Environmental Assessment

Lockhart and Harper Solar Projects Hinkley, San Bernardino County, California

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U.S Department of Agriculture
Rural Utilities Service (RUS)

Prepared by:

Juniper Energy LLC
204 East 2nd Avenue, #606
San Mateo, CA 94401

Prepared for:

U.S. Department of Agriculture
Rural Utilities Service
1400 Independence Avenue
Washington, DC 20250

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List of Acronyms and Abbreviations

APCD	Air Pollution Control District
APE	Area of Potential Effects
BMPs	Best management practices
CARB	California Air Resources Board
CDFW	California Department of Fish and Wildlife
CRHR	California Register of Historical Resources
CEQ	Council of Environmental Quality
CEQA	California Environmental Quality Act
CFS	Cubic Feet per Second
CNPS	California Native Plant Society
CNDDB	California Natural Diversity Database
CO	Carbon Monoxide
DPR	Department of Parks and Recreation
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
FMMP	Farmland Mapping and Monitoring Program
FEMA	Federal Emergency Management Agency
FONSI	Finding of No Significant Impact
GHG	greenhouse gas emissions
kV	kilovolt (1000 volts)
LESA	Land evaluation and site assessment
MW	Megawatt
MWac	Megawatts Alternating Current
MDAB	Mohave Desert Air Basin
MDAQMD	Mojave Desert Air Quality Management District
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NRHP	National Register of Historic Places
NRCS	Natural Resources Conservation Service
NO	nitric oxide
PM	particulate matter
PV	photovoltaic
RPS	Renewable Portfolio Standard
RUS	Rural Utilities Service
RWQCB	California Regional Water Quality Control Boards
SB	Senate Bill
SB Zoning Code	San Bernardino Zoning Code
SCCIC	South-Central Coastal Information Center
SCE	Southern California Edison
SHPO	California State Historic Preservation Office
SO	Sulfur Oxides
THPO	Tribal Historic Preservation Officer

USEPA	United States Environmental Protection Agency
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VOC	Volatile Organic Compounds

1.0 Purpose and Need for Proposal

1.1. Introduction

US Department of Agriculture (USDA), Rural Development is a mission area that includes three federal agencies – Rural Business-Cooperative Service, Rural Housing Service, and Rural Utilities Service (RUS). The agencies have more than 50 programs that provide financial assistance and a variety of technical and educational assistance to eligible rural and tribal populations, eligible communities, individuals, cooperatives, and other entities with a goal of improving the quality of life, sustainability, infrastructure, economic opportunity, development, and security in rural America. Financial assistance can include direct loans, guaranteed loans, and grants to accomplish program objectives.

Juniper Energy LLC (Juniper Energy or applicant) intends on applying to RUS, for a loan through the Electric Infrastructure Loan and Loan Guarantee Program. The loan would finance the two solar electric generating systems plus storage (Lockhart Solar and Harper Solar) (collectively, the Proposed Action) using photovoltaic (PV) panel arrays mounted on single-axis tracker equipment. The Proposed Action will be constructed on a single undeveloped parcel located at 315 Roy Rd., Hinkley, California (APN 0490-171-01) (the Project Site).

In accordance with the National Environmental Policy Act (NEPA), RUS has prepared this Environmental Assessment (EA) for the Proposed Action. Juniper Energy will develop, own, and operate the Proposed Action through two subsidiaries. Once constructed, the Proposed Action's solar PV generating systems will each generate up to four (4) megawatts (MW) of electricity for a total combined output of eight (8) MW_{ac} of electricity at peak output. Some of the energy produced will be stored in accompanying battery storage systems for distribution throughout the day. The Proposed Action will be constructed on a couple of abandoned structures and vacant land in a desert region characterized by utility-scale solar facilities and transmission lines, which is approximately 10 miles northwest of Hinkley, California.

This EA will serve as a detailed written record of the environmental analysis completed for the proposal and will be used along with other considerations to determine whether RUS provides the requested financing.

This EA was prepared in accordance with NEPA as amended (42 United States Code [U.S.C.] § 4321, et seq.) and its implementing regulations (40 Code of Federal Regulations [CFR] 1500–1508) as well as Rural Development's NEPA Regulations (7 CFR Part 1970—Environmental Policies and Procedures) and RD Instructions 1970-Subpart C. The purpose of an EA is to assess whether the Proposed Action would pose a potential significant impact on the environment and to determine whether either

an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI) is appropriate for the Proposed Action. The specific needs and the Proposed Action or purpose to be evaluated in this EA are described Sections 2.1–2.3 below.

The Proposed Action and No Action (defined below) are evaluated to determine the direct, indirect, and cumulative impacts or changes that may occur on both people and the environment because of the potential effects of the proposed improvements. Effects can be ecological, aesthetic, historic, cultural, economic, social, or health related. The following are the interest factors to be evaluated in this EA:

- Land Use
- Floodplains
- Wetlands
- Water Resources
- Coastal Resources
- Biological Resources
- Cultural Resources
- Aesthetics
- Air Quality
- Socioeconomics and Environmental Justice
- Noise
- Transportation
- Hazardous Materials
- Health & Human Safety

The purpose of this EA is to inform decision makers and the public of the likely environmental consequences of the Proposed Action. To that end, the EA identifies, documents, and evaluates potential effects of construction and operation of a solar PV generating and storage system on the natural and human environment using a period of analysis from 2024 (facility opening) through 2044 (expiration of the initial proposed useful life of the Proposed Action).

