

PANORAMA LinkedIn

On Wed, Apr 3, 2024 at 2:46 PM Zdimal-Quarles, Kerrianne L CIV USARMY CESPA (USA) <Kerrianne.L.Zdimal-Quarles@usace.army.mil> wrote:

> Good Afternoon Aaron,
>
> I am sending this email to confirm receipt of the request for Jurisdictional Determination (JD) and to let you know I am the project manager assigned to this request. This request is identified as reference number SPL-2024-00258.
>
> I recommend reviewing Regulatory Guidance Letter 16-01 which explains the differences between the two types of JDs and provides guidance to the public on when it may be appropriate to issue an Approved JD as opposed to a Preliminary JD, and when it may be appropriate to not request a JD. Please see https://www.usace.army.mil/Missions/Civil-Works/Regulatory-Program-and-Permits/Guidance-Letters/ to review this document, issued in 2016.
>
> I am out of the office next week and will follow up with you the week of April 15 regarding the status of this request.
>
> Best regards,
>
> kz
>
> **Kerrianne Zdimal**
>
> Regulatory Specialist
>
> US Army Corps of Engineers

Albuquerque District - Southern Colorado Branch

South Pacific Division - Regional Technical Support and Execution Center (TREC)

Let us know how we're doing. Please complete the survey at: https://regulatory.ops.usace.army.mil/customer-service-survey/

If you have received this email in error, please notify the sender immediately by replying to the email and permanently delete the email and any attachments without reading, forwarding, saving or disclosing them.

From: Aaron Lui <aaron.lui@panoramaenv.com>
Sent: Tuesday, March 26, 2024 11:46 AM
To: Allen, Aaron O CIV USARMY CESPL (USA) <Aaron.O.Allen@usace.army.mil>
Cc: Laurel Lees <laurel.lees@hydrostor.ca>; Susanne Heim <Susanne.Heim@panoramaenv.com>
Subject: [Non-DoD Source] Jurisdictional Delineation Verification for the Willow Rock Energy Storage Project

Mr. Allen,

I am contacting you to request verification of a Jurisdictional Delineation (JD) for the Willow Rock Energy Storage Project (project) located north of Rosamond in eastern Kern County, California. The project Applicant is GEM A-CAES LLC (GEM), a subsidiary of Hydrostor, Inc. (Hydrostor). The JD was prepared by WSP in January 2024, and it concludes the project would not impact jurisdictional waters (see attached).

The project is currently under state environmental review by the California Energy Commission (CEC). More information about the project and additional background materials are available on the CEC's website (see docket log). NEPA review will be initiated in April with the Department of Energy as lead agency. We are seeking USACE verification of the JD for the NEPA admin record. We have the following questions and requests:

- What verification process do you recommend to support NEPA review documentation? Is it possible to get an informal verification via email or do you recommend a formal verification?
- Please direct us to any verification process guidance or forms you would like us to use.
- What is the typical verification process timeline?

Thank you,

Aaron Lui, Senior Manager
Panorama Environmental, Inc.
717 Market Street, Suite 400
San Francisco, CA 94103
o.650.340.4836 | **c**.916.719.0094

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS LOS ANGELES DISTRICT
915 WILSHIRE BOULEVARD, SUITE 930
LOS ANGELES, CALIFORNIA 90017-3489

October 1, 2024

CESPL-RG

SUBJECT: Determination of Need for Department of the Army Permit

Cody Niehus
GEM A-CAES LLC
1125 17th St #700
Denver, CO 80202
cody.niehus@hydrostor.ca

Dear Mr. Niehus:

I am responding to your request dated June 25, 2024, for clarification whether a Department of the Army Permit is required for your proposed project, Willow Rock Energy Storage Center (File No. SPL-2024-00258). The work, as described in email correspondence and depicted on the detail map set prepared by Panorama Environmental, Inc., will consist of the development of an energy storage facility (approximately 190 acres) and approximately 20 miles (300 acres) of electrical transmission lines connecting to the existing Southern California Edison Whirlwind Substation. The total area, including the energy storage facility, transmission lines and their corridor (125-foot buffer), is approximately 490 acres (Enclosure 1). The proposed project is located on private property in and around the rural community of Ansel, north of State Route (SR) 138, south of SR 58, east of Interstate 5, and west of Edwards Air Force Base, within the Antelope-Fremont Valleys subbasin (HUC 18090206), Kern County, California (Latitude 34.87445352°, Longitude -118.22909557°).

The U.S. Army Corps of Engineers' (Corps) evaluation process for determining if you need a permit is based on whether or not the proposed project is located within or contains a water of the United States, and whether or not the proposed project includes an activity potentially regulated under Section 10 of the Rivers and Harbors Act or Section 404 of the Clean Water Act. If both conditions are met, a permit would be required.

Based on the information provided, we have determined that a Department of the Army permit is not required since the project would not result in the discharge of dredged or fill material into waters of the United States. However, please be advised that there are potential waters of the United States located in the vicinity of the project site and it is incumbent upon you to remain informed of any changes in the Corps' Regulatory Program regulations and policy as they relate to your project.

This determination applies only to this project. Other project proposals require a new determination. If your plans change such that waters of the United States could be impacted by the proposed project, please contact our office for a reevaluation of permit requirements. Notwithstanding this determination, your proposed project may be regulated under other Federal, State, and local laws.

Please note that the Corps did not make a determination of geographic jurisdiction under any of our permitting authorities for this project.

Please also note that a Corps' permit decision does not constitute approval of project design features, nor does it imply that the construction is adequate for its intended purpose. Additionally, a Corps' permit decision does not authorize any injury to property or invasion of rights or any infringement of federal, state, or local laws or regulations. The responsible party and/or any contractors acting on behalf of the responsible party must possess the authority and any other approvals required by law, including property rights, in order to undertake the proposed work.

If you have any questions, please contact me at (970) 259-1764 X 1 or via email at kerrianne.l.zdimal-quarles@usace.army.mil. Thank you for participating in the Corps' Regulatory Program. Please help me to evaluate and improve the regulatory experience for others by completing the customer survey form at https://regulatory.ops.usace.army.mil/customer-service-survey/.

Sincerely,

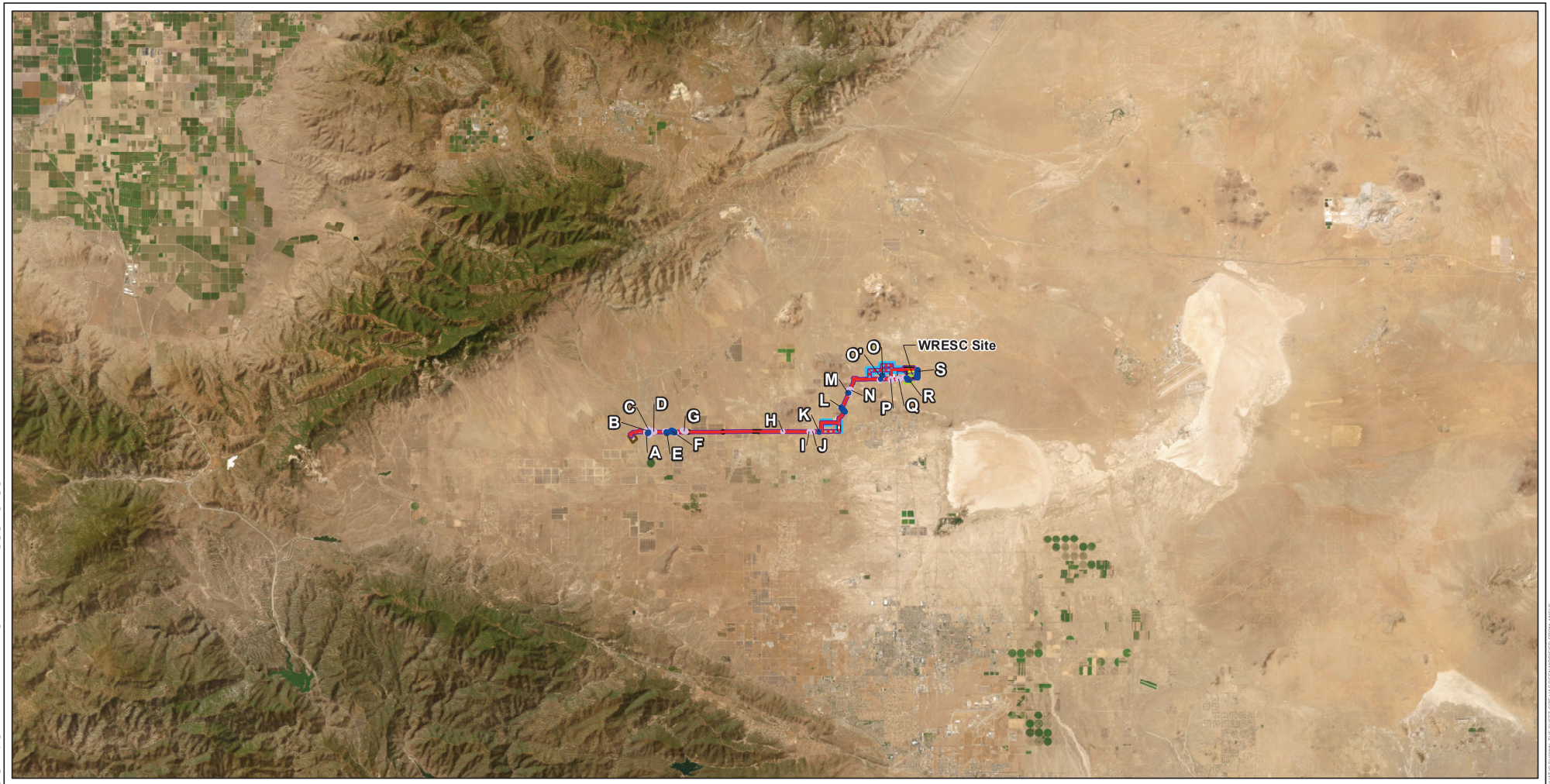
Kerrianne Zdimal

Kerrianne Zdimal
Regulatory Specialist

Enclosure

CF:

CA WRCB, elizabeth.payne@waterboards.ca.gov
RWQCB, lahontan@waterboards.ca.gov
Aaron Lui, Panorama Environmental, Inc., aaron.lui@panoramaenv.com



LEGEND

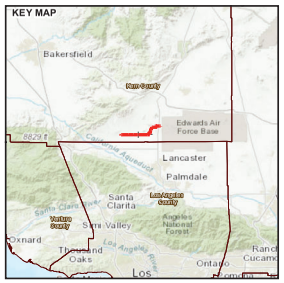
Jurisdictional Drainages
- Mapped in Field
- Delineation as Observed

Proposed Transmission Line
- Preferred Route, Aboveground
- Preferred Route, Underground
- Route Options 1-6, Aboveground
- Route Options 1-6, Underground

Project Components
- WRESC Site
- Other Project Parcels
- No Right of Entry Areas
- Project Boundary
- SCE Whirlwind Substation
- 500 ft Buffer Around Project Parcels and Transmission Line

2024 Project Areas
- Gen-Tie Transmission Line Variances
- P2 North
- P2 South

KEY MAP



0 5 10
1:350,000 MILES

REFERENCE(S)
1. COORDINATE SYSTEM: NAD 1983 STATEPLANE CALIFORNIA V FIPS 0405 FEET
2. MAP SERVICE LAYER CREDITS: SOURCES: ESRI, HERE, GARMIN, INTERMAP, INCREMENT P CORP., GEBCO, USGS, FAO, NPS, NRCAN, GEOBASE, IGN, KADASTER NL, ORDNANCE SURVEY, ESRI JAPAN, METI, ESRI CHINA (HONG KONG), (C) OPENSTREETMAP CONTRIBUTORS, AND THE GIS USER COMMUNITY
SOURCE: ESRI, MAXAR, EARTHSTAR GEOGRAPHICS, AND THE GIS USER COMMUNITY

CLIENT
GEM A-CAES LLC

CONSULTANT
wsp

YYYY-MM-DD	2024-07-30
DESIGNED	MK
PREPARED	MK
REVIEWED	SC
APPROVED	VG/LL

PROJECT
WILLOW ROCK ENERGY STORAGE CENTER
JURISDICTIONAL DELINEATION FOCUSED SURVEY

TITLE
JURISDICTIONAL WATERS

PROJECT NO.	PHASE	REV.	FIGURE
31406639.000	01.LBR	1	8

ENCLOSURE 1

Gmail

Aaron Lui <aaron.lui@panoramaenv.com>

FW: CMLUCA Military Services Notification for Willow Rock Energy Storage Center Project

Laurel Lees <laurel.lees@hydrostor.ca> Wed, Apr 10, 2024 at 10:19 AM
To: "Glasgow, Sarah (CONTR)" <sarah.glasgow@hq.doe.gov>
Cc: "Harris, Kara" <kara.harris@hq.doe.gov>, Aaron Lui <aaron.lui@panoramaenv.com>, Susanne Heim <susanne.heim@panoramaenv.com>

FYI the DOD military contact list

Laurel G. Lees

Senior Director, Development – Permitting (North America)

HYDROSTOR

333 Bay Street, Suite 520

Toronto, Ontario, M5H 2R2, Canada

T: +1 858 232 3541

E: laurel.lees@hydrostor.ca

From: Laurel Lees
Sent: Wednesday, February 14, 2024 10:25 AM
To: sarah.glasgow@icf.com; Harris, Kara <kara.harris@hq.doe.gov>
Cc: Susanne Heim <susanne.heim@panoramaenv.com>; Aaron Lui <aaron.lui@panoramaenv.com>; Erin Ekblad <erin.ekblad@hydrostor.ca>
Subject: FW: CMLUCA Military Services Notification for Willow Rock Energy Storage Center Project

Please see below…

Laurel G. Lees

Senior Director, Development – Permitting (North America)

HYDROSTOR

333 Bay Street, Suite 520

Toronto, Ontario, M5H 2R2, Canada

T: +1 858 232 3541

E: laurel.lees@hydrostor.ca

From: Laurel Lees
Sent: Tuesday, January 30, 2024 8:40 PM
To: david.bell.3@us.af.mil; Reed.p.haney2@usace.army.mil; tom.caughlan@usmc.mil; steve.u.chung@navy.mil
Cc: Stein, David <david.stein@wsp.com>
Subject: CMLUCA Military Services Notification for Willow Rock Energy Storage Center Project

Good evening,

The purpose of this email is to notify you of Hydrostor's proposed **Willow Rock Energy Storage Center Project** (project) located in the Mojave-Rosamond region of eastern Kern County, California. The project facility is proposed on a location referred to as the "Zevsar Site" on APN 431-022-13 and surrounding properties near the intersection of Dawn Road and State Route 14.

The project includes construction and operations of an Advanced-Compressed Air Energy Storage (A-CAES) facility and a 19-mile 230 kV transmission line with interconnection to the existing Whirlwind Substation. When fully charged, this long duration energy storage A-CAES facility is designed to provide 500MW for an 8-hour period (4,000 MWh) at the point of interconnection.

Per the California Military Land Use Compatibility Analyst mapping tool, the project is located within 1000 feet of an area of military special use airspace (Figure 1) and, as such, we are contacting the Military Points of Contact listed on the SB 1462 Point of Contact list (updated August 2018). The results of the mapping tool are summarized below for reference.

This location IS WITHIN:

- **1000 feet of an area of military special use airspace.**
- **4000 feet of an area of military special use airspace.**

This location IS NOT WITHIN:

- **1000 feet of a military installation.**
- **1000 feet of a military training flight route.**
- **4000 feet of a military installation.**
- **4000 feet of a military training flight route.**

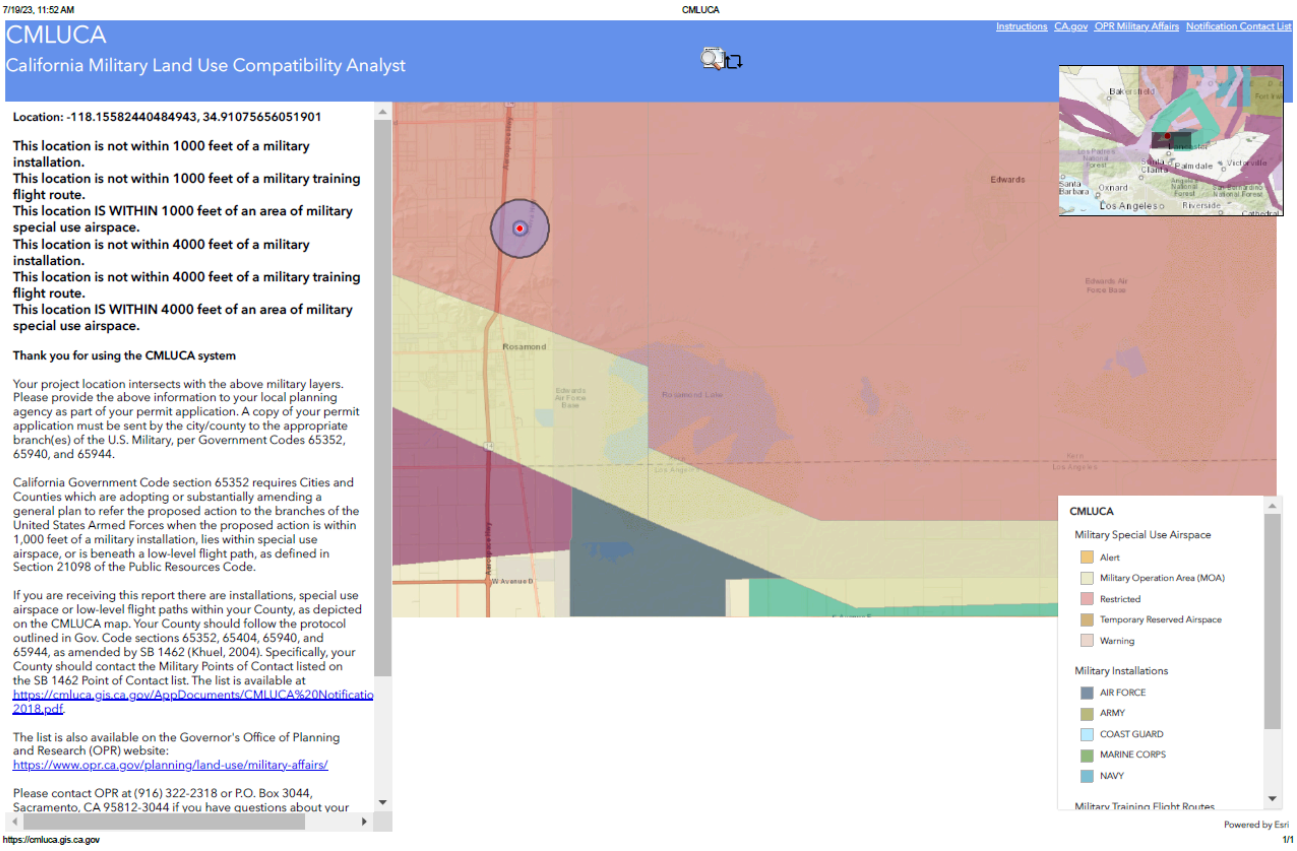


Figure 1. CMLUCA Results for the Zevsar Site (July 19, 2023)

Similarly, the project is located within an area mapped by Kern County with military review requirements for proposed projects that include structures over 100 feet (Figure 2). Although all structures are proposed to be less than 100 feet and formal consultation is not required, Hydrostor has conducted introductory/informal meetings with personnel at Edwards Air Force Base and provided them the map shown in Figure 2. We continue to work with Edwards AFB as part of ongoing stakeholder engagement.