An interdisciplinary team has described the existing environment and analyzed the Proposed Action with respect to the no-action alternative in the study area (defined as the area that may be directly and indirectly affected, as explained in Chapter 3), and has identified relevant beneficial and adverse effects associated with the Proposed Action. The impacts can be direct effects (those caused by the action that occur at the same time and place), indirect effects (those caused by the action that take place later in time or farther removed in distance), or cumulative effects (the incremental impacts of the Proposed Action when combined with past, present, and reasonably foreseeable future activities).

1.2. Purpose and Need

The power generated by the Proposed Action would be sold to Pioneer Community Energy in accordance with its mission to provide the residents and businesses of Placer and El Dorado County, California with clean energy from renewable resources. In addition, the Proposed Action would enable Pioneer Energy to meet its targets for selling power derived from eligible renewable energy sources generally in accordance with California Senate Bill (SB) 100. California law requires that private

and municipal electric utilities have at least 60% of their retail sales derived from eligible renewable energy resources by 2030. SB 100 also established the target that 100% of all retail sales come from eligible renewable energy resources by 2045.

The purpose of and need for the Proposed Action are as follows:

- Assist in achieving the state's Renewable Portfolio Standard (RPS) and greenhouse gas emissions (GHG) reduction objectives, approved under Senate Bill (SB) 1078 (Sher, 2002), which established renewable energy targets of 20% total electricity sold to retail customers by the end of 2013, 25% by the end of 2016, and 33% of total electricity sold to retail customers by 2020, and later by Senate Bill 100, which established renewable energy targets of 60% by the end of 2030 and 100% by the end of 2045.

- Pioneer Energy could not meet the increasing demand for electricity by the residents and businesses in its service territory, covering most of Placer and El Dorado Counties with renewably sourced energy. In addition, without the Proposed Action, Pioneer Energy could not meet the RPS requirements instituted by the State of California. It would continue to use existing (and potentially other planned) power sources, the great majority of which rely on fossil fuels.

- Create utility-scale solar energy to improve reliability of energy for the citizens of California.

- Locate solar power plant facilities as near as possible to existing or planned electrical transmission facilities, including co-locating with existing transmission facilities when feasible in accordance with the San Bernardino County General Plan.

- Supporting the goals in the San Bernardino County General Plan to create renewable energy.

- Locate solar power plant facilities in areas within regions with excellent solar attributes, including but not limited to high direct normal irradiance, to maximize productivity.

- Produce power through means with no net additional emission of GHGs, including GHG emissions from employee transportation, consistent with the methodology employed by the California Air Resources Board (CARB) pursuant to Division 25.5 (commencing with Section 38500) of the Health and Safety Code.

2.0 Alternatives Evaluated Including the Proposed Action

2.1. Proposed Action

2.1.1. Introduction

Juniper Energy seeks RUS funding to construct, own, and operate the Proposed Action located on a parcel in San Bernadino County, California (Figure 1). All figures referenced throughout are provided in Appendix A. The Proposed Action would consist of two solar PV generating systems coupled with long-duration battery storage systems, able to generate up to 8 Megawatts Alternating Current (MW_{ac}) at peak capacity. The solar generating systems will use PV modules arranged in north-south arrays, which will rotate to track the Sun as it moves across the sky.

2.1.2. Site Description

The Project Site is located in the Mohave Desert area of San Bernardino County, California approximately nine miles northwest of the City of Hinkley (See Figure 1, Project Location). The approximate geographic coordinates of the Project Site are Latitude, Longitude 34.999732, -117.323827. The Project Site is located on a single, approximately 80-acre parcel owned by Lockhart Solar. The topography of the Project Site is level desert land with small bushes, a few trees, and no other vegetation.

From Harper Lake Road, the Project Site is accessed via Roy Road, which has been designated by the County of San Bernardino as a future County maintained road. To secure rights to access the Project Site, an easement (the Access Easement) granted by the owner of an adjacent parcel (APN 0490-171-30) has been recorded with the County of San Bernardino (Assessor No. 2023-0027268). The Access Easement provides for, among other things, access to the Project Site from Harper Lake Road over the area designated as Roy Road and to pave the road and install utilities (See Figure 1).

Surrounding parcels range from 5 acres to 1,750 acres, with the average parcel size of approximately 106 acres. The Project Site is bound on the north by a two privately owned and developed rural residences and a solar thermal solar power plant. (Figure 2, Vicinity Map). None of the adjacent parcels on the eastern or western borders have been developed. Several high-voltage electric transmission lines operated by Southern California Edison (SCE), the California Independent System Operator and the Los Angeles Department of Water and Power run along the southern border.