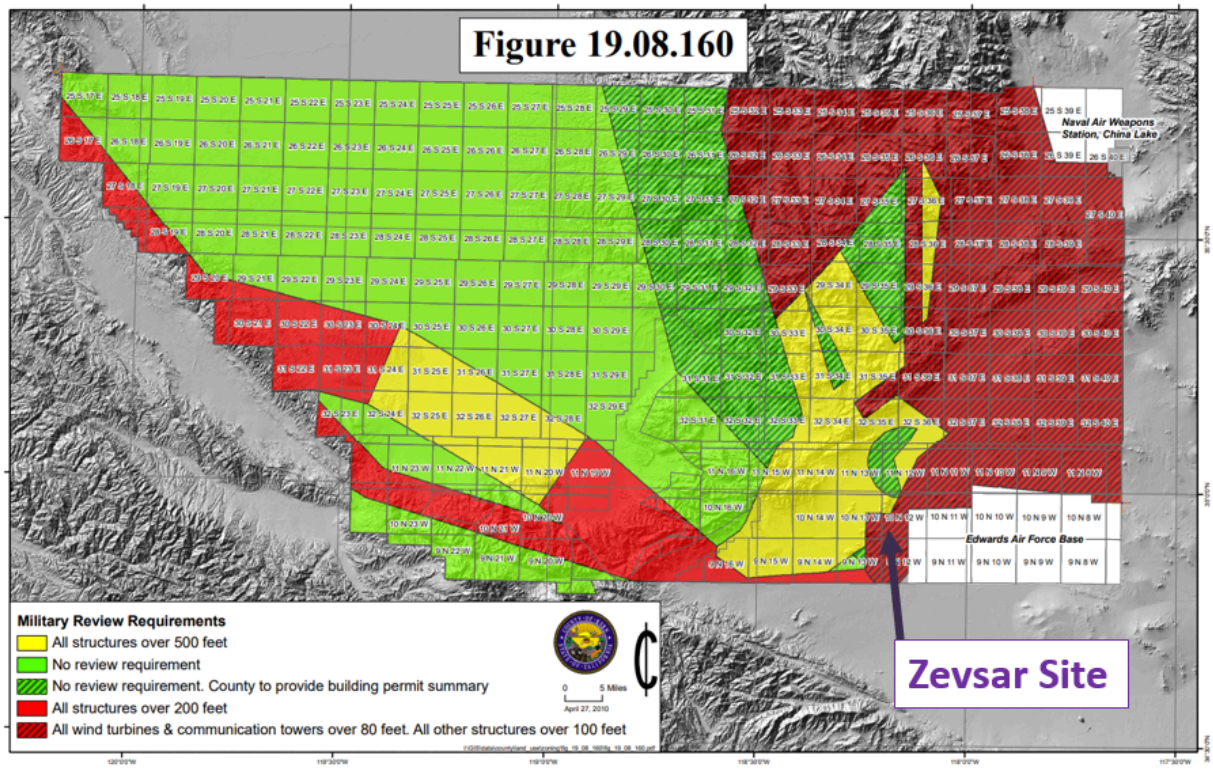


Figure 2. Kern County Military Review Requirements for the Zevsar Site

In terms of next steps, a reference to this consultation will be docketed in the California Energy Commission proceedings (21-AFC-02) to demonstrate compliance with Public Resources Code 25519.5. This filing is anticipated within Q1 2024. Please let us know if you have questions or comments on the matter.

Thank you for receiving this information as stakeholders in the project.

Very Respectfully,

Laurel G. Lees

Senior Director, Development – Permitting (North America)

HYDROSTOR

333 Bay Street, Suite 520

Toronto, Ontario, M5H 2R2, Canada

T: +1 858 232 3541

E: laurel.lees@hydrostor.ca

Attention:

Department of Energy
Washington, DC 20585

July 16, 2025

Peter Sanzenbacher
Fish and Wildlife Biologist
U.S. Fish and Wildlife Service
777 East Tahquitz Canyon Way, Suite 208
Palm Springs, CA 92262

SUBJECT: Endangered Species Act (ESA) Section 7 Consultation for the U.S. Department of Energy's proposed loan guarantee for the Willow Rock Energy Storage Center in Kern County, California

Dear Mr. Sanzenbacher,

In accordance with Endangered Species Act (ESA) Section 7, the U.S. Department of Energy (DOE) is initiating consultation and requesting concurrence with our determination of potential effects on ESA-listed threatened and endangered species for the Hydrostor USA Holdings Inc. (Applicant) proposed Willow Rock Energy Storage Center in Kern County, California. The DOE Loan Programs Office (LPO) is currently considering whether to issue a loan guarantee to the Applicant pursuant to its authority under Title XVII of the Energy Policy Act of 2005 (EPAct 2005), which established a Federal loan guarantee program.

DOE LPO's application process requires completion of environmental review pursuant to the National Environmental Policy Act (NEPA), as well as special purpose consultations such as those required under ESA Section 7, prior to the issuance of a loan guarantee. This Section 7 consultation request is being coordinated with DOE LPO's review of the Project pursuant to the NEPA statute (42 U.S.C. 4321-4347), DOE's NEPA regulations (10 CFR Part 1021), and DOE's NEPA implementing procedures published June 30, 2025.

Project Description

The Willow Rock Energy Storage Center (WRESC) Project (Project) is a proposed renewable energy project that would provide long-duration energy storage to help meet the region's growing demand for reliable, clean and resilient power. The proposed facility would be situated on up to 163.5 acres of land located immediately north of Dawn Road and between State Route (SR) 14 and Sierra Highway. The WRESC would be designed to charge and discharge up to 520-megawatts (MW) and 4,160 megawatt-hours (MWh) of energy using proprietary, advanced compressed air energy storage (A-CAES) technology. Energy stored at the WRESC would be delivered to Southern California Edison's (SCE) Whirlwind Substation located approximately 19 miles west of the WRESC at the

intersection of 170th Street W. and Rosamond Boulevard, via a new 230-kilovolt (kV) generation-tie (gen-tie) line (Figure 1 in Attachment 1). The proposed facility would consist of transmission systems, cooling systems, operation and maintenance facilities, other ancillary support systems, and temporary construction areas (Figure 2 in Attachment 1).

Determinations

To begin its review under Section 7 of the Endangered Species Act, the Applicant requested an updated official species list for the Project in June 2025. The U.S. Fish and Wildlife (USFWS) Information for Planning and Consultation (IPaC) database identified no critical habitat within the Project area, and therefore the Project will not have any impacts on critical habitat. The USFWS IPaC Species List for the analysis was accessed on June 6, 2025, to evaluate the federally protected species and habitat associated with the Project (Attachment 2). The USFWS Project Code is 2024-0130448.

The Applicant relied on the USFWS Consultation Package Builder (Attachment 3) and based on our review, DOE has made the following effect determinations on threatened and endangered species and on designated critical habitat resulting from the construction and operation of the WRESC in Kern County, CA.

The IPaC database identified five federally-listed species with potential to occur in the Project area: California condor (Gymnogyps californianus), western snowy plover (Charadrius nivosus nivosus), desert tortoise (Gopherus agassizii), northwestern pond turtle (Actinemys marmorata), and monarch butterfly (Danaus plexippus). A habitat evaluation determined that there is no habitat in the Project area for western snowy plover, northwestern pond turtle, or monarch butterfly, so there is no potential for the project to affect these species. With limited habitat in the Project area, it is unlikely that California condor or desert tortoise would be present, and mitigation and minimization measures would be implemented for both species. It is anticipated that the Project is *not likely to adversely affect* these two species.

Table 1: Effect Determination Summary

Species (Common Name)	Scientific Name	Listing Status	Present in Action Area	Effect Determination
California Condor	Gymnogyps californianus	Endangered	Yes	NLAA
Desert Tortoise	Gopherus agassizii	Threatened	Yes	NLAA
Monarch Butterfly	Danaus plexippus	Proposed Threatened	Excluded from analysis	Excluded from analysis
Northwestern Pond Turtle	Actinemys marmorata	Proposed Threatened	Excluded from analysis	Excluded from analysis
Western Snowy Plover	Charadrius nivosus nivosus	Threatened	No	NE

NLAA: Not Likely to Adversely Affect
NE: No Effect

In conclusion, DOE requests that you evaluate the information provided and concur with DOE's ***may affect, not likely to adversely affect*** determination for the Project to satisfy DOE's Section 7 responsibilities. If you have any questions, please contact me in the DOE Loan Programs Office by email at LPO_Environmental@hq.doe.gov (please include "Willow Rock" in the subject line) or by telephone at 202-578-4573.

Sincerely,

TODD STRIBLEY

Digitally signed by TODD STRIBLEY
Date: 2025.07.16 12:27:50 -06'00'

Todd Stribley
Director, Environmental Compliance
Loan Programs Office

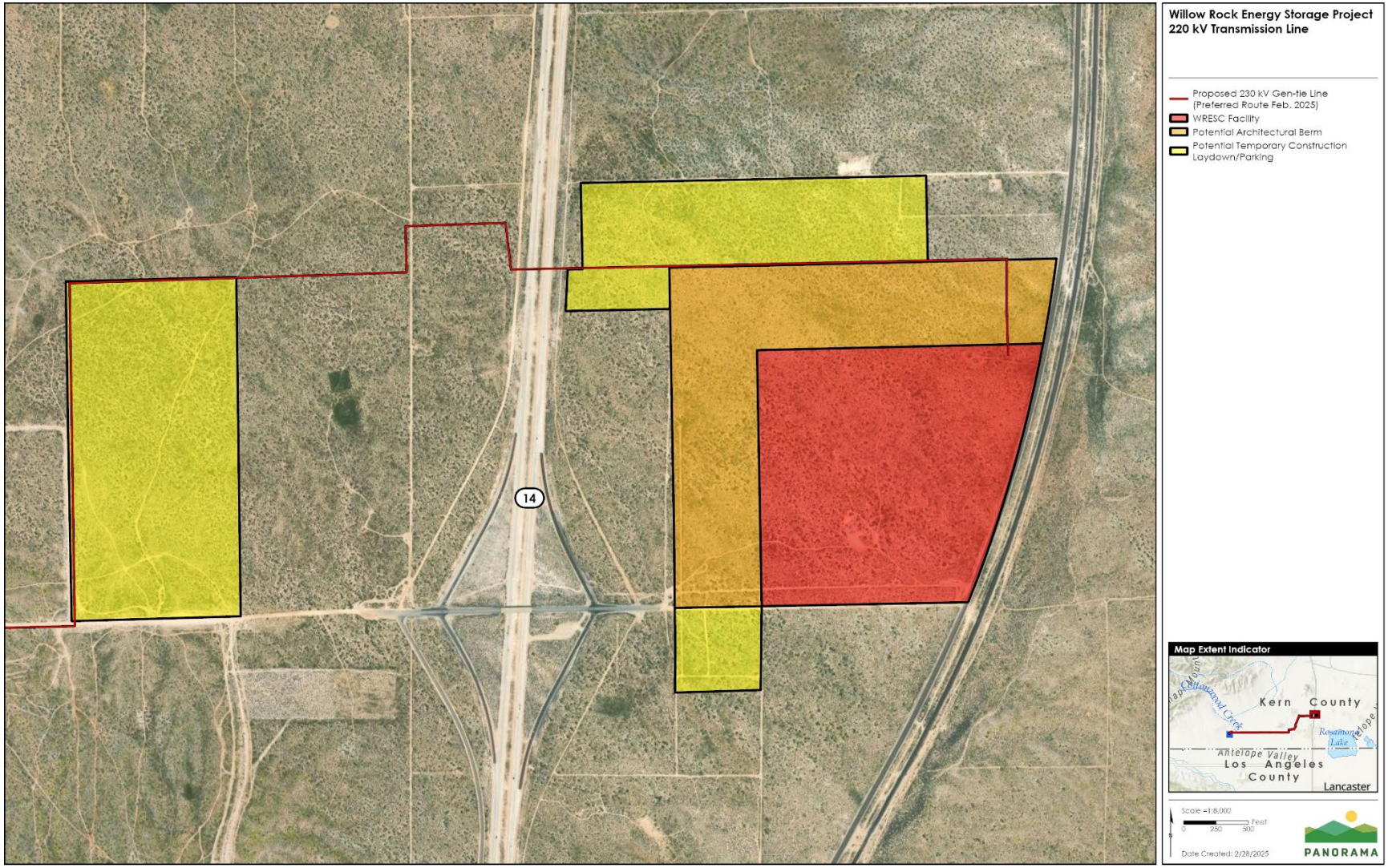
Attachments:

1. Project Figures
2. IPaC List of Threatened and Endangered Species
3. Biological Analysis prepared using IPaC CPB

Attachment 1: Project Figures

Figure 1 **Project Overview**

Figure 2 **Proposed Willow Rock Energy Storage Center Site with Aerial Imagery**



Attachment 2: IPaC List of Threatened and Endangered Species

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Carlsbad Fish And Wildlife Office
2177 Salk Avenue - Suite 250
Carlsbad, CA 92008-7385
Phone: (760) 431-9440 Fax: (760) 431-5901

In Reply Refer To: 06/06/2025 23:25:25 UTC
Project Code: 2024-0130448
Project Name: Willow Rock Energy Storage Center

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A biological assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological

evaluation similar to a biological assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a biological assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found at the Fish and Wildlife Service's Endangered Species Consultation website at:

https://www.fws.gov/service/esa-section-7-consultation

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity, intentional or unintentional, resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts, see https://www.fws.gov/program/migratory-bird-permit/what-we-do.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures, see https://www.fws.gov/library/collections/threats-birds.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/partner/council-conservation-migratory-birds.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Carlsbad Fish And Wildlife Office
2177 Salk Avenue - Suite 250
Carlsbad, CA 92008-7385
(760) 431-9440

PROJECT SUMMARY

Project Code: 2024-0130448
Project Name: Willow Rock Energy Storage Center
Project Type: Federal Grant / Loan Related
Project Description: The WRESC is a bulk-scale energy storage system (the Project) that uses proprietary, advanced compressed air energy storage (A-CAES) technology to generate and store electricity. The WRESC is a long-duration storage asset and would be able to deliver power to the Southern California Edison (SCE) Whirlwind Substation during periods of increased need. The WRESC would provide power during periods of increased demand on the grid, such as times of high electrical load, periods when intermittent renewable source generation fluctuates, when baseload plants are not operating or are being brought online, or during grid emergency conditions and/or local reliability needs. To maximize efficiency, the facility would be expected to charge when renewable source generation is higher than the instantaneous system demand, thus affording the ability to store excess renewable generation that might otherwise be lost.

The WRESC facility would be located on private land immediately north of Dawn Road and between State Route (SR) 14 and Sierra Highway within unincorporated, southeastern Kern County, California. The WRESC will connect to the SCE Whirlwind Substation via an approximately 19-mile long, 230-kilovolt (kV) new generation-tie (gen-tie) line. Gen-tie routing options have been defined to allow for flexibility in siting based on local landowner approval within the corridor. All potential gen-tie route options are considered part of the Project.

The WRESC will be a nominal 4,160-megawatt hours (MWh) energy storage facility capable of charging and discharging daily. The facility will consist of four nominal 130-megawatt (MW) (gross) trains, producing a total of 500-MW net at the point of interconnection. Each train will contain an electric motor-driven air compressor drivetrain, heat exchangers, an air turbine generator, air exhaust stacks and ancillary equipment. Each train will share a common set of hot and cold water storage tanks and the underground cavern for compressed air storage. The net electrical output of the system will vary in response to ambient air temperature conditions, electrical grid operating requirements such as voltage or volt ampere reactive (VAR) support, and other operating factors. Operational modes will be driven by good operating practices, market conditions, and grid dispatch requirements.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@34.8875096,-118.22341848082972,14z

NOTE: The location has been updated to reflect the Project's Action Area delineated in CPB.

Counties: Kern County, California

ENDANGERED SPECIES ACT SPECIES

There is a total of 5 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

BIRDS

NAME	STATUS
California Condor *Gymnogyps californianus* Population: Wherever found, except where listed as an experimental population There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8193	Endangered
Western Snowy Plover *Charadrius nivosus nivosus* Population: Pacific Coast population DPS-U.S.A. (CA, OR, WA), Mexico (within 50 miles of Pacific coast) There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8035	Threatened

REPTILES

NAME	STATUS
Desert Tortoise *Gopherus agassizii* Population: Wherever found, except AZ south and east of Colorado R., and Mexico There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4481	Threatened
Northwestern Pond Turtle *Actinemys marmorata* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1111	Proposed Threatened

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/9743	Proposed Threatened

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

IPAC USER CONTACT INFORMATION

Agency: Private Entity
Name: Teresa Campbell
Address: 717 Market Street, Suite 400
City: San Francisco
State: CA
Zip: 94103
Email teresa.campbell@panoramaenv.com
Phone: 6502907215

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Department of Energy

Attachment 3: Biological Analysis prepared using IPaC Consultation Package Builder (CPB)

WILLOW ROCK ENERGY STORAGE CENTER

BIOLOGICAL ANALYSIS

Prepared using IPaC

Generated by Teresa Campbell (teresa.campbell@panoramaenv.com)

July 9, 2025

The purpose of this document is to assess the effects of the proposed project and determine whether the project may affect any federally threatened, endangered, proposed, or candidate species. If appropriate for the project, this document may be used as a biological assessment (BA), as it is prepared in accordance with legal requirements set forth under Section 7 of the Endangered Species Act (16 U.S.C. 1536 (c)).

In this document, any data provided by U.S. Fish and Wildlife Service is based on data as of October 9, 2024.

Prepared using IPaC version 6.128.3-rc1

WILLOW ROCK ENERGY STORAGE CENTER BIOLOGICAL ASSESSMENT

TABLE OF CONTENTS

1 DESCRIPTION OF THE ACTION

1.1 PROJECT NAME

Willow Rock Energy Storage Center

1.2 EXECUTIVE SUMMARY

The Willow Rock Energy Storage Center (WRESC) Project (Project) is a proposed renewable energy project that would provide long-duration energy storage to help meet the region's growing demand for reliable, clean and resilient power. The WRESC would have a capacity of up to 4,160 MWh and could be recharged daily using grid power. As a long-duration energy storage asset, the WRESC will provide power during periods of increased need on the grid. By increasing the ability to store renewable energy, the energy stored by the Project will reduce criteria air pollutant emissions, reduce emissions of greenhouse gases, and help the transition from fossil fuels to carbon free energy sources.

Project elements will include an energy generation and storage facility, a hydrostatically compensating surface reservoir, underground energy storage infrastructure (including an underground cavern, access shaft, and water and air shafts), a generation-tie (gen-tie) line, and ancillary support features (including an office and control room, warehouse and maintenance area, parking area, fire water pumps and storage tank, oil and water separators, main switchyard, lined evaporation pond, unlined stormwater pond, substation, facility instrumentation, reclaimed condensate collection and tank, potable water tank, demineralized water treatment, facility fencing, and access roads). Temporary construction facilities will include a concrete batch plant and construction rock crushing facility.

The U.S. Fish and Wildlife (USFWS) Information for Planning and Consultation (IPaC) database identified no critical habitat within the Project area, and therefore the Project will not have any impacts on critical habitat. The IPaC database identified five federally-listed species with potential to occur in the Project area: California condor (*Gymnogyps californianus*), western snowy plover (*Charadrius nivosus nivosus*), desert tortoise (*Gopherus agassizii*), northwestern pond turtle (*Actinemys marmorata*), and monarch butterfly (*Danaus plexippus*). A habitat evaluation determined that there is no habitat in the Project area for western snowy plover, northwestern pond turtle, or monarch butterfly, and so the Project would have No Effect on these species. Because northwestern pond turtle and monarch butterfly are not listed species and the Project would not jeopardize their continued existence, they have been excluded from the analysis.