The remains of a former home sit at the northern corner of the parcel. Presently, the remnants of a few structures are present. The southern half of the Project Site has not been developed and is currently vacant.

2.1.3. The Solar PV Generation System Layout

The Proposed Action would design and construct two 4MW$_{ac}$ solar PV power generating facilities with battery storage capabilities on approximately 73 acres. Arrays of solar modules approximately three to nine feet in height would be arranged in rows spanning on a north-south axis, will cover almost the entire Project Site with a few exceptions. Solar modules mounted to metal beams, which can pivot east to west, would sit atop pile driven supports posts. The posts supporting the solar arrays and approximately four equipment pads would create less than one acre of impervious surface. Figures 4 and 5 show the site plan for the Proposed Action.

Power from the modules would connect to the battery system, switchgear and other equipment via electrical wiring laid in 30-inch wide by 42-inch-deep trenches. Pads would be constructed to hold switchgear, inverters, transformers, and the battery system. An interior perimeter all-weather unpaved road will provide access to the system. Minimal grading would be required to construct the equipment and storage pads and to lay the access road. A water detention basin to collect runoff from a 100-year storm event would be located along the northern border. Security fencing would be installed along the perimeter of the Project Site.

Each solar PV generation system would connect to a battery storage system. Each battery storage system would be mounted on one or two pads, which will create approximately 6,000 square feet of impervious surface (a combined 0.27 acres of impervious surface for both projects). The battery storage systems will employ nickel-hydrogen batteries. The batteries do not present any risk of fire, explosion, or release of hazardous materials.

The battery storage system, inverters, medium-voltage transformers, and other electrical equipment would be housed in enclosures throughout the Project Site. The inverter and medium-voltage transformer units would be mounted on concrete foundation pads. All electrical equipment would be either outdoor rated or mounted within electrical enclosures designed specifically for outdoor installation. The proposed equipment poses no electrical shock risk and would be safe to touch.

Power generated by the PV systems would interconnect to the SCE controlled grid via 33 kilovolt (kV) distribution lines running for approximately 0.25 miles from Harper Lake Road to the Project Site. (*See* Figure 4). The PV generation system located on the southern portion of the Project Site would interconnect to a new line, to be constructed by SCE, which would run along a right-of-way controlled by SCE to the southwestern corner of the Project Site. For the PV system located on the northern portion of the Project Site, a new 33kV line would run along Roy Road from the northwestern corner of the Project Site to an interconnection point next to Harper Lake Road. Costs to upgrades the distribution system controlled by SCE would be borne by the Applicant and accordingly are part of the funding request. Each distribution line would run above ground for approximately 0.25 miles (the distance

from Harper Lake Road to the western border of the Project Site) where they would interconnect to the two respective projects. The lines would be supported by approximately six utility poles, which would range between 30 to 60 feet in height.

Poles would be installed by direct embedment. Each pole would be placed into an augured hole lined with gravel then back filled with native soils, stone dust or cement depending on the soil conditions.

2.1.4. Construction Activities

Earthwork would be required to construct the battery storage system and equipment pads, and access roads. Anticipated grading would be minimal as the slope for the Project Site is level, allowing for installation of the solar arrays with little or no land disturbance. No export or import of cut or fill material is proposed.

While construction and installation would require vegetation removal within necessary areas of disturbance. During construction, the Project Site would be stabilized to minimize wind and storm water erosion and protect topsoil and nearby drainages. In addition, watering and other approved measures would be used to control dust onsite. Following grading and installation of the Project's components, stockpiled topsoil would be redistributed across the Project Site for revegetation efforts and other needs.

A temporary laydown area would be established onsite during construction. Standard best management practices (BMPs) would be employed to prevent construction pollutants, including erosion of soils (such as topsoil), from moving off-site and in compliance with County requirements for construction related erosion and sediment control.

Construction equipment to be used onsite would include scrapers, motor graders, backhoe/loaders, excavators, dozers, smooth drum compactors, vibratory hammers, water trucks, pile driving machines, and lightweight trucks. The posts would be installed by driving steel pipes into the ground using a hydraulic vibratory post driver. After construction has been completed, all equipment would be removed and the construction contractor would be required to stabilize and restore all the Project Site areas disturbed during construction, including laydown, parking, temporary roadways, temporary office trailers, etc., to original conditions.

2.1.5. Operations & Maintenance

Operation and security would be conducted from an off-site location, and maintenance crews would be dispatched to the Project Site (as needed) during operation. Periodically, personnel would visit the Project Site for inspection, security, maintenance, and system monitoring purposes. For example, staff would periodically visit the Project Site to clean solar panels and would truck in water for periodic panel

washing throughout the year. No full-time staffing, however, would be required to operate the facility. Replacement parts and components would be warehoused off-site and deployed as needed.

All lighting installed on the Project Site would be directed downward and shielded to focus illumination on the desired areas only and to minimize light trespass onto adjacent properties. If lighting at individual PV modules or other equipment were needed for nighttime maintenance or during emergencies, personnel would use portable lighting.