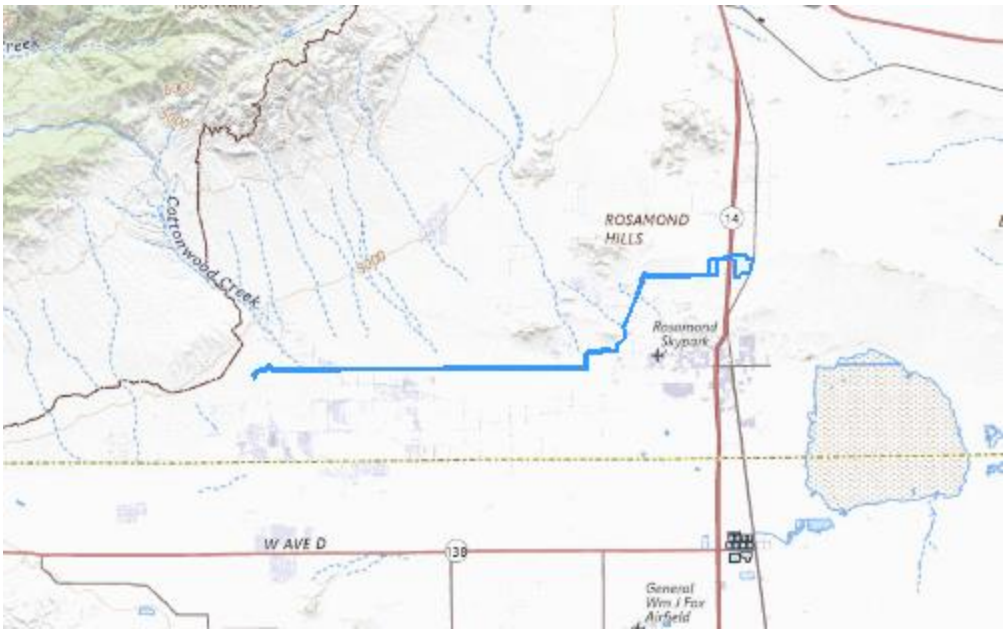
Habitat evaluations and protocol-level surveys determined there is no potential for California condor to nest in the Project area and low potential for it to forage within the Project area due to a lack of key prey items and distance from critical habitat. In the unlikely event that a California condor were present in the Project area, minimization measures implemented by the Project would reduce potential impacts to this species. These measures include a biological monitor who will be present onsite during vegetation removal activities, slow vehicle speed limits (15 mph) that would minimize collision risk, and implementation of Avian Power Line Interaction Committee (APLIC) guidelines that deter perching and nesting on power line infrastructure. For desert tortoise, habitat evaluations and protocol-level surveys determined there is suitable habitat present in the Project area, but no tortoises or their sign were present onsite and the species is considered absent from the Project area. Mitigation and minimization measures will be implemented to reduce risk of impacts to desert tortoises that could enter the Project area in the future, including exclusion fencing, pre-construction clearance surveys, a biological monitor, slow speed limits, and a Raven Management Plan. With limited habitat in the Project area, it is unlikely that California condor or desert tortoise would be present and mitigation and minimization measures would be implemented for both species. It is anticipated that the Project is *not likely to adversely affect* these two species.

1.3 EFFECT DETERMINATION SUMMARY

SPECIES (COMMON NAME)	SCIENTIFIC NAME	LISTING STATUS	PRESENT IN ACTION AREA	EFFECT DETERMINATION
California Condor	Gymnogyps californianus	Endangered	Yes	NLAA
Desert Tortoise	Gopherus agassizii	Threatened	Yes	NLAA
Monarch Butterfly	Danaus plexippus	Proposed Threatened	Excluded from analysis	Excluded from analysis
Northwestern Pond Turtle	Actinemys marmorata	Proposed Threatened	Excluded from analysis	Excluded from analysis
Western Snowy Plover	Charadrius nivosus nivosus	Threatened	No	NE

1.4 PROJECT DESCRIPTION

1.4.1 LOCATION



LOCATION
Kern County, California

1.4.2 DESCRIPTION OF PROJECT HABITAT

The Project site consists of largely undeveloped, natural open space. Dominant vegetation communities include creosote bush-white bursage scrub and allscale scrub. Soils are extremely rocky with very little loose soil present. Existing disturbances within the Project site included existing access roads and communication equipment.

The Project site's topography slopes from northwest to southeast from flat in the southern portion of the Project site with gently rolling hills in the central portion of the Project site. Elevations range from approximately 2,400 feet (732 meters) in the southeast corner of the gen-tie line at the corner of Rosamond Boulevard and 65th Street W to 2,720 feet (830 meters) along Dawn Road, just south of an existing water tank facility. Soils in the Project site are categorized as well-drained, somewhat excessively drained, or excessively drained; none are considered hydric.

An aquatic resources delineation survey determined that no wetlands are present in the Project site. Surface water features in the Project site consist of seven ephemeral drainages, none of which meet the criteria for Waters of the United States (WOTUS) and are therefore not under the jurisdiction of USACE. The low organic content of the soils and lack of hydrophytic or riparian plant species within the drainages indicate that water is present within them for a small portion of the year, likely associated with rain events. Nevertheless, the Applicant is committed to avoiding impacts on these drainages.

A habitat assessment was conducted March 28, 2023, through October 6, 2023, to document the vegetation communities within the survey area, which included the WRESC area and a 1,000-foot buffer around WRESC parcels as well as a 500-foot buffer around gen-tie line for a total of 3,759.25 acres. Natural communities within the survey area include:

Allscale Scrub (567.50 acres) – dominated by allscale (Atriplex polycarpa) and also including other alkaline desert shrub species

Cheesebush Scrub (114.49 acres) – dominated by cheesebush (Ambrosia Salsola)

Creosote Bush – White Bursage Scrub (1,364.21 acres) – co-dominated by the shrub species creosote bush (Larrea tridentata) and white bursage (Ambrosia dumosa)

Creosote Bush Scrub (149.81 acres) – dominated only by creosote bush

Joshua Tree Woodland (74.66 acres) – dense stands of Joshua trees with little to no other dominant or co-dominant species

Needleleaf Rabbitbrush Scrub (77.08 acres) – dominated by needleleaf rabbitbrush (Ericameria teretifolia)

Rubber Rabbitbrush Scrub (119.35 acres) – rubber rabbitbrush (Ericameria nauseosa) dominates or co-dominates with big sagebrush (Artemisia tridentata) or other shrubs

Tamarisk Thickets (2.21 acres) – tamarisk (Tamarix ramosissima) dominates or co-dominates with native species, such as cottonwood (Populus fremontii) or willow (Salix spp.)

White Bursage Scrub (79.69 acres) – white bursage dominates or co-dominates with other desert shrub species

Disturbed/developed areas (1,058.75 acres) and non-native grassland and forbs communities (151.49 acres) also occur within the survey area.

The Project area does not contain any USFWS designated critical habitat. The closest critical habitat is desert tortoise critical habitat 17 miles to the east and California condor critical habitat 16 miles to the west.

1.4.3 PROJECT PROPONENT INFORMATION

Provide information regarding who is proposing to conduct the project, and their contact information. Please provide details on whether there is a Federal nexus.

REQUESTING AGENCY
Private Entity

FULL NAME
Teresa Campbell

STREET ADDRESS
717 Market Street, Suite 400

CITY	STATE	ZIP
San Francisco	CA	94103

PHONE NUMBER	E-MAIL ADDRESS
6502907215	teresa.campbell@panoramaenv.com

LEAD AGENCY
Department of Energy

1.4.4 PROJECT PURPOSE

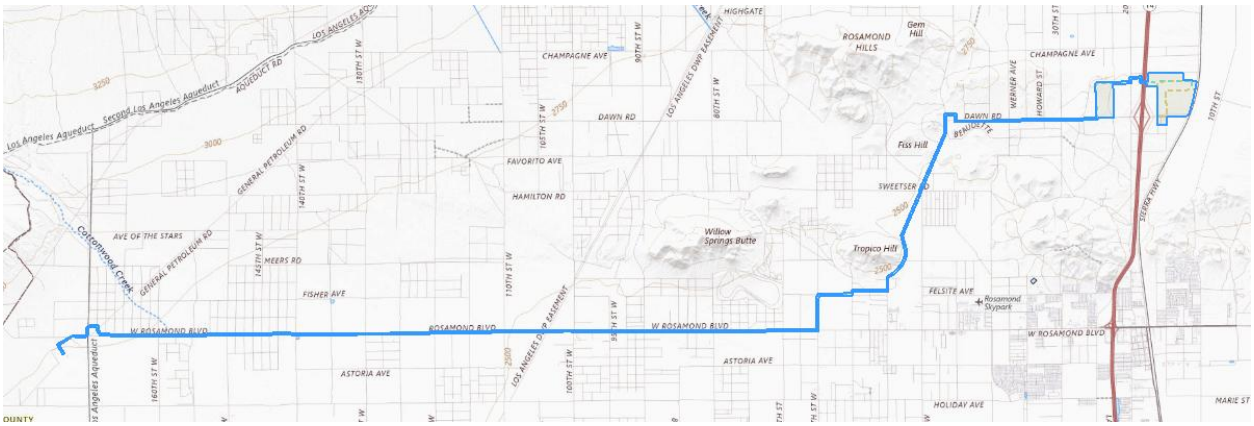
The Applicant is proposing to provide long-duration energy storage to help meet the region's growing demand for reliable, clean and resilient power. The WRESC would have a capacity of up to 4,160 MWh and could be recharged daily using grid power. As a long-duration energy storage asset, the WRESC will provide power during periods of increased need on the grid, such as times of high electrical load, periods when intermittent renewable source generation fluctuates, when baseload plants are not operating or are being brought online, or during grid emergency conditions and/or local reliability needs. To maximize efficiency, the facility is expected to charge during times of low demand on the grid such as times of low electrical load and during periods when renewable source generation is higher than the instantaneous system demand, thus affording the ability to store excess renewable generation that might otherwise be lost.

By increasing the ability to store renewable energy, the energy stored by the Applicant will reduce criteria air pollutant emissions and will reduce emissions of GHGs that contribute to global climate change, as is consistent with the primary goal of the Title XVII Program. Implementation of the Project would help the transition from fossil fuels to carbon free energy sources, thereby reducing overall national emissions of air pollutants and human-caused GHGs.

1.4.5 PROJECT TYPE AND DECONSTRUCTION

This project is a energy storage project.

1.4.5.1 PROJECT MAP



LEGEND

Project footprint

Gen-tie: Gen-tie line (structure)

Project facilities: Ancillary support facilities (structure), concrete batch plant (structure), construction rock crushing facility (structure), energy generation and storage facility (structure), hydrostatically compensating surface reservoir (structure), underground energy storage infrastructure (structure)

1.4.5.2 ANCILLARY SUPPORT FACILITIES

STRUCTURE COMPLETION DATE
January 31, 2030

REMOVAL/DECOMMISSION DATE (IF APPLICABLE)
Not applicable

STRESSORS

- Increase in predators
- Increase in raptor/predator perches
- Decrease in native vegetation
- Increase in anthropogenic water sources
- Increase in human structures
- Increase in impervious surfaces
- Increase in soil compaction
- Increase in human presence
- Increase in soil disturbance
- Increase in vehicle traffic
- Increase in wildlife attractant

DESCRIPTION
Construction of most ancillary support facilities will require the use of light and heavy equipment to clear vegetation, grade surfaces, and excavate and compact soils for engineered cement foundation and pad sites. Facilities that will be installed include an office and control room; warehouse and maintenance area; parking area; fire water storage tank; oil and water separators; main switchyard; lined evaporation pond; unlined stormwater pond; substation; facility instrumentation; reclaimed condensate collection and tank; potable water tank, demineralized water treatment; facility fencing; and access roads. Prefabricated metal material, insulated metal plates, metal siding, and natural material will be utilized for these ancillary support facilities.

1.4.5.3 CONCRETE BATCH PLANT

STRUCTURE COMPLETION DATE
December 31, 2027

REMOVAL/DECOMMISSION DATE (IF APPLICABLE)
Not applicable

STRESSORS

- Decrease in native vegetation
- Increase in human structures
- Increase in soil compaction
- Increase in human presence
- Increase in soil disturbance
- Increase in vehicle traffic

DESCRIPTION
A temporary portable concrete batch plant will be located in the south-center portion of the site. The concrete batch plant is expected to operate onsite for approximately 12 to 15 months. Construction is expected to require up to 80 cubic yards per day of finished concrete. The facility will be capable of operating from a locally provided power feed or using one 500-horsepower diesel-fired engine generator meeting USEPA Tier 4 emission standards. The entire facility is expected to be certified by the California Air Resources Board (CARB) under the Portable Equipment Registration Program.

1.4.5.4 CONSTRUCTION ROCK CRUSHING FACILITY

STRUCTURE COMPLETION DATE
December 31, 2030

REMOVAL/DECOMMISSION DATE (IF APPLICABLE)
Not applicable

STRESSORS

- Decrease in native vegetation
- Increase in soil compaction
- Increase in human presence
- Increase in soil disturbance
- Increase in vehicle traffic

DESCRIPTION
A temporary rock crushing facility will operate in the southwest portion of the site for up to 10 hours per day, 7 days a week, over 22 months, starting approximately month 25 after the start of construction. It will process up to 350 tons per hour, including a primary jaw crusher, secondary cone crusher, screens, three conveyors, and two stackers. Dust and particulate emissions will be controlled using water sprays and a baghouse, and power will be supplied locally or by two 779-horsepower diesel-fired engine generators meeting USEPA Tier 4 standards. The facility will be CARB-certified under the Portable Equipment Registration Program. Depending on whether an architectural berm is built on-site or excavated cavern rock is hauled off-site for beneficial reuse, then the quantity of rock to be crushed in the temporary facility will vary. If an architectural berm is built on-site using excavated cavern rock, it is estimated that only 25 percent of excavated rock will be crushed onsite, while if rock is hauled off-site, then it is assumed up to 100% will be crushed to meet offtake specifications.

1.4.5.5 ENERGY GENERATION AND STORAGE FACILITY

STRUCTURE COMPLETION DATE
December 31, 2031

REMOVAL/DECOMMISSION DATE (IF APPLICABLE)
Not applicable

STRESSORS

- Decrease in native vegetation
- Increase in human structures
- Increase in impervious surfaces
- Increase in soil compaction
- Increase in human presence
- Increase in soil disturbance
- Increase in vehicle traffic

DESCRIPTION
The energy generation and storage facility will be constructed in accordance with the final, permitted plans within the boundaries of the site. All best management practices, requirements and measures to prevent stormwater pollution in accordance with the approved Stormwater Pollution Prevention Plan (SWPPP) and the project permits will be installed before any ground-disturbing activities take place. Ancillary features (tanks, utility towers, etc.) will be designed and constructed in accordance with their respective design standards consistent with the standard of practice.

1.4.5.6 GEN-TIE LINE

STRUCTURE COMPLETION DATE
December 31, 2030

REMOVAL/DECOMMISSION DATE (IF APPLICABLE)
Not applicable

STRESSORS

- Increase in raptor/predator perches
- Decrease in native vegetation
- Increase in human structures
- Increase in soil compaction
- Increase in soil disturbance
- Increase in wildlife attractant

DESCRIPTION
The gen-tie will mainly be overhead, consisting of steel transmission poles, each approximately 90 feet tall. Standard transmission line construction techniques will be used for the overhead sections. A small number of short underground segments may be required for crossing a Los Angeles Department of Water and Power corridor or congested areas with existing facilities, utilizing open trenching and/or horizontal directional drilling.

Surge arrestors at the point of interconnection will protect against disturbances caused by potential lightning strikes or system disruptions. The 230-kV line will terminate at a dead-end tower before the main power transformers, which will step down the voltage to 13.8-kV and 5-kV for distribution within the WRESC, with the grid connection capable of power import and export, adaptable to all operating scenarios.

1.4.5.7 HYDROSTATICALLY COMPENSATING SURFACE RESERVOIR

STRUCTURE COMPLETION DATE
December 31, 2027

REMOVAL/DECOMMISSION DATE (IF APPLICABLE)
Not applicable

STRESSORS

- Decrease in vegetation
- Increase in anthropogenic water sources
- Increase in soil compaction
- Increase in soil disturbance
- Increase in wildlife attractant

DESCRIPTION
The hydrostatically compensating surface reservoir will be constructed in the northwest corner of the site. The reservoir will have a capacity of about 575 acre-feet. The reservoir will be lined to prevent percolation and equipped with a floating cover to minimize water loss.

1.4.5.8 UNDERGROUND ENERGY STORAGE INFRASTRUCTURE

STRUCTURE COMPLETION DATE
December 31, 2030

REMOVAL/DECOMMISSION DATE (IF APPLICABLE)
Not applicable

STRESSORS

- Increase in soil compaction
- Increase in soil disturbance

DESCRIPTION
The WRESC will utilize underground energy storage infrastructure consisting of one underground, constructed cavern for storing compressed air and multiple shafts for conveying air and water between the cavern and the aboveground portions of the facility. Initial access to the cavern depth for mobilization of the construction equipment and crews will be accomplished either by constructing a large-diameter, conventionally sunk shaft or by constructing several rotary drilled (blind bore) shafts.

Cavern

The storage cavern will be constructed in bedrock to a target depth of approximately 2,000 to 2,500 feet bgs. The cavern will be constructed by conventional mining methods including drilling and controlled detonation. After completion of the cavern access shafts, cavern excavation will begin using a combination of conventional controlled detonation methods and physical/mechanical excavation.

For cavern gallery construction, a top heading will be initially driven, and roof support will be installed as the excavation progresses. Successive benches will then be excavated to develop the cavern opening to full height. Waste muck will be crushed underground and brought to the surface via a shaft skip. Cavern floors will be graded to drain toward a water sump and shaft. Roofs will be sloped where possible to naturally vent into the air shaft to prevent trapped air pockets. Upon completion, unused construction shafts will be filled and sealed.

Access Shaft

Two options for cavern construction access shafts are proposed: Conventionally Sunk Shaft and Rotary Drilled Shafts. If a conventionally sunk shaft is used, it will have a 24-foot inside diameter and be equipped with a double-drum hoist, service hoist, dual ventilation ducts, and utilities for cavern construction. Controlled detonations will occur from the top of the bedrock surface to approximately 2,000 to 2,500 feet bgs, with one or two detonations per day expected. The shaft sinking rate is estimated to be 5 to 8 feet per day, with an overall construction duration of approximately 12 to 14 months. Once completed, the shaft will support hauling, ventilation, equipment, and personnel.

If rotary drilled shafts are used, five 8-foot diameter shafts will be constructed for operations. No surface-level controlled detonations will occur. One shaft will provide equipment and personnel access, two for material movement, and two for ventilation. A lined pond will be constructed to hold drill cuttings during boring operations, sized for three times the shaft volume in water. After completion, the pond will be emptied, and surplus muck will be used to backfill the excavation. Drilling water will be repurposed for reservoir fill or disposed of offsite.

Water Shaft

One large-diameter water shaft will be built for water conveyance during A-CAES operations. The water shaft will be constructed by blind bore or conventionally sunk methods. If blind bored, the shaft will be approximately 8-feet in diameter; if conventionally sunk, it will be 24-feet in diameter. Depending on the cavern access method, it will either be a converted construction shaft or purposely built. The shaft will convey compensation water between the cavern and topside reservoir, lined and cemented to keep the water isolated within the shaft. Its lower end will extend into a sump below the cavern floor to maintain a water seal.