2.1.6. Project Decommissioning

The Proposed Action would be in operation for a minimum of 25-30 years, with the possibility of a subsequent re-powering of the solar PV generation system for additional years of operation. If the solar PV generating system is decommissioned at the end of its expected life span or upon its eventual decommissioning, whenever that occurs, the Project owner would be responsible for the removal, recycling, or disposal of all solar arrays, inverters, transformers, and other structures on the Project Site. Juniper Energy anticipates using the best available recycling measures at the time of decommissioning.

The Proposed Action would be constructed with numerous recyclable materials, including glass, semiconductor material, steel, and wiring. When the Proposed Action reaches the end of its operational life, the component parts would be dismantled and recycled as practicable. All waste resulting from the decommissioning of the facility would be transported by a certified and licensed contractor and taken to a landfill/recycling facility in accordance with all local, State, and federal regulations.

2.2. Site Alternatives

Proper siting of a solar generation system requires substantial evaluation and due diligence. Appropriate evaluation and analysis of factors influential in siting a large facility such as the proposed 8 MW_{ac} Proposed Action can reduce costs, eliminate delays, minimize potential impacts and opposition, and streamline the regulatory process. Conversely, improper siting can have the opposite effect. The consequences of improper siting can result in dollars lost and/or material schedule delays. Thus, site selection criteria need to be developed that reflect both the purpose and need of the Proposed Action as well as the local setting.

Among the constraints of siting a solar PV generation facility is proximity to suitable electrical transmission lines. While the cost to construct miles of transmission lines may represent a smaller percentage of the total construction cost for a large generation facility (hundreds or more MWs), the same infrastructure represents a larger percent of the cost for a relatively small utility scale generating facility such as the Proposed Action. Another constraint of siting, especially during the construction

phase of the Proposed Action, is the need for suitable surface transportation infrastructure (roads/highways) the presence of which minimizes the need for access road construction. In addition to being costly, infrastructure construction also represents additional development risks to a project. Construction of this infrastructure may involve negotiating property acquisitions with multiple owners, which can be a long and expensive process. Therefore, proximity of the site to transmission and transportation infrastructure is important, as well as the avoidance of negative social, and environmental impacts.

A suitable site will also have sufficient developable land to meet the objectives for the proposed development. Several considerations can affect how much of any given site may be developed cost effectively. The property should have a relatively level topography to minimize grading. Single axis tracking systems like the one proposed for the Proposed Action have limited slope tolerances. In addition, sites should allow for a clear southern facing exposure to maximize solar coverage throughout the day. Shading from nearby hills, trees or structures must be evaluated too, as they can adversely limit production levels and undermine a potential site's economic viability.

Finally, local land use laws, guidelines and policies can impact the selection of a particular site. For example, the County of San Bernardino County (County) Code of Ordinances (SBC Code; County of San Bernardino, 2010), as amended, imposes certain siting restrictions for any new commercial solar development specifically related to aesthetics; biologic resources; cultural and historic resources; farmlands; parks; military bases and other Special Districts; and proximity to utility transmission lines.

Juniper Energy engaged in preliminary feasibility studies for over 180 sites. Many sites were immediately rejected due to costs, multiple zoning issues or geography. Approximately 13 sites, having passed certain initial screens were evaluated in-depth. (See Figures 4 and 5).

In one case (Site SB-13) the Proposed Action was located within the city limits of Twentynine Palms, which presented several developmental hurdles due to its proximity to residential neighborhoods. Site SB-2 is near a residential community, which would result in aesthetic concerns from the County.

Sites SB-2, SB-3, SB-4, SB-5, SB-6, SB-7, and SB-11 would require either substantial interconnection upgrades or the installation of new distribution lines. An initial review of the interconnection capacity and potential upgrades identified these sites as presenting significant challenges and likely resulting in unsupportable costs. Another site (SB-12) sits on a floodway and could be subject to damage or unforeseen operating costs.

Finally, sites SB-6 and SB-7 met the environmental criteria and were located near distribution lines. These sites, however, covered over 100 acres, materially larger

than required for the current Proposed Action. Also, each site sits next to or near very high-voltage lines, which would require the construction of a substation to interconnect a generation system to the grid. Given the site's size and the costs of interconnection, these sites are better suited for larger projects than being contemplated for this project. After conducting preliminary feasibility studies for these selected sites, only one site meets the criteria for continuing with development of the Proposed Action as initially envisioned.

2.3. No Action Alternative

Under the "No Action" alternative (No Action), the proposed solar PV generating system would not be constructed. Without this facility, Pioneer Energy could not meet the increasing demand for electricity by the residents and businesses in its service territory. The No Action alternative would not achieve the objectives of the Proposed Action. Consequently, it is not considered a feasible or desirable alternative and is included in this EA solely to fulfill the legal requirements of NEPA and to provide a baseline against which to measure the impacts of the Proposed Action.