Air Shaft

Up to two blind-bored air shafts, each approximately 4-feet in diameter, will be constructed during cavern construction for use as air shafts during A-CAES operations. The air shafts will be lined and cemented in-place to isolate them from the surrounding rock formation. These air shafts will be used to convey compressed air between the cavern and topside process trains during A-CAES operations. The lower end of the air shaft will be located at a high point in the roof of the cavern so that it is never submerged during operation.

1.4.6 ANTICIPATED ENVIRONMENTAL STRESSORS

Describe the anticipated effects of your proposed project on the aspects of the land, air and water that will occur due to the activities above. These should be based on the activity deconstructions done in the previous section and will be used to inform the action area.

1.4.6.1 ANIMAL FEATURES

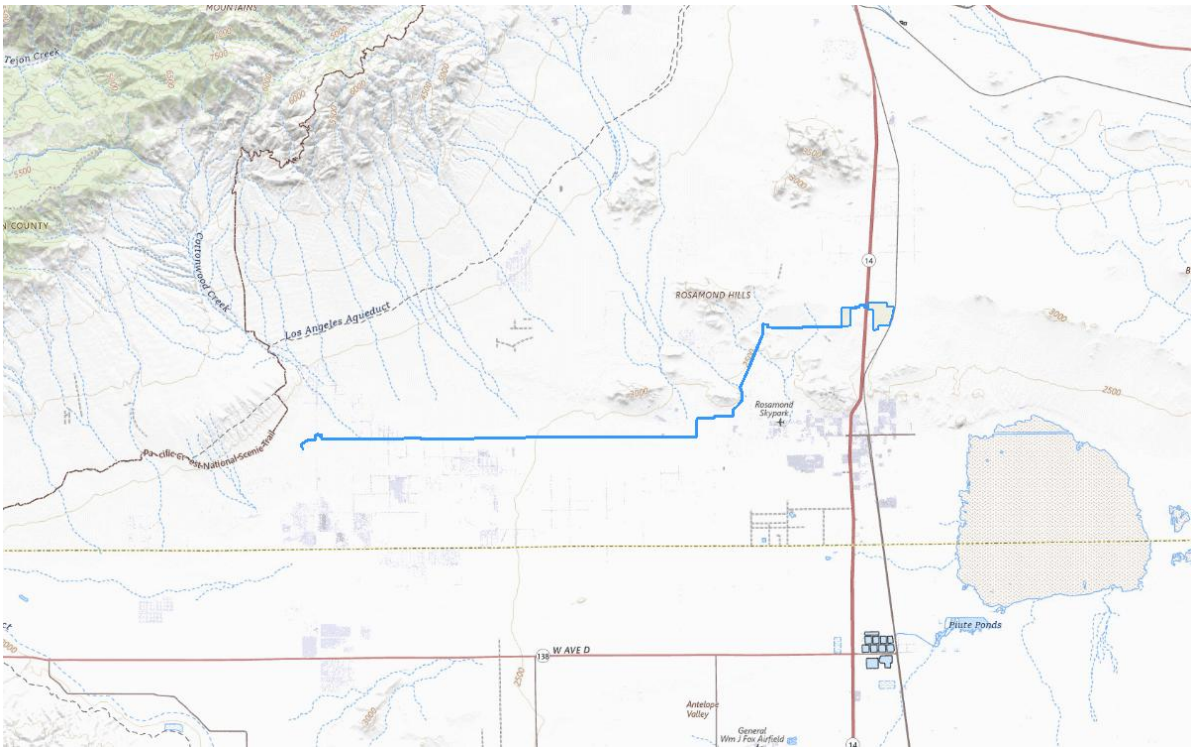
Individuals from the Animalia kingdom, such as raptors, mollusks, and fish. This feature also includes byproducts and remains of animals (e.g., carrion, feathers, scat, etc.), and animal-related structures (e.g., dens, nests, hibernacula, etc.).

1.4.6.1.1 INCREASE IN PREDATORS

ANTICIPATED MAGNITUDE

Increases in the presence of predators in and around the Project area as a result of the Project are expected to be minimal with the implementation of the Project's Raven Management Plan. This plan will require measures to reduce the attractiveness of the Project facilities to ravens, which are known to prey on the eggs and young of desert tortoises and ground nesting bird species. Examples of measures in the Raven Management Plan include reducing perching and nesting opportunities and implementing trash and waste control measures to minimize food subsidies (e.g., from worker food trash). The trash and waste control measures will also minimize attraction of other predators (e.g., coyotes) to the Project area. However, even with the implementation of the Raven Management Plan, it is possible for some food trash to become present in the environment and provide subsidies to predators. Therefore, this stressor is expected to be minimized, but not completely avoided.

STRESSOR LOCATION



LEGEND

Project footprint

Stressor location

CONSERVATION MEASURES

- Raven management plan

STRUCTURES AND ACTIVITIES

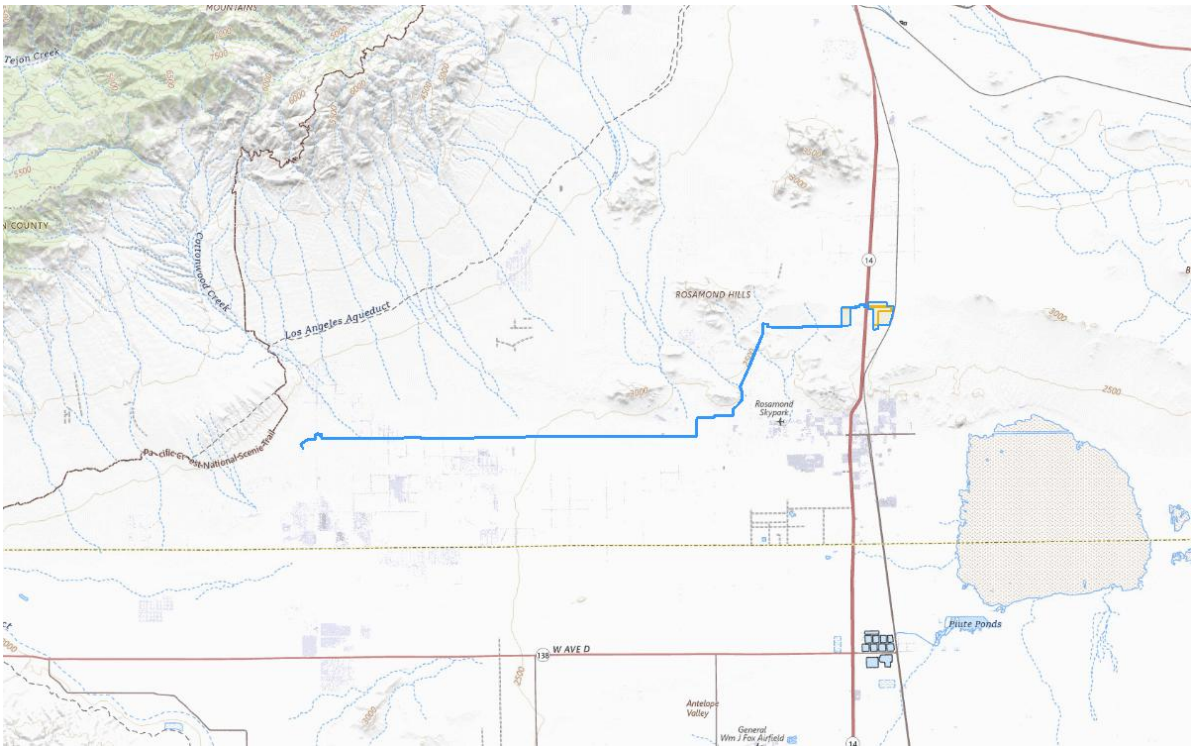
- Ancillary support facilities

1.4.6.1.2 INCREASE IN RAPTOR/PREDATOR PERCHES

ANTICIPATED MAGNITUDE

Raptor and predator (including raven) perches will be created by the buildings associated with the energy generation and storage facility and ancillary support facilities (office, control room, warehouse, etc.), and facility fencing. Perching opportunities created by the gen-tie line structures will be significantly reduced by implementing guidelines set forth by the Avian Power Line Interaction Committee (APLIC). Measures suggested by APLIC include selecting utility line pole configurations and installing physical devices that deter perching and nesting by raptors and ravens. Although implementation of APLIC measures will reduce perching opportunities associated with the gen-tie line, perches associated with other Project structures will remain.

STRESSOR LOCATION



LEGEND

Project footprint

Stressor location

CONSERVATION MEASURES

- Avian power line interaction committee (APLIC) guidelines

STRUCTURES AND ACTIVITIES

- Gen-tie line
- Ancillary support facilities

1.4.6.2 PLANT FEATURES

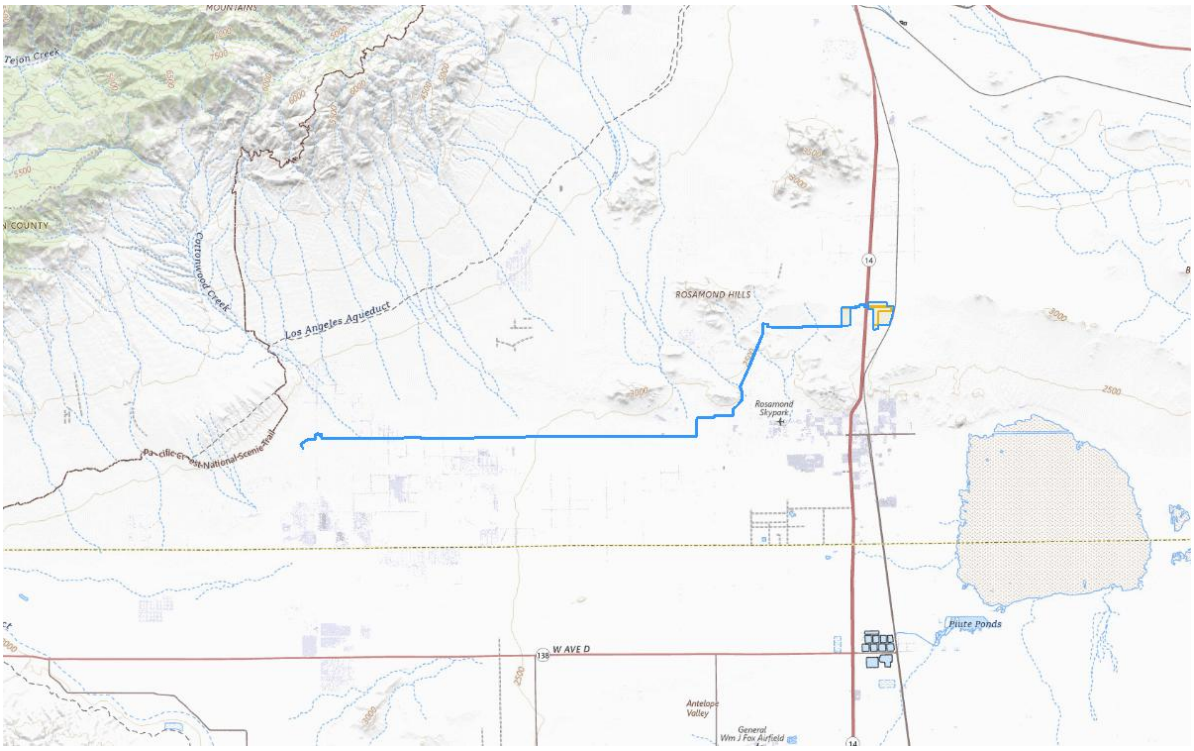
Individuals from the Plantae kingdom, such as trees, shrubs, herbs, grasses, ferns, and mosses. This feature also includes products of plants (e.g., nectar, flowers, seeds, etc.).

1.4.6.2.1 DECREASE IN NATIVE VEGETATION

ANTICIPATED MAGNITUDE

Decreases in native vegetation will occur in all areas where project activities occur. This impact cannot be avoided, but the impact will be temporary in areas, such as staging areas, where construction impacts will be temporary and then the affected area will be re-seeded with native seed mix. Additionally, compensatory mitigation measures could be used to compensate for the decreased vegetation cover.

STRESSOR LOCATION



LEGEND

Project footprint

Stressor location

CONSERVATION MEASURES

No conservation measures for this stressor

STRUCTURES AND ACTIVITIES

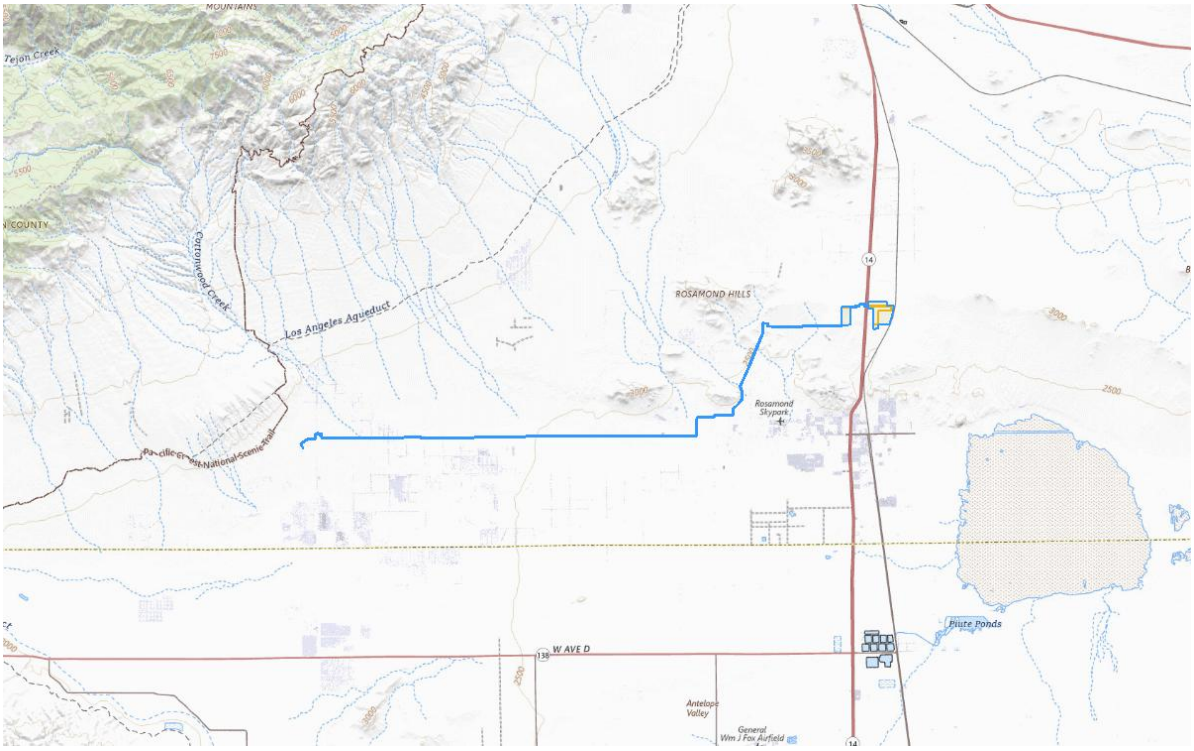
- Concrete batch plant
- Construction rock crushing facility
- Gen-tie line
- Energy generation and storage facility
- Ancillary support facilities

1.4.6.2.2 DECREASE IN VEGETATION

ANTICIPATED MAGNITUDE

The anticipated magnitude of decreases in vegetation will be the same as for decreases in native vegetation described above.

STRESSOR LOCATION



LEGEND

Project footprint

Stressor location

CONSERVATION MEASURES

No conservation measures for this stressor

STRUCTURES AND ACTIVITIES

- Hydrostatically compensating surface reservoir

1.4.6.3 AQUATIC FEATURES

Bodies of water on the landscape, such as streams, rivers, ponds, wetlands, etc., and their physical characteristics (e.g., depth, current, etc.). This feature includes the groundwater and its characteristics. Water quality attributes (e.g., turbidity, pH, temperature, DO, nutrients, etc.) should be placed in the Environmental Quality Features.

1.4.6.4 ENVIRONMENTAL QUALITY FEATURES

Abiotic attributes of the landscape (e.g., temperature, moisture, slope, aspect, etc.).

1.4.6.5 HUMAN FEATURES

Man-made Structures on the landscape (e.g., roads, trails, buildings, bridges, farm fields, etc.).

1.4.6.5.1 INCREASE IN ANTHROPOGENIC WATER SOURCES

ANTICIPATED MAGNITUDE

This stressor is not expected to occur; the following explanation has been provided:

Any areas of open water will contain wildlife exclusion measures (e.g., netting) to reduce the possibility of wildlife becoming entrapped in the water feature. Routes of escape from water sources will also be installed for wildlife that could become entrapped. These locations will be regularly inspected over the course of the Project. If any entrapped wildlife are discovered, work will be suspended until the animal can be safely relocated by the biological monitor or Project biologist.

CONSERVATION MEASURES

- Measures to prevent attraction to and entrapment within open anthropogenic water sources

STRUCTURES AND ACTIVITIES

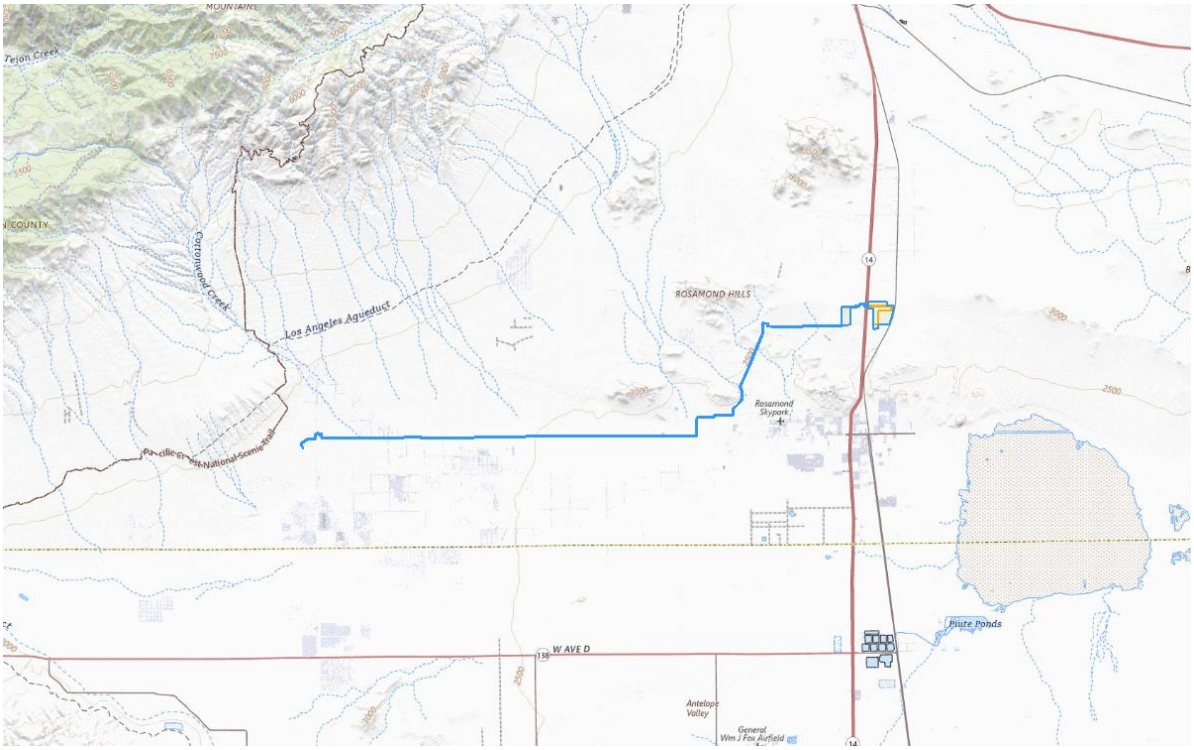
- Hydrostatically compensating surface reservoir
- Ancillary support facilities

1.4.6.5.2 INCREASE IN HUMAN STRUCTURES

ANTICIPATED MAGNITUDE

Human structures will be created throughout the Project area and will include the gen-tie line poles and cables and buildings associated with the energy generation and storage facility and ancillary support facilities (office, control room, warehouse, etc.).

STRESSOR LOCATION



LEGEND

Project footprint

Stressor location

CONSERVATION MEASURES

No conservation measures for this stressor

STRUCTURES AND ACTIVITIES

- Concrete batch plant
- Gen-tie line
- Energy generation and storage facility
- Ancillary support facilities

1.4.6.6 LANDFORM (TOPOGRAPHIC) FEATURES

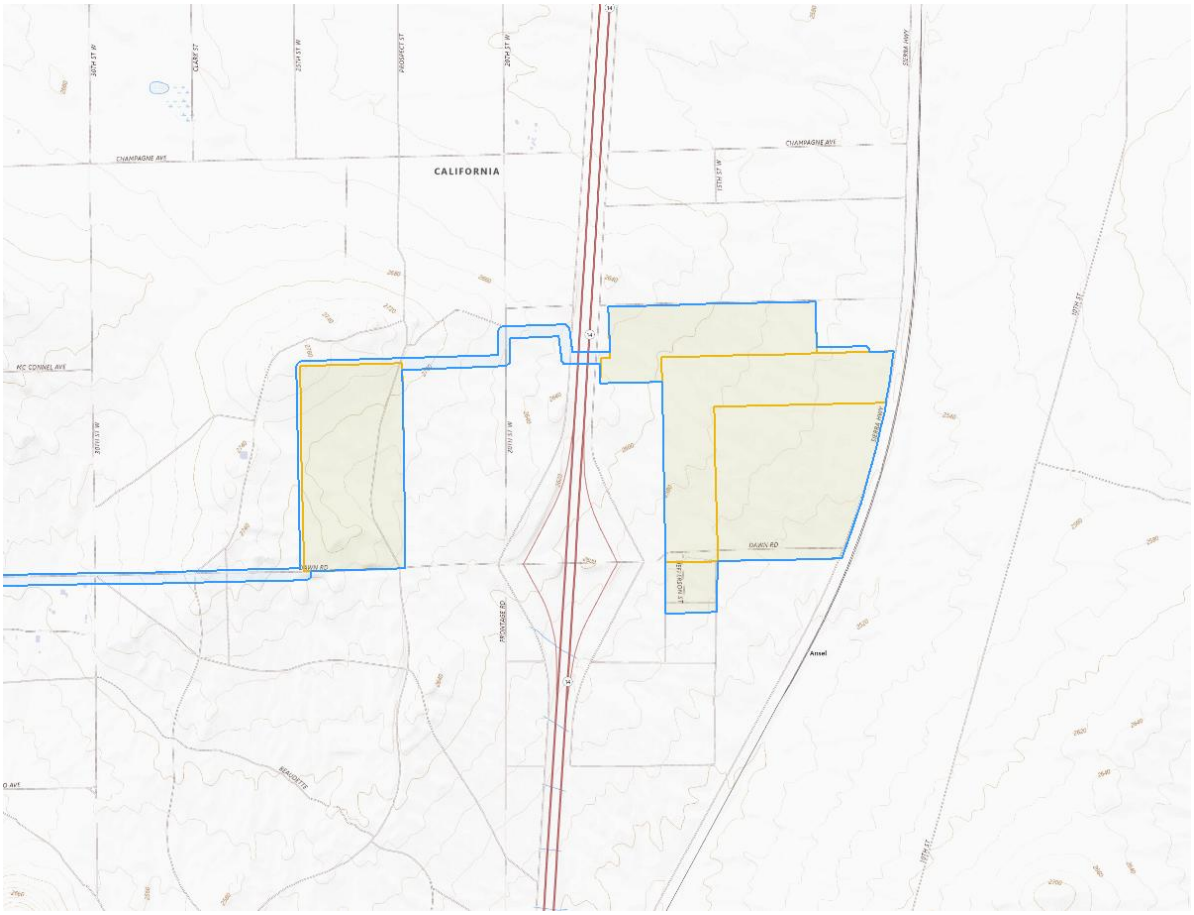
Topographic (landform) features that typically occur naturally on the landscape (e.g., cliffs, terraces, ridges, etc.). This feature does not include aquatic landscape features or man-made structures.

1.4.6.6.1 INCREASE IN IMPERVIOUS SURFACES

ANTICIPATED MAGNITUDE

Impervious surfaces will be created in the areas of the energy generation and storage facility and the ancillary support facilities (office, control room, warehouse, roads, parking areas, etc.).

STRESSOR LOCATION



LEGEND

Project footprint

Stressor location

CONSERVATION MEASURES

No conservation measures for this stressor

STRUCTURES AND ACTIVITIES

- Energy generation and storage facility
- Ancillary support facilities

1.4.6.7 SOIL AND SEDIMENT

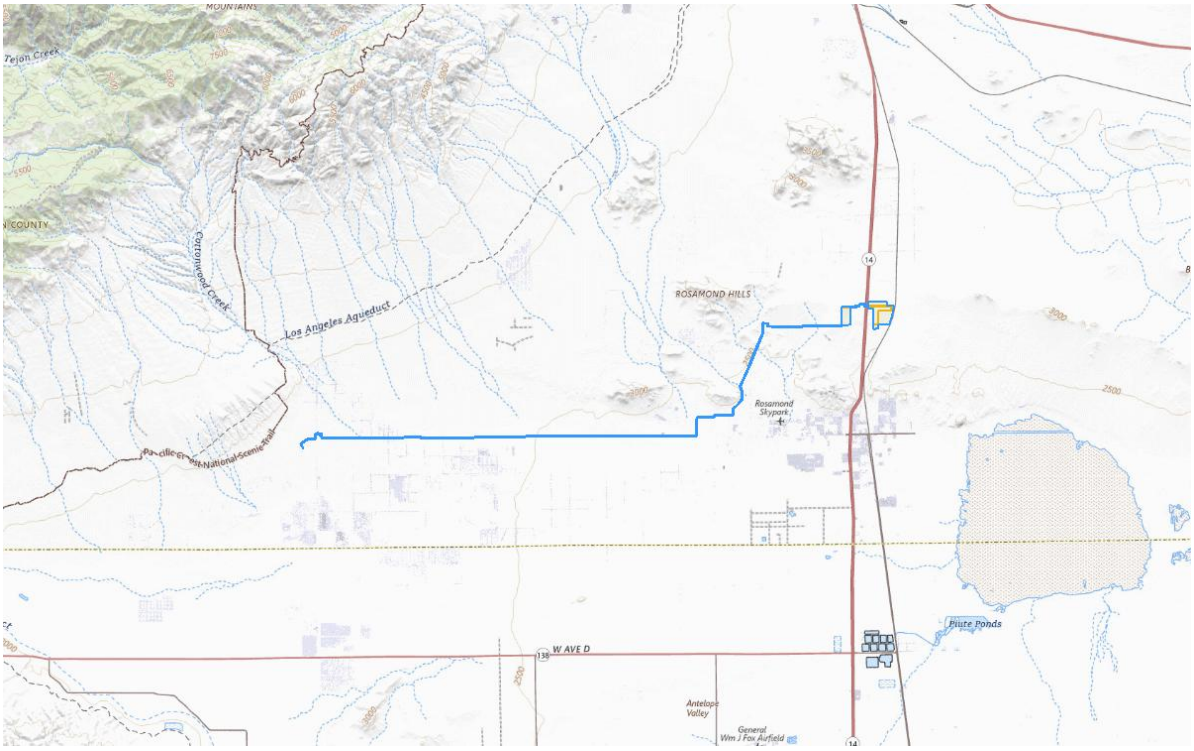
The topmost layer of earth on the landscape and its components (e.g., rock, sand, gravel, silt, etc.). This feature includes the physical characteristics of soil, such as depth, compaction, etc. Soil quality attributes (e.g, temperature, pH, etc.) should be placed in the Environmental Quality Features.

1.4.6.7.1 INCREASE IN SOIL COMPACTION

ANTICIPATED MAGNITUDE

Areas of soil compaction will be created throughout the Project area during all phases of the Project. Some areas will be temporary during construction and will be rehabilitated through regrading and reseeding with native vegetation.

STRESSOR LOCATION



LEGEND

Project footprint

Stressor location

CONSERVATION MEASURES

No conservation measures for this stressor

STRUCTURES AND ACTIVITIES

- Concrete batch plant
- Hydrostatically compensating surface reservoir
- Construction rock crushing facility
- Gen-tie line
- Underground energy storage infrastructure
- Energy generation and storage facility
- Ancillary support facilities

1.4.6.8 ENVIRONMENTAL PROCESSES

Abiotic processes that occur in the natural environment (e.g., erosion, precipitation, flood frequency, photoperiod, etc.).

1.4.6.9 HUMAN ACTIVITIES

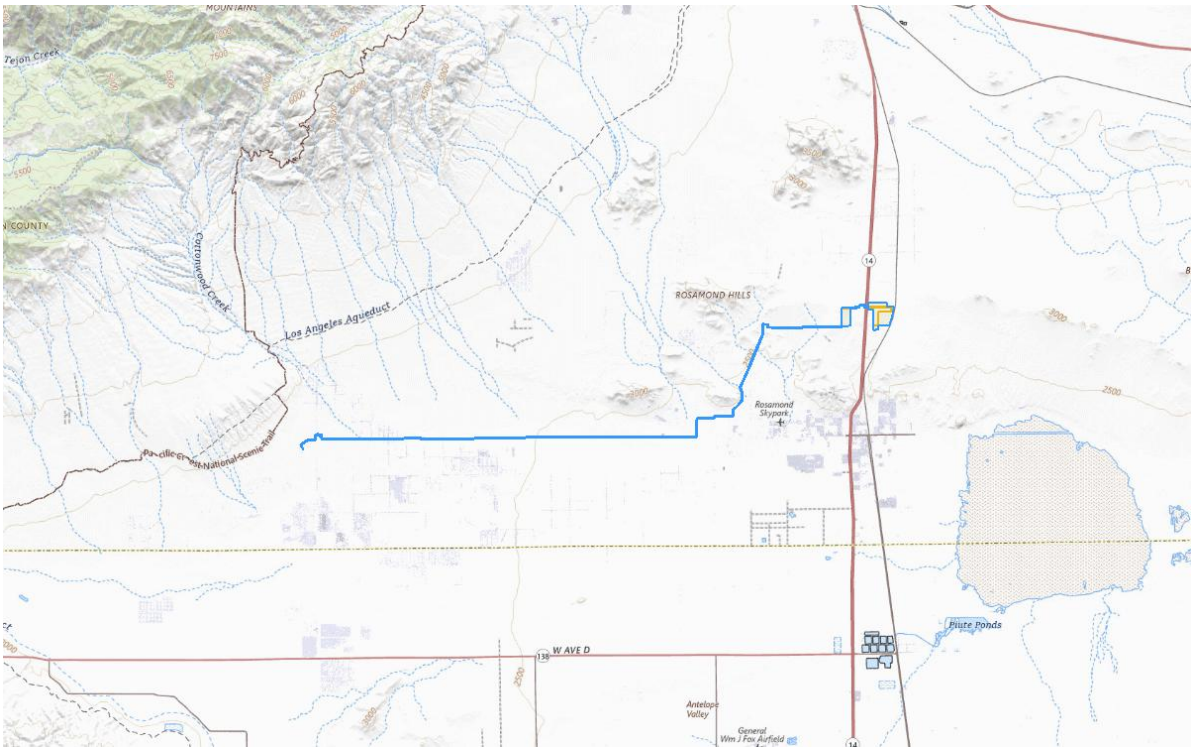
Human actions in the environment (e.g., fishing, hunting, farming, walking, etc.).

1.4.6.9.1 INCREASE IN HUMAN PRESENCE

ANTICIPATED MAGNITUDE

Increased human presence will occur throughout the Project area to varying degrees during the different phases of the Project. Human presence will be highest during construction. During operation and maintenance, human presence will be reduced and will include approximately 40 full-time staff to operate the facility, including control room operators (24 hours per day, 7 days per week) and roving operators in the field conducting general rounds at least twice per 12-hour shift.

STRESSOR LOCATION



LEGEND

Project footprint

Stressor location

CONSERVATION MEASURES

No conservation measures for this stressor

STRUCTURES AND ACTIVITIES

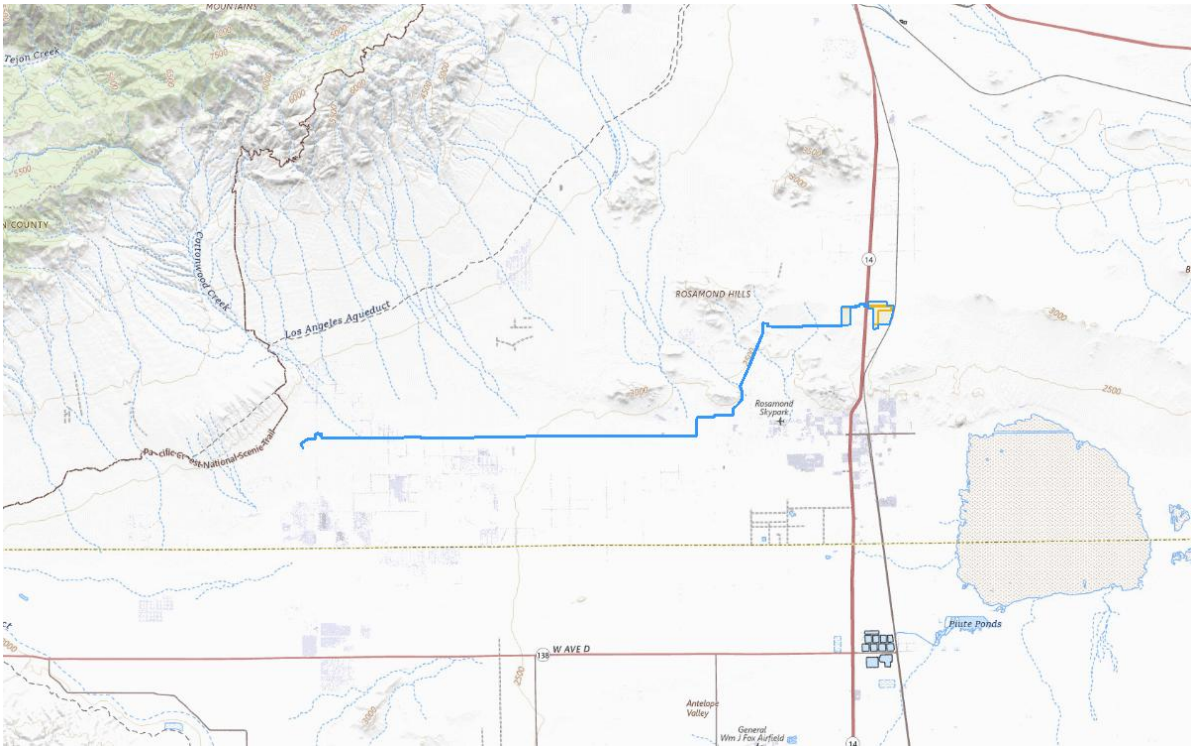
- Concrete batch plant
- Construction rock crushing facility
- Energy generation and storage facility
- Ancillary support facilities

1.4.6.9.2 INCREASE IN SOIL DISTURBANCE

ANTICIPATED MAGNITUDE

Areas of soil disturbance will be created throughout the Project area during all phases of the Project. Some areas will be temporary during construction and will be rehabilitated through regrading and reseeding with native vegetation.

STRESSOR LOCATION



LEGEND

Project footprint

Stressor location

CONSERVATION MEASURES

No conservation measures for this stressor

STRUCTURES AND ACTIVITIES

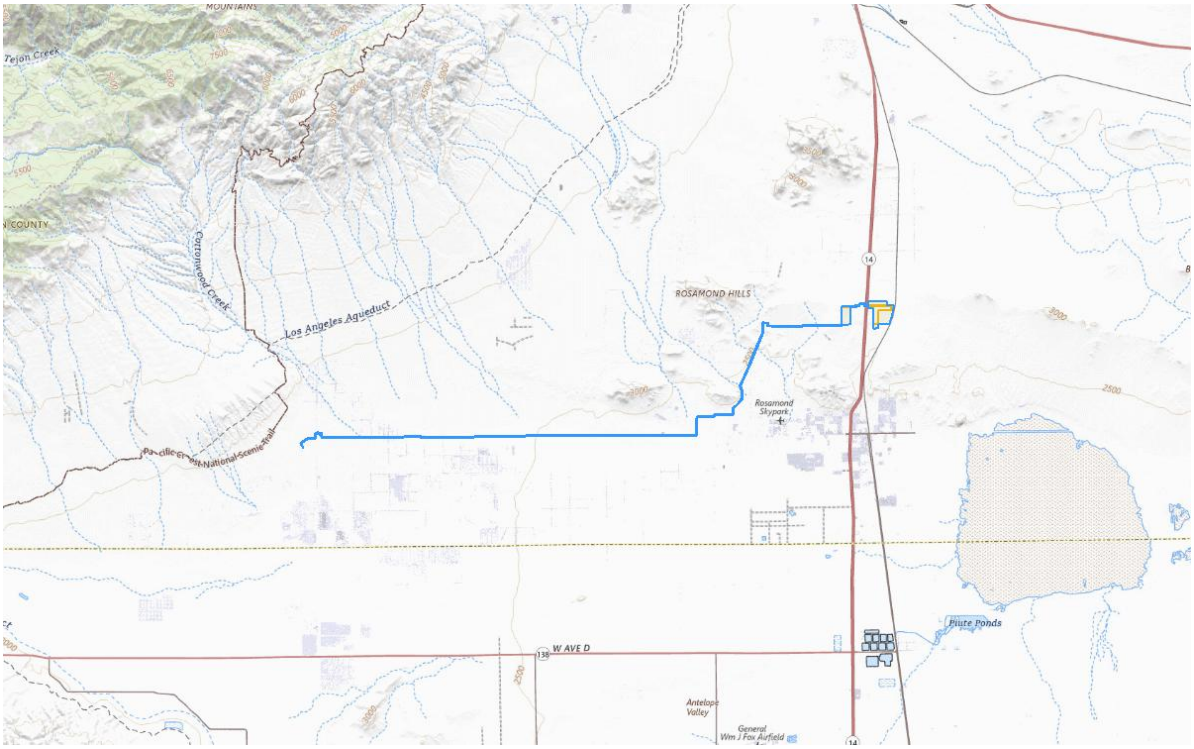
- Concrete batch plant
- Hydrostatically compensating surface reservoir
- Construction rock crushing facility
- Gen-tie line
- Underground energy storage infrastructure
- Energy generation and storage facility
- Ancillary support facilities

1.4.6.9.3 INCREASE IN VEHICLE TRAFFIC

ANTICIPATED MAGNITUDE

Increased vehicle traffic will occur throughout the Project area to varying degrees during the different phases of the Project. Vehicle traffic will be highest during construction. During operation and maintenance, vehicle traffic will be reduced and will primarily include traffic related to the approximately 40 full-time staff operating the facility. Vehicle operators will follow slow speed limits (limited to 15 mph per the Project's air quality impact minimization measure) to reduce the potential for collisions with wildlife.