3.0 Affected Environment and Environmental Consequences

This chapter describes the existing conditions and potential environmental consequences of the Proposed Action. The chapter is organized by resource area (e.g., land use, floodplains, water resources, biological resources, etc.). The discussion distinguishes between short-term construction impacts and those that may result from the system's continuing long-term presence, including impacts associated with operation, maintenance, or decommissioning. Where appropriate, measures that Juniper Energy proposes to minimize or mitigate potential impacts are included.

3.1. Land Use

3.1.1. General Land Use

This section describes existing land use, land use plans, and zoning in the project area, and the effects of the Proposed Action and No Action on these resources.

3.1.1.1. Affected Environment

The Project Site is located on one parcel and existing land use is a former abandoned and uninhabitable residence and undeveloped land. The Project Site is located adjacent to two rural residential developments and a large thermal solar farm along the northern boundary; and undeveloped land along the eastern, southern, and western boundaries. In addition, the Proposed Action may affect land running along rights of way leading from existing utility lines to the Project Site in which new or

upgraded distribution lines will be constructed to connect the Project to the electric grid.

The Project Site is located in a Rural Living (RL) zoning district as designated by the San Bernardino County Code of Ordinances (the "SB Zoning Code"). See Figure 7. The County of San Bernardino has advised that it will follow recent guidance set forth in the updated general plan, which prevents development of commercial solar in the RL zoning district (San Bernadino County Policy Plan Land Use Element 2020).

3.1.1.2. Environmental Consequences

3.1.1.2.1. No Action

The No Action alternative would not impact land use. The existing land use in the analysis area (abandoned structures and vacant land) would continue.

3.1.1.2.1. Proposed Action

The Proposed Action would change the land use of the Project Site from vacant and undeveloped land to a solar PV facility. This change in use would be consistent with other existing land uses in the surrounding area which include solar generation facilities. The proposed land use change would not be consistent with a recommendation (Policy RE-4.10) in the Renewable Energy and Conservation Element of the County General Plan, however.

While the SB Zoning Code has not yet been amended to reflect this policy, the applicant is seeking approval of a general plan amendment changing the zoning designation of the Project Site to Resource Conservation (RC), which allows for construction of solar energy facilities (See SB Code of Ordinances § 82.03.040). A copy of the letter of intent to rezone, along with the application for conditional use permit, is attached as part of Appendix E. The Proposed Action would meet all the requirements under the County Code for development if the property is redesignated to an RC zoning district (*See* SB Zoning Code, § 84.29.035(a)&(b)). Renewable energy generation facilities in San Bernardino County are governed by Section 84.29 of the SB Zoning Code (County of San Bernardino, 2010).

In connection with the application for a conditional use permit and to rezone the property, the County of San Bernardino requested that application prepare (a) a drainage study (Appendix C); (b) comply with certain setback and road construction requirements (Appendix E); and (c) a construction management plan (Appendix I). A copy of the request for further documentation is attached hereto at Appendix E. Finally, the County requested an updated site plan. All of the reports and documents requested have been prepared and submitted to the County as part of the conditional use permit and rezone application process and are pending review by the County.

The Proposed Action would not conflict with any other applicable goals, objectives, and policies of the County of San Bernardino General Plan or Development Code.

3.1.1.3. Mitigation

The applicant will obtain a conditional use permit and approval of a general plan amendment from San Bernadino County changing the zoning designation of the Project Site to Resource Conservation (RC). The Proposed Action would meet all the requirements under the County Code for development if the property is redesignated to an RC zoning district.

3.1.2. Important Farmland

The goal of the Farmland Protection Policy Act (FPPA), the regulation implementing the FPPA (7 CFR part 658), and USDA Departmental Regulation 9500-3, Land Use Policy, is to minimize the impact federal programs have on the unnecessary and irreversible direct or indirect conversion of farmlands to nonagricultural uses. Areas that have been designated as "prime and unique farmland," "farmland of statewide or local importance," or "unique farmland" by the Natural Resources Conservation Service (NRCS) are classified as important farmland. Form AD-1006, Farmland Conversion Impact Rating, is used to determine whether a site is farmland subject to the FPPA. The NRCS Web Soil Survey tool was used to determine whether important farmland exists in the analysis area, and the NRCS was also contacted directly.

3.1.2.1. Affected Environment

The analysis area for assessing potential impacts to important farmland is the 80-acre Project Site. According to the Web Soil Survey and a review of the project by NRCS, approximately 49 acres of the analysis area is designated by the NRCS as Farmland of Statewide Importance (NRCS 2019). The remaining 31 acres of the analysis area is not classified by the NRCS as important farmland.

3.1.2.2. Environmental Consequences

3.1.2.2.1. No Action

The No Action alternative would not impact any important farmland. No development would occur on important farmland.

3.1.2.2.2. Proposed Action

Under the Proposed Action, approximately 40 acres of Farmland of Statewide Importance will be converted to non-agricultural use. Assistance from the NRCS was requested on March 1, 2022, to complete the AD-1006 and on March 4, 2022, the NRCS determined the total points for the Proposed Action to be 100. Pursuant to 7

CFR § 658.4 (c)(2), sites that receive a total score of less than 160 need not be given further consideration for protection and no additional sites need to be evaluated. This report is provided as Appendix B. Construction of the transmission lines would not result in the conversion of important farmland.

3.1.2.1. Mitigation

No mitigation measures are proposed for important farmland.

3.1.3. Formally Classified Lands

Certain land areas have been accorded special protection through formal legislative designations and are either administered by federal, state, or local agencies, tribes, or private parties. These properties have been termed "formally classified lands", including, but not limited to, national parks and monuments; national forests and grasslands; national historic landmarks; national wildlife refuges; state parks; state fish and wildlife management areas; Bureau of Land Management administered lands; and Native American owned lands.

3.1.3.1. Affected Environment

The Project Site is not located in or adjacent to a formally classified land area.

3.1.3.2. Environmental Consequences

3.1.3.2.1. No Action

The No Action alternative would not impact any formally classified lands.

3.1.3.2.2. Proposed Action

The Proposed Action would not directly or indirectly impact any formally classified lands.

3.1.3.3. Mitigation

No mitigation measures are proposed for formally classified lands.

3.2. Floodplains

Executive Order (EO) 11988 Floodplain Management requires federal agencies "avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and . . . avoid direct or indirect support of floodplain development wherever there is a practicable alternative."

A floodplain is defined as a low-lying area adjoining a river or body of water that is subject to periodic flooding. Floodplains provide risk reduction benefits such as storing flood water and slowing runoff as well as environmental value such as erosion control, groundwater recharge, and fish and wildlife habitat protection (Federal Emergency Management Agency (FEMA) 2020a). A 100-year floodplain, or Special Flood Hazard Area, is defined as an area with a 1 percent probability of flooding in a given year, and a 500-year floodplain is an area with a 0.2 percent probability of flooding in a given year (FEMA 2020b).

Floodplains include river or stream flood hazard areas, and areas with a 1 percent or greater chance of shallow flooding each year, usually in the form of sheet flow, with an average depth ranging from 1 to 3 feet. FEMA identifies these areas on Flood Insurance Rate Maps (FIRM) as "Zone AO."

3.2.1. Affected Environment

A review of the FEMA Flood Insurance Rate Map (FIRM) of the area revealed that the Project Site is located in an Area of Undetermined Flood Hazard (Zone D). The FIRM is provided in Appendix C. The Hazard Overlays Map (Ridgecrest/Cuddeback Lake region) of the San Bernardino County General Plan 2020 indicates that the Project Site is not located in a 100- year flood hazard area (See Appendix C for a copy of the map). The Hazards Overlay Map also shows that the Project Site is not in an area subject to flooding because of dam failure.

An NRCS Web Soil Survey Flooding Frequency Class Report was also created to evaluate if the Project Site is located in a floodplain. The Flooding Frequency Class Report indicates that the Project Site is located in an area where "flooding is not probable. The chance of flooding is nearly 0 percent in any year. Flooding occurs less than once in 500 years" (see Appendix C).

To better understand the risk of flooding in the area and on the Project Site, a preliminary drainage report was prepared in August 2024 (see Appendix C). The drainage report determined that the project area contains areas of shallow flooding (three foot depths or less) during a 100-year flood event. The report determined that the Project Site, which spans approximately 80 acres could potentially receive peak discharge during a 100-year storm event of approximately 41.34 cubic feet per second (cfs).

3.2.2. Environmental Consequences

3.2.2.1. No Action

The No Action alternative would not impact any floodplains or affect any flood zones. No development would occur in the Project area; therefore, there would be no

activities that would impact floodplains or flood zones downstream of the analysis area.

3.2.2.2. Proposed Action

The preliminary drainage report determined that the Proposed Action would slightly increase the volume of runoff generated by a 100-year storm event. The Proposed Action could increase peak flows during a 100-year storm event from 41.34 cfs to approximately 44.38 cfs.

3.2.3. Mitigation

To mitigate impacts during a 100-year storm event, the proposed drainage report recommends the construction of two water detention basins to collect runoff from a 100-year storm event. The preliminary drainage report determined that approximately 28,902 cubic feet of storage is required for the change in runoff due to the increase in imperviousness of the proposed site design. The site plan for the Project includes two detention basins, which can retain approximately 29,197 cubic feet of water with a mitigated peak discharge rate of 41.33 cfs. The batteries, electrolyte storage tanks, and critical electrical equipment would be mounted on concrete pads and placed above the 100-year water surface elevation or have secondary containment to avoid potential damage from a flood.

3.3. Wetlands and Other Waters of the U.S.

E.O. 11990, Protection of Wetlands, states that it is federal policy to avoid to the extent possible the long and short-term adverse impacts associated with the destruction or modification of wetlands, and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative. In addition, federal agencies were ordered to take actions to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out their responsibilities and programs.

Regulatory oversight of wetlands falls under Section 404 of the Clean Water Act and permits are administered by the U.S. Army Corps of Engineers (USACE) with oversight by the U.S. Environmental Protection Agency (USEPA). Section 404 established a Federal permitting program that requires anyone who is proposing to place dredged or fill material into waters of the United States which includes wetlands, to obtain a permit from the USACE.