STRESSOR LOCATION



LEGEND

Project footprint

Stressor location

CONSERVATION MEASURES

No conservation measures for this stressor

STRUCTURES AND ACTIVITIES

- Concrete batch plant
- Construction rock crushing facility
- Energy generation and storage facility
- Ancillary support facilities

1.4.6.9.4 INCREASE IN WILDLIFE ATTRACTANT

ANTICIPATED MAGNITUDE

Wildlife may be attracted to the Project area due to the creation of new food and water sources and perching and nesting structures for birds. With the implementation of the Project's Raven Management Plan, Avian Power Line Interaction Committee (APLIC) guidelines, and measures to prevent attraction to open anthropogenic water sources, the potential increase in wildlife attractant in the Project area is expected to be minimal.

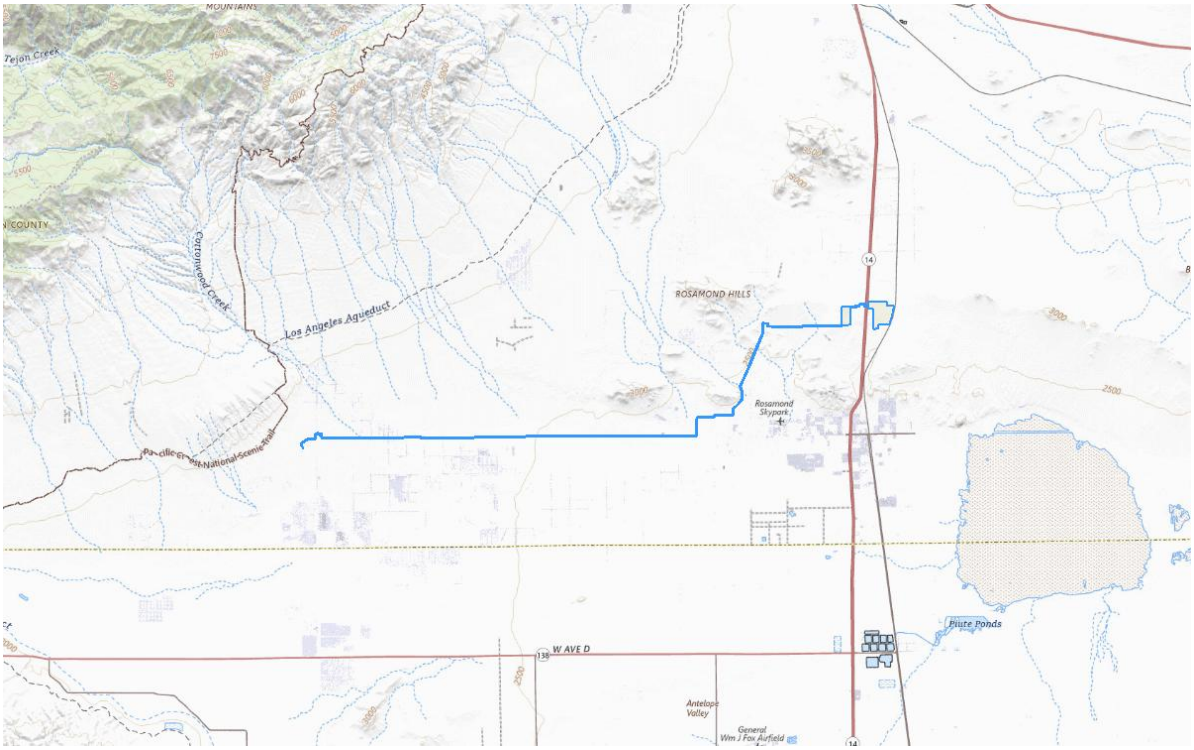
The Raven Management Plan will require measures to reduce the attractiveness of the Project facilities to ravens, including reducing perching and nesting opportunities and implementing trash and waste control measures to minimize food subsidies (e.g., from worker food trash). These measures also reduce attractiveness of the Project facilities to other avian and terrestrial species. However, even with the implementation of the Raven Management Plan, it is possible for some food trash to become present in the environment and provide subsidies to predators.

The APLIC guidelines include selecting utility line pole configurations and installing physical devices that deter perching and nesting by birds. However, while implementation of these measures will reduce perching and nesting opportunities associated with the gen-tie line, perches associated with other Project structures will remain.

Any areas of open water will contain wildlife exclusion measures (e.g., netting) to reduce the attractiveness of the water source to wildlife.

Because some wildlife attractants will remain after implementation of conservation measures, this stressor is not completely avoided, but its impacted is expected to be minimal.

STRESSOR LOCATION



LEGEND

Project footprint

Stressor location

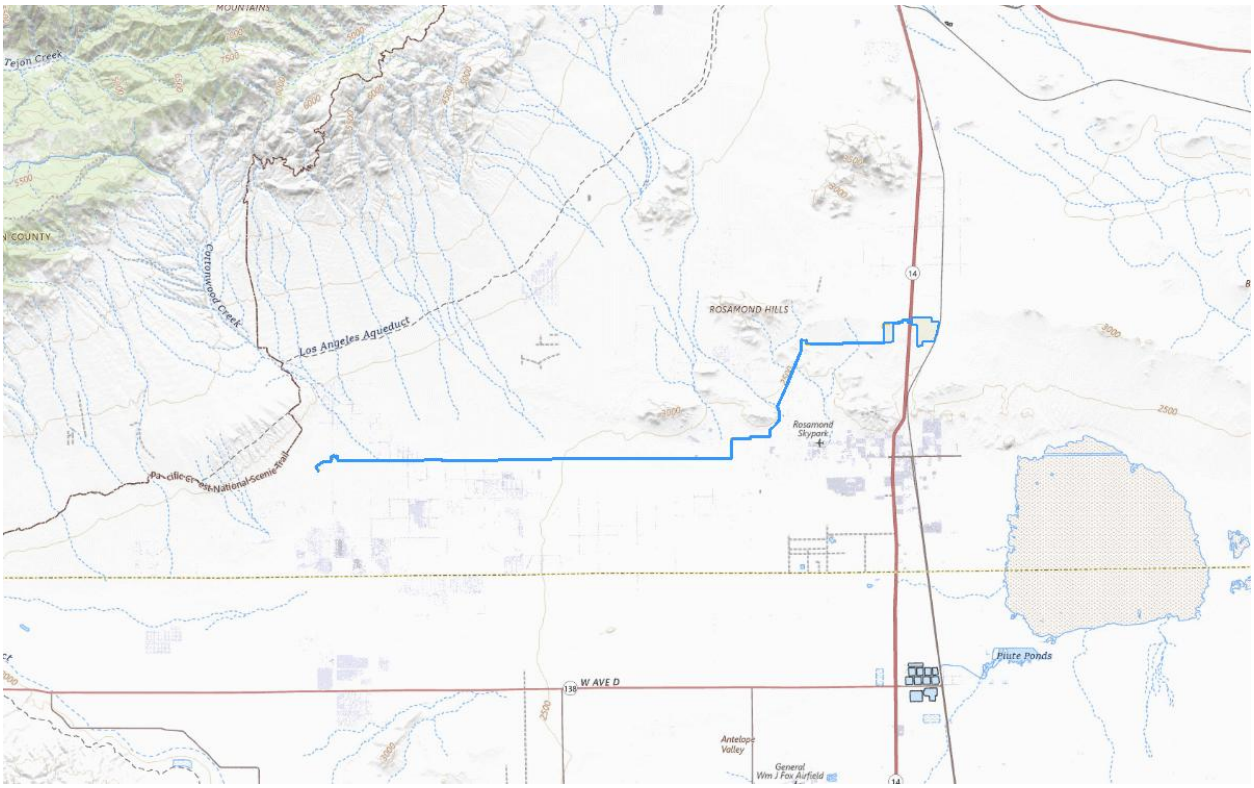
CONSERVATION MEASURES

- Raven management plan
- Measures to prevent attraction to and entrapment within open anthropogenic water sources
- Avian power line interaction committee (APLIC) guidelines

STRUCTURES AND ACTIVITIES

- Hydrostatically compensating surface reservoir
- Gen-tie line
- Ancillary support facilities

1.5 ACTION AREA



LEGEND

Project footprint

Stressor location

1.6 CONSERVATION MEASURES

1.6.1 AVIAN POWER LINE INTERACTION COMMITTEE (APLIC) GUIDELINES

DESCRIPTION

The Project will implement Avian Power Line Interaction Committee (APLIC) guidelines, which contain measures to minimize avian conflicts (including collision and electrocution) with electrical infrastructure. Such measures include anti-perching and nesting configurations and devices for electrical structures as well as visual devices to reduce collisions with power lines.

STRESSORS

- Increase in raptor/predator perches
- Increase in wildlife attractant

1.6.2 BIOLOGICAL MONITOR

DESCRIPTION

A biological monitor will be present onsite during construction of the Project to ensure that there are no direct impacts to special-status wildlife and plant species.

DIRECT INTERACTIONS

- injury

1.6.3 KEEP VEHICLE SPEED LIMIT TO 15 MPH TO MINIMIZE VEHICLE STRIKES

DESCRIPTION

Vehicle speeds on the Project site will be restricted to a maximum of 15 mph per the Project's air quality impact minimization measure. This will reduce the potential for collisions between vehicles or equipment with wildlife species.

DIRECT INTERACTIONS

- collisions
- injury

1.6.4 MEASURES TO PREVENT ATTRACTION TO AND ENTRAPMENT WITHIN OPEN ANTHROPOGENIC WATER SOURCES

DESCRIPTION

Any areas of open water will contain wildlife exclusion measures (e.g., netting) to reduce the possibility of wildlife becoming entrapped in the water feature. Routes of escape from water sources will also be installed for wildlife that could become entrapped. These locations will be regularly inspected over the course of the Project. If any entrapped wildlife are discovered, work will be suspended until the animal can be safely relocated by the biological monitor or Project biologist.

STRESSORS

- Increase in anthropogenic water sources
- Increase in wildlife attractant

1.6.5 RAVEN MANAGEMENT PLAN

DESCRIPTION

The Project area provides suitable habitat for common raven (*Corvus corax*), which is a predator of juvenile desert tortoises and thrives in areas of human development. The Project would introduce new uses into the area, which could subsidize food sources for and increase the presence of ravens. The Raven Management Plan will be implemented to prevent unwanted indirect impacts of the Project to the desert tortoise populations that may occur near the Project area. The plan will be prepared in accordance with the Common Raven Management Plan Template (USFWS 2010). The primary purpose of the plan is to eliminate and/or minimize the availability of subsidies and the potential for ravens to occupy the Project site during all phases of development and use.

STRESSORS

- Increase in predators
- Increase in wildlife attractant

1.6.6 RESTRICT VEGETATION REMOVAL TO THE PROJECT FOOTPRINT AND NECESSARY STAGING AREAS

DESCRIPTION

The amount of vegetation removal within the Project site will be minimized by restricting it to those areas necessary for construction of the Project, including the physical Project footprint, staging areas, and access roads.

RESOURCE NEEDS

- native vegetation (multiple types)
- soil temperature (temperature: ≤ 32.8°c)

1.6.7 REVEGETATE TEMPORARY DISTURBANCE AREAS AFTER CONSTRUCTION IS COMPLETED

DESCRIPTION

After construction is completed, temporary disturbance areas, such as staging areas or temporary access routes, will be revegetated with native vegetation.

RESOURCE NEEDS

- soil temperature (temperature: ≤ 32.8°c)

1.6.8 USE BMPS TO MANAGE NOISE AND COMPLY WITH LOCAL NOISE ORDINANCES

DESCRIPTION

Best management practices (BMPs) will be used to manage noise and comply with local noise ordinances. These practices will reduce impacts to wildlife species in the vicinity of the Project.

DIRECT INTERACTIONS

- disturbance

1.7 PRIOR CONSULTATION HISTORY

As described in an email communication with Peter Sanzenbacher, USFWS Fish and Wildlife Biologist, on March 7, 2024, the USFWS reviewed the Project in 2022 when it was called the GEM Energy Storage Center. At that time, the USFWS did not recommend protocol level desert tortoise surveys based on the location and knowledge of tortoise occurrence in that part of Kern County.

Later in this same communication, USFWS indicated that the desert tortoise survey completed on the Project site in 2023 would be sufficient for ESA analysis and that no further surveys were recommended.

This communication is uploaded to the consultation under Section 1.8 - Other Reports and Helpful Information.

1.8 OTHER AGENCY PARTNERS AND INTERESTED PARTIES

California Department of Fish and Wildlife

Lahontan Regional Water Quality Control Board

1.9 OTHER REPORTS AND HELPFUL INFORMATION

Not applicable.

RELEVANT DOCUMENTATION

- Panorama Environmental Mail - Re_ Deser..

2 SPECIES EFFECTS ANALYSIS

This section describes, species by species, the effects of the proposed action on listed, proposed, and candidate species, and the habitat on which they depend. In this document, effects are broken down as direct interactions (something happening directly to the species) or indirect interactions (something happening to the environment on which a species depends that could then result in effects to the species).

These interactions encompass effects that occur both during project construction and those which could be ongoing after the project is finished. All effects, however, should be considered, including effects from direct and indirect interactions and cumulative effects.

2.1 CALIFORNIA CONDOR

2.1.1 STATUS OF THE SPECIES

This section should provide information on the species' background, its biology and life history that is relevant to the proposed project within the action area that will inform the effects analysis.

2.1.1.1 LEGAL STATUS

The California Condor is federally listed as 'Endangered' and additional information regarding its legal status can be found on the ECOS species profile.

2.1.1.2 RECOVERY PLANS

Available recovery plans for the California Condor can be found on the ECOS species profile.

2.1.1.3 LIFE HISTORY INFORMATION

117-134 cm. Huge and unmistakable. Black with white wing-linings and silvery panel on upper secondaries. Head naked and orange/red. Immatures with black head and underwing mottled dark. Soars on horizontal wings with primaries curled up.

IDENTIFIED RESOURCE NEEDS

Carrion

Source: marine and source: terrestrial

Cliffs/cliffline

Location: steep, rocky canyons, presence: cavity, presence: nesting site, and presence: rock ledge

Open water

Water source: communal watering hole and water source: freshwater

Tree cavities

Trees

Type: roost

Wind patterns

Uplift: orographic and uplift: thermal

2.1.1.4 CONSERVATION NEEDS

According to the Recovery Plan for the California Condor (USFWS, 1996), there are five conservation needs included as part of the strategy for recovery of the California condor. These are: (1) increasing reproduction in captivity to provide condors for release, (2) the release of condors to the wild, (3) minimizing condor mortality factors, (4) maintaining habitat for condor recovery, and (5) implementing condor information and education program. The Recovery Plan also includes one minimum criterion with five conditions that need to be achieved before the species can be reclassified as threated. The minimum criterion is the maintenance of at least two non-captive (wild) populations and one captive populations. The five conditions for these populations are that the populations: (1) must each number at least 150 individuals; (2) must each contain at least 15 breeding pairs; (3) must be reproductively self-sustaining with a positive rate of population growth, (4) the non-captive populations must be spatially disjunct and noninteracting, and (5) the non-captive populations must contain individuals descended from each of the 14 founders.

The 5-Year Review: California condor/*Gymnogyps californicus* (USFWS 2023) provides an update on the status of this recovery strategy and indicates that the Recovery Plan criteria have only been partially met and the species remains classified as endangered. The captive population and one non-captive population (Southern/Central California population) have achieved the condition of having 150 or more individuals, but the other two non-captive populations (Arizona/Utah and Baja California populations) have not. The captive population and Southern/Central California non-captive population have met the condition of having at least 15 breeding pairs while the others have not. Adult mortality continues to affect breeding pairs. None of the populations have met the condition of being reproductively self-sustaining with a positive growth rate. Condition (4), that the non-captive populations must be spatially disjunct, has been met. Condition (5) has also been met, given the new information that there are only 13 (not 14) founders (Ryder et al. 2016).

2.1.2 ENVIRONMENTAL BASELINE

*The environmental baseline describes the species' health **within the action area only** at the time of the consultation, and does not include the effects of the action under review. Unlike the species information provided above, the environmental baseline is at the scale of the Action area.*

2.1.2.1 SPECIES PRESENCE AND USE

California condor was identified by a literature review as occurring within a 10-mile (16-kilometer) buffer on the Project site. However, the California condor has a low potential for occurrence in the Project site due to limited foraging habitat located approximately 8 miles (12.9 kilometers) northwest of the project area. Designated critical habitat is approximately 6 miles (9.7 kilometers) northwest of the Whirlwind Substation and 19 miles west of the WRESC site. No nesting habitat is available onsite and no California condor were observed during biological reconnaissance surveys. California condor may fly over the Project area in search of prey. The key prey for this species (large mammals, including but not limited to, deer, cattle, and pigs) is not present within the project area. There is potential for California condor to fly over the Project site while foraging and low potential for it to utilize carcasses of the small mammals available in the Project site for prey. Vehicle speeds onsite will be kept to a maximum of 15 mph, which will reduce potential for increased carrion sources that could serve as an attractant and reduce potential collision risk. A biological monitor will be present on-site during vegetation removal.

RELEVANT DOCUMENTATION

- TN258316_20240805T155642_Willow Rock Biological Resources Report 2024 Addendum

2.1.2.2 SPECIES CONSERVATION NEEDS WITHIN THE ACTION AREA

The Project site is located within the Southern/Central California non-captive California condor population. The species is known to occur in the mountains to the west of the Project site, but its likelihood to occur within the Project site is low. There is no nesting habitat within the Project site and the closest foraging habitat containing the key food items for this species (carcasses of medium to large mammals) is approximately eight miles northwest of the Project site. It is possible for California condor to fly over the Project site in search of prey, but the Project site offers low-value foraging habitat, with potential food items including the carcasses of small mammals.

The Southern/Central California non-captive California condor population is currently meeting four of the five criteria for downlisting the species from endangered to threatened. As such, it is doing better than the other two non-captive populations in terms of recovery. The criterion that it has not met is being reproductively self-sustaining and having a positive rate of population growth.

The Project site is not considered important to meeting the conservation needs of the California condor because it is sited in already-developed areas. The WRESC facility and gen-tie line are located adjacent to existing roads and solar energy facilities. Therefore, the broader area is already unsuitable as California condor habitat and the construction and operation of the Project would not further detract from the site's habitat value.

2.1.2.3 HABITAT CONDITION (GENERAL)

CARRION (SOURCE: MARINE AND SOURCE: TERRESTRIAL)
Carrion was not observed within the Project site during biological surveys, but it is likely that carrion would be present at times due to the presence of small mammals within the site that may experience mortality from vehicle strikes or other sources.

WIND PATTERNS (UPLIFT: OROGRAPHIC AND UPLIFT: THERMAL)
The presence of orographic and thermal uplift within the Project site is consistent with the amount present within the regional area.

SUPPORTING DOCUMENTATION

- TN258316_20240805T155642_Willow Rock Biological Resources Report 2024 Addendum

2.1.2.4 INFLUENCES

According to the 5-Year Review: California condor/*Gymnogyps californicus* (USFWS 2023), the primary threat to California condor is lead poisoning from prey animals shot with lead ammunition followed by electrocution or collision with powerlines, disease (highly pathogenic avian influenza), shooting by hunters, and potential collision with wind turbines.

Within and in the immediate vicinity of the Project site, there are numerous powerlines along existing roadways and associated with existing solar facilities. Wind facilities to the north and west of the Project site may influence the survival of California condor, but to date there have been no documented mortalities of California condor due to wind turbines (USFWS 2023). The extent to which the other threats to California condor (lead poisoning, disease, and shooting) influence the species within the Project site is unknown and would require additional research.