The following databases were reviewed prior to the jurisdictional delineation: historical aerial photographs (Google Earth Pro 2021; Historic Aerials 2021); U.S. Geological Survey's National Hydrography Dataset (USGS 2021); U.S. Department of Agriculture Natural Resources Conservation Service Web Soil Survey (USDA 2022a); and the USFWS National Wetland Inventory (USFWS 2022a). Google Earth was also

used to assess current and historical presence or absence of flows and/or ponding on the Project Site (Google Earth Pro 2021).

3.3.1. Affected Environment

The Project Site is located within the Coyote–Cuddeback Lakes Hydrological Unit (HUC 18090207) in the Harper Valley Groundwater Basin. Surface flows within the immediate watershed of the Project Site drains into Harper Lake playa. However, the existing solar thermal generation facility (located to the north of the Project Site) may prevent surface flow within the Project Site from reaching Harper Lake. The Harper Lake playa is at the lowest part of an undrained desert basin, generally devoid of vegetation per the U.S. Geological Survey (USGS 2021). Additionally, there is a riverine U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory classification (USFWS 2022a) and an unnamed ephemeral USGS National Hydrography Dataset flowline occurring within the Project Site (Figure 8). According to the Web Soil Survey the soils had ratings of either 5 or 2 percent, indicating very low hydric levels at the Project Site.

A system of braided ephemeral channels flows from the southwest corner to the northeast corner across the Project Site carrying surface flows. The braided channels dissipate within the middle of the Project Site and dissipate off-site prior to reaching Harper Lake (surface flow may be blocked by an existing solar facility). (See Figure 8). The Harper Valley is considered a closed basin and functions as an isolated intrastate watershed system lacking the presence of traditional navigable water.

The results of the delineation concluded that there are non-wetland California Regional Water Quality Control Boards (RWQCB) jurisdictional waters of the state and California Department of Fish and Wildlife (CDFW) jurisdictional streambeds within the project site. The project site does not contain any streams, wetland waters, or other waters that are subject to federal jurisdiction under Section 404 of the Clean Water Act. Ephemeral channels within the project site either dissipate, evaporating or infiltrating into the groundwater basin, or may continue to flow to Harper Lake during larger storm events. Harper Valley is considered a closed basin and functions as an isolated intrastate watershed system lacking the presence of a traditional navigable water.

The USACE evaluated the Project Site in response to a request for jurisdictional determination (File No. SPL-2022-00380-DLC). In a letter dated March 17, 2023, the USACE determined that aquatic resources identified at the Project Site are excluded from the Clean Water Act Section 404 jurisdiction (See Appendix D).

3.3.2. Environmental Consequences

3.3.2.1. No Action

The No Action alternative would not impact any wetlands.

3.3.2.2. Proposed Action

The Proposed Action would not impact any jurisdictional wetlands or other jurisdictional waters of the U.S. Based on Dudek's Aquatics Resources Delineation, the proposed project would permanently impact 0.86 acres of non-wetland waters of the state under the jurisdiction of RWQCB and 0.86 acres of streambeds under the jurisdiction of CDFW. The National Wetlands Inventory does not identify any wetlands on or near areas where the proposed distribution lines would be constructed to interconnect the Project to the grid. Note that the final boundaries of each agency's jurisdiction are determined by the aquatic resource agency and, therefore, impacts may be slighter higher or lower than what is stated herein.

3.3.3. Mitigation

No mitigation measures are proposed for impacts on jurisdictional wetlands.

3.4. Water Resources

This section addresses water quantity and quality issues related to: discharges to or appropriations from surface or ground water; ground water protection programs (e.g., sole source aquifers and recharge areas); and water quality degradation from temporary construction activities. Water quantity and quality changes can impact other (and sometimes quite distant) environmental resources such as: groundwater and drinking water supplies; threatened or endangered species; other fish and wildlife species; and wetlands, among others. Water Resources are protected under federal law such as the Clean Water Act (CWA).

California's Porter-Cologne Water Quality Control Act of 1970 and its implementing regulations established the RWQCB as the agency responsible for implementing CWA and Porter-Cologne requirements in the Mohave River Basin Watershed. These requirements include adoption of a Water Quality Control Plan ("Basin Plan") to protect inland freshwaters and estuaries. The Basin Plan identifies the beneficial uses for waterbodies in the Mohave River Basin watershed, establishes the water quality objectives required to protect those uses, and provides an implementation plan to protect water quality in the region (RWQCB 2016 and subsequent amendments).

A Sole Source Aquifer (SSA) is an aquifer that has been designated by the United States Environmental Protection Agency (EPA) as the sole or principal source of drinking water for an area and are protected by the Safe Drinking Water Act. An SSA

is an aquifer that supplies at least 50% of the drinking water consumed in the area overlying the aquifer.

3.4.1. Affected Environment

The Project Site is not located in an area served by public sewer and no septic system would be required as this is an unmanned facility. In addition, no irrigation lines would be installed at the Project Site.