2.1.2.5 ADDITIONAL BASELINE INFORMATION

The complete baseline information for California condor within the Project site is provided in Section 2.1.2.1 - Species Presence and Use.

2.1.3 EFFECTS OF THE ACTION

This section considers and discusses all effects on the listed species that are caused by the proposed action and are reasonably certain to occur, including the effects of other activities that would not occur but for the proposed action.

2.1.3.1 INDIRECT INTERACTIONS

RESOURCE NEED	STRESSORS	CONSERVATION MEASURES	AMOUNT OF RESOURCE IMPACTED	INDIVIDUALS AFFECTED
Carrion (source: marine and source: terrestrial)	Increase in vehicle traffic		The increase in vehicle traffic associated with the Project could lead to an increase in carrion sources, but any increase is expected to be minimal because the Project proponent's air quality impact minimization measure of keeping vehicle speeds to 15 mph onsite would limit the potential for vehicular animal strikes and reduce the potential for increase in carrion sources.	***No individuals will be affected*** The increase in vehicle traffic associated with the Project could lead to an increase in carrion sources, but these would not be expected to increase the potential for California condor to occur in the Project site because these are not the ideal carrion sources (medium to large mammals) for this species. Additionally, the Project proponent's air quality impact minimization measure of keeping vehicle speeds to 15 mph onsite would limit the potential increase in carrion sources.

RESOURCE NEED	STRESSORS	CONSERVATION MEASURES	AMOUNT OF RESOURCE IMPACTED	INDIVIDUALS AFFECTED
Cliffs/cliffline (location: steep, rocky canyons, presence: cavity, presence: nesting site, and presence: rock ledge)			***This resource is not present in the action area*** Biological surveys and desktop reviews were conducted within the Project site to identify habitat types present within the site. Cliff/cliffline habitat was not present.	***There will be no impacts to this resource, so no individuals will be affected.***
Open water (water source: communal watering hole and water source: freshwater)			***This resource is not present in the action area*** A desktop analysis and field visit to determine hydrologic features and jurisdictional waters within the Project site determined that there were 12 drainage features within the site, seven of which had observable hydrologic indicators. However, all features identified within the site are classified as ephemeral; therefore, they would not be considered an open water source serving as a communal watering hole.	***There will be no impacts to this resource, so no individuals will be affected.***

RESOURCE NEED	STRESSORS	CONSERVATION MEASURES	AMOUNT OF RESOURCE IMPACTED	INDIVIDUALS AFFECTED
Tree cavities			***This resource is not present in the action area*** From the onsite biological resource surveys, this species was determined not to have nesting habitat within the Project site. Trees with cavities were not documented during the surveys, but it is possible for them to occur in adjacent areas.	***There will be no impacts to this resource, so no individuals will be affected.***
Trees (type: roost)			***This resource is not present in the action area*** Suitable roost trees for California condor are not present within the Project area. Site visits by qualified biologists have confirmed this.	***There will be no impacts to this resource, so no individuals will be affected.***
Wind patterns (uplift: orographic and uplift: thermal)	No exposure path			***There will be no impacts to this resource, so no individuals will be affected.***

2.1.3.2 DIRECT INTERACTIONS

DIRECT INTERACTION	CONSERVATION MEASURES	INDIVIDUALS IMPACTED	IMPACT EXPLANATION
Collisions	Keep vehicle speed limit to 15 mph to minimize vehicle strikes	No	The likelihood of California condor occurring within the Project site is low and, with the conservation measure of maintaining reduced speed limits, collisions with vehicles or equipment are not expected to occur.
Disturbance	Use bmps to manage noise and comply with local noise ordinances	No	Foraging habitat and critical habitat for California condor are located too far away from the Project site to be disturbed by noise from the Project. The closest foraging habitat is approximately eight miles northwest of the Project site and the closest designated critical habitat is approximately six miles northwest of the Whirlwind Substation and 19 miles west of the WRESC site. The Project site does not contain suitable habitat for California condor and therefore this species is unlikely to occur within the site or be disturbed by Project noise.
Injury	Keep vehicle speed limit to 15 mph to minimize vehicle strikes Biological monitor	No	California condor is unlikely to occur within the site due to unsuitable habitat conditions and limited prey availability. Therefore, the likelihood that an individual would be injured onsite is low. Additionally, conservation measures implemented by the Project, including maintaining low vehicle speed limits and having a Biological Monitor present during construction activities, would decrease the likelihood of injury even further. Thus, injury to California condor as a result of the Project is not expected.

2.1.4 CUMULATIVE EFFECTS

There is no ESA requirement for federal action agencies to address cumulative effects for informal consultation, as confirmed by *Conservation Congress v. U.S. Forest Service*, No. 12-16452 (9th Cir. 2013). Therefore, because DOE is making a Not Likely to Adversely Affect determination for this species, cumulative effects are not addressed.

2.1.5 DISCUSSION AND CONCLUSION

DETERMINATION: NLAA

RELEVANT DOCUMENTATION

- TN258316_20240805T155642_Willow Rock Biological Resources Report 2024 Addendum

2.2 DESERT TORTOISE

2.2.1 STATUS OF THE SPECIES

This section should provide information on the species' background, its biology and life history that is relevant to the proposed project within the action area that will inform the effects analysis.

2.2.1.1 LEGAL STATUS

The Desert Tortoise is federally listed as 'Threatened' and additional information regarding its legal status can be found on the ECOS species profile.

2.2.1.2 RECOVERY PLANS

Available recovery plans for the Desert Tortoise can be found on the ECOS species profile.

2.2.1.3 LIFE HISTORY INFORMATION

Gopherus agassizii is terrestrial, with a domed shell and round, stumpy elephantine hind legs. The front limbs are flattened for digging and heavily scaled without webbed toes. The carapace (upper shell) is oblong and domed with the sides round due to joining of the carapace and plastron (lower shell). The scute centers are often yellowish which have grooved concentric rings. The plastron is also yellowish, with brown along the scute margins. The head is small and rounded in front with reddish-tan coloring and the iris being greenish-yellow. The front and hind feet are about equal in size and the tail is of short length (Behler/King, 1979).

IDENTIFIED RESOURCE NEEDS

Burrows

Type: excavations, caves, rock crevices, or overhangs

Cover

Type: rocks (larger is typically better), soil similar to individual coloration, shrubs with branches that touch the ground

Native vegetation

Multiple types

Soil moisture/saturation

Percent moisture: 0.4%

Soil temperature

Temperature: ≤ 32.8°c

Water

Presence: free-standing water, both spatially and temporally (for drinking) and type: any water available in desert tortoise habitat (from temporary or permanent sources)

2.2.1.4 CONSERVATION NEEDS

The Revised Recovery Plan for the Mojave Population of the Desert Tortoise (*Gopherus agassizii*) published by the USFWS in May 2011 laid out a comprehensive plan for recovery of the species that included recovery goals, objectives, criteria, and recovery actions (USFWS 2011). Six recovery actions were identified, each of which included specific subactions. The six recovery actions included: (1) develop, support, and build partnerships to facilitate recovery, (2) protect existing populations and habitat, (3) augment depleted populations through a strategic program, (4) monitor progress toward recovery, (5) conduct applied research and modeling in support of recovery efforts within a strategic framework, and (6) implement an adaptive management program.

The USFWS's Mojave Desert Tortoise (*Gopherus agassizii*) 5-Year Review: Summary and Evaluation published in May 2022 (5-Year Review) provides an update on the status of the species and the progress of the recovery strategy in light of research published since that time. The 5-Year Review found that, due to ongoing population declines and threats, a low potential for recovery, its listing at the species level, and potential conflict with economic or other development activities, desert tortoise should remain classified as threatened (USFWS 2022). In light of this conclusion, the 5-Year Review put forward the highest priority recovery actions for the next five years. These actions include: (1) aggressive implementation of recovery actions endorsed by the Desert Tortoise Management Oversight Group, which include (a) habitat restoration, (b) minimization of predation, (c) installation and maintenance of tortoise barrier fencing along priority stretches of highways, (d) fire management planning and implementation, and (e) environmental education; (2) maintenance of landscape connectivity and resilience of Tortoise Conservation Areas; (3) increased law enforcement efforts to minimize impacts of habitat destruction resulting from unauthorized OHV use, unpermitted cannabis farms, and trespass grazing; (4) use of population augmentation; (5) updated taxonomy, distribution and listing status under the ESA to include additional populations; (6) incorporation of updated population trend analysis and climate change/ land use modeling); (7) increased/improved range-wide monitoring; and (8) development of a revised spatial decision support system to improve models of threats, recovery actions, and tortoise demographics.

2.2.2 ENVIRONMENTAL BASELINE

The environmental baseline describes the species' health ***within the action area only*** *at the time of the consultation, and does not include the effects of the action under review. Unlike the species information provided above, the environmental baseline is at the scale of the Action area.*

2.2.2.1 SPECIES PRESENCE AND USE

Suitable desert tortoise habitat is present throughout the Project area. As a result, a protocol-level focused survey for desert tortoise was conducted in 2023 and 2024. No live desert tortoises or any desert tortoise sign were observed onsite or within the buffer area during the survey. No desert tortoise burrows, scat, carcasses, tracks, drinking depressions, or courtship rings were observed. Based on information provided by USFWS, this species is not known to occur within the vicinity of the project area. The Project area is at the far western edge of the species' range and not within critical habitat (the closest of which is 12 miles southeast). Additionally, the closest recorded occurrence of desert tortoise is approximately 3 miles away from the Project area. As a result, it is unlikely that desert tortoise would be present in the Project area. However, because suitable habitat has been identified throughout the Project area and the Project area is within the species' range, the presence of the species cannot be definitively ruled out.

The Project would introduce new uses into the area, which could subsidize food sources for and increase the presence of ravens, a predator of desert tortoise. A Raven Management Plan will be implemented to reduce impacts on desert tortoise from predators. A perimeter fence around the Project area would be installed to reduce the likelihood of desert tortoise entering the Project area. Pre-construction clearance surveys will be required prior to any vegetation removal and ground disturbance activities.

RELEVANT DOCUMENTATION

- TN258316_20240805T155642_Willow Rock Biological Resources Report 2024 Addendum
- TN258309_20240805T163125_Willow Rock Desert Tortoise Survey 2024 Addendum
- TN254815_20240301T223057_2023 DESERT TORTOISE SURVEY

2.2.2.2 SPECIES CONSERVATION NEEDS WITHIN THE ACTION AREA

The Project site is located within the Western Mojave Recovery Unit for the desert tortoise at the very western edge of the unit. The site is not within critical habitat for the species, the closest of which is six miles from the site. However, suitable desert tortoise habitat is present onsite. Occurrences have been documented within two miles of the site, but no individuals were found during the focused survey for the species conducted in the Project site in 2023. The survey was also negative for tortoise sign (burrows, scat, carcasses, shell remains, drinking depressions, or courtship rings). Given the lack of historical observations within the site and the recent negative survey results, the likelihood for the species to occur within the Project site is low. The proposed Project is also sited in or near developed areas, which offer lower conservation value for desert tortoise. The WRESC facility and gen-tie line are located adjacent to existing roads and solar energy facilities. Therefore, the broader area is not ideal habitat and the construction and operation of the Project would not further detract from the site's habitat value. For these reasons, the Project site is not likely to be considered important for meeting the conservation needs of desert tortoise.

2.2.2.3 HABITAT CONDITION (GENERAL)

BURROWS (TYPE: EXCAVATIONS, CAVES, ROCK CREVICES, OR OVERHANGS)
Twenty-nine burrows were identified and mapped within the Project site during onsite field assessments. These burrows were likely associated with medium to large mammals. No desert tortoise burrows were observed during the focused survey for desert tortoise conducted in 2023.

COVER (TYPE: ROCKS (LARGER IS TYPICALLY BETTER), SOIL SIMILAR TO INDIVIDUAL COLORATION, SHRUBS WITH BRANCHES THAT TOUCH THE GROUND)
Suitable desert tortoise habitat is present onsite, which includes these habitat features.

NATIVE VEGETATION (MULTIPLE TYPES)
Native vegetation exists throughout the Project site.

SOIL MOISTURE/SATURATION (PERCENT MOISTURE: 0.4%)
Further analysis of the Project site would be required to know the distribution of this level of soil moisture throughout the site.

SOIL TEMPERATURE (TEMPERATURE: ≤ 32.8°C)
Further analysis of the Project site would be required to understand the distribution of soil temperatures throughout the site.

WATER (PRESENCE: FREE-STANDING WATER, BOTH SPATIALLY AND TEMPORALLY (FOR DRINKING) AND TYPE: ANY WATER AVAILABLE IN DESERT TORTOISE HABITAT (FROM TEMPORARY OR PERMANENT SOURCES))
Twelve drainage features intersect the Project site, seven of which have observable hydrologic indicators, such as shelving, sedimentation, and cracked soil surfaces with drainage patterns. All of these features were determined to be ephemeral. Therefore, none of them provide a year-round water source.

SUPPORTING DOCUMENTATION

- TN258316_20240805T155642_Willow Rock Biological Resources Report 2024 Addendum

2.2.2.4 INFLUENCES

According to the Mojave Desert Tortoise (*Gopherus agassizii*) 5-Year Review: Summary and Evaluation (USFWS 2022), the primary threat to desert tortoise is destruction, modification, or curtailment of habitat or range. Other threats include overutilization for commercial, recreational, scientific, or educational purposes; disease or predation; inadequacy of existing regulatory mechanisms; and other factors.

The proposed Project is sited near already-developed areas. The WRESC facility and gen-tie line are located adjacent to existing roads and solar energy facilities. Therefore, destruction and modification of desert tortoise habitat has already occurred within and adjacent to the action area. The extent to which the other threats to Mojave desert tortoise (overutilization, disease, predation, regulatory mechanisms, and other factors) influence the species within the Project site is unknown and would require additional research. It is possible that levels of predation by common raven may be elevated in the vicinity of the Project site due to increased perching and nesting opportunities provided by existing buildings and numerous powerlines along roadways and associated with the existing solar facilities within and in the immediate vicinity of the Project site. However, the true levels of common raven predation in this area would require field verification.

2.2.2.5 ADDITIONAL BASELINE INFORMATION

The complete baseline information for Mojave desert tortoise within the Project site is provided in Section 2.2.2.1 - Species Presence and Use.

2.2.3 EFFECTS OF THE ACTION

This section considers and discusses all effects on the listed species that are caused by the proposed action and are reasonably certain to occur, including the effects of other activities that would not occur but for the proposed action.

2.2.3.1 INDIRECT INTERACTIONS

RESOURCE NEED	STRESSORS	CONSERVATION MEASURES	AMOUNT OF RESOURCE IMPACTED	INDIVIDUALS AFFECTED
Burrows (type: excavations, caves, rock crevices, or overhangs)	Increase in impervious surfaces Increase in soil compaction Increase in human structures		No desert tortoise burrows were found during the focused desert tortoise survey. However, burrows do occur within the Project. The ability for burrows to occur depends on the availability of suitable soils and the presence of burrowing	***No individuals will be affected*** No desert tortoise individuals are currently present onsite, as determined by database reviews of historical records and a focused survey conducted onsite for the species in 2023.

RESOURCE NEED	STRESSORS	CONSERVATION MEASURES	AMOUNT OF RESOURCE IMPACTED	INDIVIDUALS AFFECTED
			mammals. Therefore, development of the WRESC facility and installation of transmission poles to support the gen-tie will reduce the availability of burrows by reducing habitat for mammal species and reducing the amount of suitable soils, some of which will be compacted or completely covered by buildings and impervious surfaces. The permanent disturbance area associated with the WRESC facility and gen-tie structures is approximately 88.6 acres. This reduction in the amount of suitable soils for burrows is not significant in the context of the 6,000,000 acres that were designated as critical habitat for the species in portions of the Mojave and Colorado deserts.	
Cover (type: rocks (larger is typically better), soil similar to individual coloration, shrubs with branches that touch the ground)	Increase in human structures		Construction of the WRESC facility and gen-tie will result in the permanent impacts to approximately 88.6 acres of habitat, some of which contain these habitat features for desert tortoise. This reduction in habitat is not significant in the context of the 6,000,000 acres that were designated as critical habitat for the species in portions of the	***No individuals will be affected*** No desert tortoise individuals are currently present onsite, as determined by database reviews of historical records and a focused survey conducted onsite for the species in 2023.

RESOURCE NEED	STRESSORS	CONSERVATION MEASURES	AMOUNT OF RESOURCE IMPACTED	INDIVIDUALS AFFECTED
			Mojave and Colorado deserts.	
Native vegetation (multiple types)	Decrease in native vegetation Increase in impervious surfaces Increase in soil compaction Decrease in vegetation Increase in human structures	Restrict vegetation removal to the project footprint and necessary staging areas	Construction of the WRESC facility and gen-tie will result in the permanent impacts to approximately 88.6 acres of habitat, some of which contain native vegetation. This reduction in habitat is not significant in the context of the 6,000,000 acres that were designated as critical habitat for the species in portions of the Mojave and Colorado deserts.	***No individuals will be affected*** No desert tortoise individuals are currently present onsite, as determined by database reviews of historical records and a focused survey conducted onsite for the species in 2023.
Soil moisture/ saturation (percent moisture: 0.4%)	Increase in impervious surfaces Increase in soil compaction		Construction of the WRESC facility and gen-tie will result in the permanent impacts to approximately 88.6 acres of habitat. Impacts include construction of permanent facilities and roadways, which require the compaction of soils and installation of impervious surfaces, which would reduce soil moisture. This impact area is not significant in the context of the 6,000,000 acres that were designated as critical habitat for the species in portions of the Mojave and Colorado deserts. There will be no permanent impact to soil moisture beyond the permanent footprint of the Project facilities.	***No individuals will be affected*** No desert tortoise individuals are currently present onsite, as determined by database reviews of historical records and a focused survey conducted onsite for the species in 2023.

RESOURCE NEED	STRESSORS	CONSERVATION MEASURES	AMOUNT OF RESOURCE IMPACTED	INDIVIDUALS AFFECTED
Soil temperature (temperature: ≤ 32.8°c)	Increase in impervious surfaces Increase in human structures	Restrict vegetation removal to the project footprint and necessary staging areas Revegetate temporary disturbance areas after construction is completed	The permanent footprint of the WRESC facility, gen-tie structures (approximately 88.6 acres), and associated roads will affect the soil temperature in that area. Soil temperatures will also be affected in temporary disturbance areas required for construction where vegetation is removed. However, temporary disturbance areas will be revegetated after construction is completed, so the impact to soil temperature will be short-term. The permanent reduction in soils of suitable temperature due to the permanent Project structures is not significant in the context of the 6,000,000 acres that were designated as critical habitat for the species in portions of the Mojave and Colorado deserts.	***No individuals will be affected*** No desert tortoise individuals are currently present onsite, as determined by database reviews of historical records and a focused survey conducted onsite for the species in 2023.
Water (presence: free-standing water, both spatially and temporally (for drinking) and type: any water available in desert tortoise habitat (from temporary or permanent sources))	No exposure path			***There will be no impacts to this resource, so no individuals will be affected.***

2.2.3.2 DIRECT INTERACTIONS

No direct interactions leading to effects on species are expected to occur from the proposed project.

Justification:

Results of database searches for historical records of occurrence and a focused survey for the species on the Project site in 2023 were negative for the presence of desert tortoise. Additionally, no tortoise sign was found during the 2023 focused survey, indicating that desert tortoises have not been present on the site for a long period of time. Therefore, desert tortoises have been determined to be unlikely to be present in the Project site and thus impacts to the species are unlikely. To further ensure that there will be no direct impacts to desert tortoises, the Project proponent will implement measures such as pre-construction clearance surveys, exclusion fencing, an on-site biological monitor, and reduced speed limits during construction of the Project.

2.2.4 CUMULATIVE EFFECTS

There is no ESA requirement for federal action agencies to address cumulative effects for informal consultation, as confirmed by *Conservation Congress v. U.S. Forest Service,* No. 12-16452 (9th Cir. 2013). Therefore, because DOE is making a Not Likely to Adversely Affect determination for this species, cumulative effects are not addressed.

2.2.5 DISCUSSION AND CONCLUSION

DETERMINATION: NLAA

2.3 MONARCH BUTTERFLY

This species has been excluded from analysis in this environmental review document.

RELEVANT DOCUMENTATION

- TN258316_20240805T155642_Willow Rock Biological Resources Report 2024 Addendum

JUSTIFICATION FOR EXCLUSION

Monarch butterfly is associated with western winter roost sites primarily occurring along the coast from northern Mendocino to Baja California, Mexico, located in wind-protected tree groves (Eucalyptus, Monterey pine, cypress), with nectar and water sources nearby. During breeding season, adults are widespread across California, but are scarce in desert habitat, which is the habitat type present in the Project area. In larval form, Monarch butterfly require milkweed (*Asclepias* sp.) in the Apocynaceae family as a food source. The Project area is not located within a coastal wind-protected tree grove or where milkweed is generally encountered, and host plants were not recorded during the protocol-level plant surveys or other biological field work conducted in 2023 and 2024. Based on the location of the Project and the lack of larval foodplant observed during field studies, this species is considered unlikely to occur in the Project area. The Project would not jeopardize the continued existence of the species.

2.4 NORTHWESTERN POND TURTLE

This species has been excluded from analysis in this environmental review document.

RELEVANT DOCUMENTATION

- TN258316_20240805T155642_Willow Rock Biological Resources Report 2024 Addendum

JUSTIFICATION FOR EXCLUSION

Northwestern pond turtle is considered absent from the Project area due to an absence of suitable habitat (i.e., streams, ponds, lakes, and permanent and ephemeral wetlands). The Project would not jeopardize the continued existence of the species

2.5 WESTERN SNOWY PLOVER

This species has been excluded from analysis in this environmental review document.

RELEVANT DOCUMENTATION

- TN258316_20240805T155642_Willow Rock Biological Resources Report 2024 Addendum

JUSTIFICATION FOR EXCLUSION

No suitable habitat (open areas in which vegetation is absent or sparse, including coastal sand beaches and shores of salt or soda lakes) is present within the Project area. Additionally, the closest recorded occurrence is more than 6 miles southeast of the Project area.

3 CRITICAL HABITAT EFFECTS ANALYSIS

No critical habitats intersect with the project action area.

4 SUMMARY DISCUSSION AND CONCLUSION

4.1 SUMMARY DISCUSSION

There will be no effects to critical habitat within the Project area because there is no critical habitat within the Project area. There is no habitat in the Project area for western snowy plover, northwestern pond turtle, or monarch butterfly, and so there will be no effects to these species.

Habitat evaluations and protocol-level surveys determined that there is no nesting habitat for California condor in the Project area and that no individuals were observed within the Project area. It is possible that California condor may fly over the Project area while foraging, but the primary prey items for California condor are not present in the Project area and so it is unlikely for California condor to be present. A biological monitor will be present on-site during vegetation removal activities. Due to the unlikely presence in the Project area and the use of a biological monitor, the Project is *not likely to adversely affect* this species.

Habitat evaluations and protocol-level surveys for desert tortoise determined that there is suitable habitat present in the Project area, but no tortoises or their sign were observed. Additionally, there are no historical occurrence records within the Project area. Therefore, desert tortoise is considered unlikely to be present in the Project area. To further ensure no impacts occur to desert tortoise, a perimeter fence around the Project area will be installed to reduce the likelihood of desert tortoise entering the Project area and pre-construction clearance surveys will ensure no individuals will be impacted by vegetation removal or ground disturbance activities. Additionally, a Raven Management Plan will be developed to reduce impacts on desert tortoise from predators. Due to unlikely presence in the Project area and implementation of avoidance and mitigation measures, the Project is *not likely to adversely affect* this species.

4.2 CONCLUSION

The Project would not result in any impacts to critical habitat. The Project would have No Effect on western snowy plover, northwestern pond turtle, or monarch butterfly because of lack of suitable habitat within the Project action area. While habitat is present for the California condor and desert tortoise, presence of these species in the Project action area is unlikely and, with implementation or minimization or mitigation measures, the Project *may affect but is not likely to adversely affect these species*.

United States Department of the Interior
U.S. FISH AND WILDLIFE SERVICE
Ecological Services
Palm Springs Fish and Wildlife Office
777 East Tahquitz Canyon Way, Suite 208
Palm Springs, California 92262

In Reply Refer to: 2024-0130448-S7-001

September 15, 2025
Sent by Email

Todd Stribley
Director, Environmental Compliance
Loan Programs Office
Department of Energy

Subject: Informal Section 7 Consultation for the Willow Rock Energy Storage Center Project, Kern County, California

Dear Todd Stribley:

On July 16, 2025, we received your letter requesting our concurrence that the proposed Willow Rock Energy Storage Center Project (Project) is not likely to adversely affect the federally threatened Mojave desert tortoise (*Gopherus agassizii;* desert tortoise) and the federally endangered California condor (*Gymnogyps californianus*) in accordance with section 7 of the Endangered Species Act of 1973 (Act), as amended (16 U.S.C. 1531 et seq.). The Project Proponent, Hydrostor USA Holdings Inc. (Hydrostor), is applying for a loan guarantee through the Department of Energy (DOE) pursuant to its authority under the Title XVII of the Energy Policy Act of 2005. The Project is in Rosamond, California.

PROJECT DESCRIPTION

The proposed Project is an energy storage facility that would provide long-duration energy storage to help meet the region's growing demand for power. The Willow Rock Energy Storage Center (WRESC) would be situated on up to 163.5 acres of land located immediately north of Dawn Road and between State Route (SR) 14 and Sierra Highway. Energy stored at the facility would be delivered to Southern California Edison's (SCE) Whirlwind Substation located approximately 19 miles west of the storage facility at the intersection of 170th Street W. and Rosamond Boulevard, via a new 230-kilovolt (kV) generation-tie (gen-tie) line. The proposed facility would consist of a hydrostatically compensating reservoir (not an open water feature), underground energy storage infrastructure (including an underground cavern, access shaft, and water and air shafts), other ancillary support systems, and temporary construction areas. A temporary laydown yard would be located west of SR 14 and north of Dawn Road. The gen-tie line would be constructed from the WRESC, pass through the laydown yard and begin an alignment with existing roads and distribution lines at Dawn Road, before connecting at the Whirlwind Substation.

Construction of most above-ground facilities will require the use of light and heavy equipment to clear vegetation, grade surfaces, and excavate and compact soils for engineered cement foundation and pad sites. Controlled detonations to construct the underground infrastructure are scheduled during daylight hours every 10 to 12 hours at a depth of approximately 2,000 feet to minimize noise and vibration impacts to surrounding areas.

Conservation Measures

CM 1. Hydrostor shall install desert tortoise exclusion fencing around the project site, laydown, staging and parking areas. Exclusion fence specifications shall be consistent with those described in the Desert Tortoise Field Manual (2009) or more current guidance provided by the U.S. Fish and Wildlife Service (Service). Fencing shall not be required to conduct work at or along the gen-tie line corridor.

CM 2. Prior to ground-disturbing or vegetation removal activities within 200 feet of the project site in suitable desert tortoise habitat, biological monitors shall conduct protocol surveys on the project site and laydown areas if construction is not initiated prior to the 2026 spring survey season (i.e., initiated outside of the desert tortoise active season). Clearance surveys shall be conducted for all linear facilities prior to any ground disturbance. In addition, surveys shall be conducted one week prior to any ground disturbance and within 24 hours of beginning work in suitable habitat. Methods for clearance surveys and exclusion fence specifications shall be consistent with those described in the Desert Tortoise Field Manual (2009) or more current guidance provided by the Service.

CM 3. The Project will implement Avian Power Line Interaction Committee (APLIC) guidelines, which contain measures to minimize avian conflicts (including collision and electrocution) with electrical infrastructure. Such measures include anti-perching and nesting configurations and devices for electrical structures as well as visual devices to reduce collisions with power lines.

CM 4. A biological monitor will be present onsite during construction of the desert tortoise exclusion fence and during Project activities that occur outside of desert tortoise exclusion fencing to minimize the potential for direct impacts to special-status wildlife and plant species (e.g., federally listed species).

CM 5. Vehicle speeds on the Project site will be restricted to a maximum of 15 miles per hour per the Project's air quality impact minimization measure. This will reduce the potential for collisions between vehicles or equipment and wildlife species.

CM 6. The Project area provides suitable habitat for common raven (*Corvus corax*; raven), which is a predator of juvenile desert tortoises and thrives in areas of human development. The Project would introduce new uses into the area, which could subsidize food sources for and increase the presence of ravens. A Raven Management Plan will be implemented to prevent unwanted indirect impacts of the Project to the desert tortoise populations that may occur near the Project area.

The primary purpose of the plan is to eliminate and/or minimize the availability of subsidies and the potential for ravens to occupy the Project site during all phases of development and use and contribute to ongoing regional monitoring and control of raven populations.

CM 7. The amount of vegetation removal within the Project site will be minimized by restricting it to those areas necessary for construction of the Project, including the physical Project footprint, staging areas, and access roads.

CM 8. After construction is completed, temporary disturbance areas, such as staging areas or temporary access routes, will be revegetated with native vegetation.

CM 9. Best management practices will be used to manage noise and comply with local noise ordinances. These practices will reduce impacts to wildlife species in the vicinity of the Project.

Environmental Baseline in the Action Area

In our consideration of the environmental baseline, we have defined the action area as the WRESC, temporary laydown yard, and gen-tie alignment, and a 200-foot noise buffer, as well as a 5,400-foot noise buffer from proposed detonations at the WRESC. The action area consists of largely undeveloped, natural open space interspersed with several roads. Dominant vegetation communities include creosote bush-white bursage scrub and allscale scrub. Soils are extremely rocky with very little loose soil present. Existing disturbances within the action area include dirt roads, paved roads, rail lines, power lines, and communication equipment. The action area has a relatively high noise baseline due to the road noise and periodic rail traffic in the area. There are existing wind and solar facilities to the north and west.

Suitable desert tortoise habitat is present throughout the action area. Consequently, a protocol-level focused survey for desert tortoise was conducted in 2023 and 2024. No live desert tortoises or any desert tortoise sign were observed onsite or within the 500-foot buffer area during the survey. No desert tortoise burrows, scat, carcasses, tracks, drinking depressions, or courtship rings were observed.

California condors generally occur in areas with topographic relief that provide orographic lift and thermal columns that California condors use for flight. The Project is south of the Tehachapi Mountains in an area that is relatively flat and therefore not conducive to California condor flights. There is also a low potential for California condor occurrence in the action area due to limited foraging habitat; the closest commonly used foraging habitat is located approximately 8 miles (12.9 kilometers) to the northwest. Similarly, there is no nesting habitat available at the Project. No California condors were observed during biological reconnaissance surveys and data from GPS and radio tagged California condors (greater than 50 percent of the flock that occurs in the vicinity of the Project are wearing transmitters) indicates that California condors do not commonly occur in the area and in those cases are primarily at high flight altitudes (i.e., greater than 500 feet above ground level; Service, unpublished data).

Analysis of Potential Effects

Stressors associated with construction and operation of the Project include an increase in raven perches and human structures, increase in wildlife attractants (water and trash), decrease in native vegetation, increase in soil compaction and disturbance from construction equipment, increase in human presence and vehicle traffic, and increases in noise and vibration. Controlled detonations and ground borne vibration have the potential to disrupt animal behavior, similar to other construction activities, and could startle species well away from the source of noise to some degree.

Desert Tortoise

Although the potential for presence of desert tortoise in the action area is low based on surveys at the Project and buffer area in 2023 and 2024, there is desert tortoise habitat in this area so their presence cannot be ruled out entirely. However, a permanent desert tortoise exclusion fence will be installed around the perimeter of the WRESC and temporary exclusion fence installed around staging, laydown, and parking areas to reduce the likelihood of desert tortoise entering these areas of ground disturbance. Additionally, pre-construction clearance surveys will be required in all Project areas prior to any vegetation removal and ground disturbance activities. Therefore, we consider the potential for adverse effects on desert tortoise from ground disturbance, noise, vibration, and increased human presence to be discountable.

Noise created by controlled detonations could adversely affect desert tortoises by startling them and temporarily interrupting feeding, sheltering, or reproductive behaviors. However, noise from controlled detonations is not continuous and would happen below ground surface. Each controlled detonation event would last only a few seconds, and no more frequently than once or twice in a day during daytime hours. During a detonation, we expect noise levels to be elevated above ambient noise for a few seconds as far away as 5,400 feet, or farther, from the site of detonations. We expect noise levels that could injure desert tortoises to dissipate within 400 feet of the detonations, which is within the boundary of the desert tortoise exclusion fencing. Any desert tortoises beyond the exclusion fence would be exposed to noise that could startle them, but those desert tortoises are likely habituated to elevated ambient noise from roads and trains. We expect the impact to desert tortoises would be insignificant because the detonation activities would occur on an infrequent basis and for short durations, and because there are not likely to be desert tortoises close enough to the detonations to be injured.

The Project would introduce new water and food sources, and perches and nest substrate for ravens and thereby could increase their presence in the wider area. However, a Raven Management Plan will be implemented to reduce impacts on desert tortoise from ravens and related desert tortoise predators. Measures to reduce subsidies for ravens will include collecting and disposing of roadkill, using devices that deter nesting by ravens, and reporting active nests, etc. Moreover, ravens are being subsidized south of the action area due to human presence and development nearby, and the elevated presence of ravens that may result from the proposed Project is likely insignificant compared to the baseline condition in the action area. Because some wildlife attractants will remain after implementing conservation measures, this stressor is

not completely avoided, but its impacted is expected to be minimal. Therefore, we consider the effect of raven subsidization from the proposed Project to be insignificant.

California Condor

The proposed Project could adversely affect California condors by increasing the availability of microtrash which California condors may ingest, such as broken glass, hardware, plastic waste, bottle caps, small pieces of metal, etc. However, the availability of microtrash is an existing condition in the region and the incremental effect of the proposed Project on microtrash is insignificant at the scale of the foraging behavior of individual condors. Additionally, the Project will manage trash as a component of their Raven Management Plan.

The proposed Project could affect California condor through collisions with power lines. However, as we mentioned in our environmental baseline section, power lines exist in the action area. Moreover, we do not have evidence that California condors have collided with any power lines in the vicinity of the action area, likely due to the lack of forage and nesting habitat. Additionally, based on our records of GPS and radio transmittered California condors, we consider the likelihood of California condors occurring in the action area and at risk of colliding with Project related power lines to be discountable.

CONCLUSION

Based on the information provided and the conservation measures that have been incorporated into the proposed project description, we concur with your determination that the proposed Project is not likely to adversely affect the Mojave desert tortoise or the California condor. Therefore, the interagency consultation requirements of section 7 of the Act have been satisfied. Although our concurrence ends informal consultation, obligations under section 7 of the Act will be reconsidered if new information reveals effects of the agency action that may affect listed species in a manner or to an extent not previously considered or this action is subsequently modified in a manner that was not considered in this assessment.

If you have any questions regarding this letter, please contact William Sherwin[1] of this office.

Sincerely,

PETER SANZENBACHER

Digitally signed by PETER SANZENBACHER
Date: 2025.08.15 10:31:03 -07'00'

for Brian Croft
Field Supervisor

[1] william_sherwin@fws.gov

LITERATURE CITED

[Service] U.S. Fish and Wildlife Service. 2009. Desert tortoise (Mojave population) field manual (*Gopherus agassizii*). Prepared by U.S. Fish and Wildlife Service, Region 8.

APPENDIX B PERMITS AND APPROVALS

Agency	Permit/Approval/Consultation	Application Date and Status
Federal		
U.S. Army Corp of Engineers (USACE)	Clean Water Act Section 404	Jurisdictional Determination demonstrates no jurisdictional features will be impacted by the Project. On October 1, 2024, USACE issued a letter and determined a Department of the Army Permit was not required.
Department of Defense (DOD)	Notification of Project	Completed on January 30, 2024.
U.S. Fish and Wildlife Service (USFWS)	Endangered Species Act – Informal Section 7 Consultation	USFWS sent Section 7 concurrence letter to LPO on August 15, 2025.
U.S. Environmental Protection Agency (USEPA), Region 9	Safe Drinking Water Act Underground Injection Control (UIC) Class V Permit	UIC Class V authorization by rule anticipated July 2026
Federal Aviation Administration (FAA)	Non-Hazard Determination Request	FAA determined the Project is a non-hazard to air navigation in December 2023.
Federal Communications Commission (FCC)	Prohibits the operation of devices that can interfere with radio-frequency communication.	Notification and coordination complete.
State of California		
California Department of Transportation (Caltrans)	Encroachment Permit	CalTrans engagement completed. Enroachment permits will be obtained by transporters as required.
California Energy Commission (CEC)	Final Staff Assessment	Issued on July 16, 2025.
California Energy Commission (CEC)	Final Decision with Conditions	Issued December 2025.
California State Historic Preservation Office (SHPO)	Section 106 of the National Historic Preservation Act	Concurrence with finding of no adverse effect received from SHPO June 2026.
Kern County		
East Kern County Air Pollution Control District	Clean Air Act	Final Determination of Compliance issued 2025.
Kern County Public Works Department	County Franchise Agreement	February 2026
Kern County Planning and Natural Resource Department	Zone Change	Finalized February 2025

APPENDIX C VISUAL SIMULATIONS AND REPRESENTATIVE PHOTOS

Figure 1: KOP 1. State Route 14 Northbound (Simulated Condition with Exterior Color Treatment Mitigation)

Figure 2: KOP 2. Sierra Highway (Simulated Condition with Exterior Color Treatment Mitigation)

Figure 3: KOP 3. 10th Street West (Simulated Condition with Exterior Color Treatment Mitigation - No-berm Option)

Figure 4: KOP 3. 10th Street West (Simulated Condition with Exterior Color Treatment Mitigation - Berm Option)

Figure 5: KOP 4. Dawn Road (Simulated Condition with Exterior Color Treatment Mitigation)

Figure 6: KOP 5. Rosamond Blvd. West (Simulated Condition with Exterior Color Treatment Mitigation – Weathering Steel Structures)

Figure 7: KOP 5. Rosamond Blvd. West (Simulated Condition with Exterior Color Treatment Mitigation – Vertical Gradient)

Figure 8: KOP 6. Rosamond Blvd. East (Simulated Condition with Exterior Color Treatment Mitigation – Weathering Steel Structures)

Figure 9: KOP 6. Rosamond Blvd. East (Simulated Condition with Exterior Color Treatment Mitigation – Vertical Gradient)

Figure 10: KOP 6a. Rosamond Blvd. East (NW View) (Simulated Condition with Exterior Color Treatment Mitigation – Weathering Steel Structures)

Figure 11: KOP 6a. Rosamond Blvd. East (NW View) (Simulated Condition with Exterior Color Treatment Mitigation – Vertical Gradient)

Figure 12: KOP 7 Dawn Road East at SR 14 Offramp (Simulated Condition with Exterior Color Treatment Mitigation – No-berm Option)

Figure 13: KOP 7 Dawn Road East at SR 14 Offramp (Simulated Condition with Exterior Color Treatment Mitigation - Berm Option)