The Project Site is located within the Coyote-Cuddeback Lakes Hydrological Unit (HUC 18090207) in the Harper Valley Groundwater Basin (Figure 8). Significant surface flow is both unpredictable and scarce in the arid desert environment. Substantial surface water is typically ephemeral and usually the result of flash-flood events.

The Project Site is not located atop an SSA designated by the EPA.

3.4.2. Environmental Consequences

3.4.2.1. No Action

The No Action alternative would have no impact on groundwater. Groundwater conditions would remain unchanged and there would be no use of groundwater in the project area. The No Action alternative would not impact any groundwater in the Harper Valley Groundwater Basin and have any effect on an SSA.

3.4.2.2. Proposed Action

The Proposed Action would not use groundwater either during the construction process or in connection with operation of the Proposed Action. Water would be trucked to the Project Site during construction. Once operational, water would be trucked to the Project Site for periodic panel washing. The Proposed Action would have no effect on an SSA.

A Preliminary Drainage Report, Lockhart Solar, dated August 2024, was prepared by Kimley-Horn for the Proposed Action. The report compared the peak discharge and peak depth in the combined stream during a 25-year event before construction with a 100-year event after construction of the Proposed Action. The proposed roads within the Project Site will be compacted soil and were considered 30 percent impervious in the analysis. The intent of the Proposed Action's design is to use existing grades to the extent practicable and to minimize required grading. The battery storage system and related equipment, mounted on equipment pads, covering approximately 0.3 acres, were considered new impervious areas, and therefore contributed additional runoff to the combined stream.

Hydrologic and hydraulic analyses were used to determine inundation limits and depths of flow for the 100-year storm in the existing conditions. The hydrologic analyses and water quality calculations were used to determine detention basin sizes for the subject tract.

The drainage report determined that approximately 28,902 cubic feet of storage would be required to account for the increase in runoff due to the 6.1% increase in imperviousness of the proposed site design. Approximately 29,197 cubic feet would be provided as stormwater storage areas in the form of a shallow detention basin. Therefore, the detention basin would accommodate the potential increase in stormwater such that development of the Project would not result in an increase of surface runoff.

3.4.3. Mitigation

No mitigation measures are proposed for water resources.

3.5. Coastal Resources

3.5.1. Affected Environment

The Project Site is located approximately 95 miles from a coastal area or barrier system.

3.6. Biological Resources

An analysis of biological resources was completed in accordance with federal law including the Endangered Species Act (ESA), Migratory Bird Treaty Act (MBTA), and Bald and Golden Eagle Protection Act (BGEPA).

Dudek biologists conducted literature reviews and field surveys of the Project Site in 2022 and prepared the Biological Technical Report (Appendix F). Prior to conducting field surveys, Dudek biologists reviewed the USFWS Critical Habitat and Occurrence Data (USFWS 2022b) databases to identify special-status species and critical habitat that are known to occur or may potentially occur within the Project Site based on the physical characteristics of the Project Site (including biogeography, elevation, soils, and vegetation communities). Field surveys conducted within the Project Site included a wildlife habitat assessment, vegetation mapping, a formal jurisdictional delineation, rare plant survey, and a protocol-level survey for the desert tortoise (Gopherus agassizii).

An evaluation of known records of special status plant species in the Twelve Gauge and Lockhart quadrangles and the ten surrounding quadrangles (CDFW 2022a; USFWS 2022b) was also conducted using CDFW information sources (CDFW 2022a).

3.6.1. General Fish, Wildlife, and Vegetation Resources

This section evaluates the general vegetative composition, fish and wildlife species that are present on the Project Site based on the literature review and field surveys conducted by Dudek in April 2022. The survey methods conformed to the California Native Plant Society's Botanical Survey Guidelines (CNPS 2001), Protocols for Surveying and Evaluating Impacts to Special- Status Native Plant Populations and Sensitive Natural Communities (CDFW 2018), and the USFWS General Rare Plant Survey Guidelines (Cypher 2002).

3.6.1.1. Affected Environment

The field surveys identified14 vascular plant species consisting of 10 native species (71 percent) and 4 nonnative species. A total of 11 wildlife species were observed within the project site consisting of eight bird species and three reptile species. These species are summarized in Table 1 and 2.

Table 1: Wildlife Species on the Project Site

Common Name (Scientific Name)	Description
Birds	
Say's phoebe *Sayornis saya*	Say's phoebe is a passerine bird in the tyrant flycatcher family, Tyrannidae. A common bird across western North America, it prefers dry, desolate areas. It was named for Thomas Say, an American naturalist.
common raven *Corvus corax*	The common raven is a large all-black passerine bird. It is the most widely distributed of all corvids, found across the Northern Hemisphere.
northern mockingbird *Mimus polyglottos*	The northern mockingbird is a mockingbird commonly found in North America. This bird is mainly a permanent resident, but northern birds may move south during harsh weather. This species has rarely been observed in Europe.
LeConte's thrasher *Toxostoma lecontei*	LeConte's thrasher is a pale bird found in the southwestern United States and northwestern Mexico. It prefers to live in deserts with very little vegetation, where it blends in with the sandy soils. LeConte's thrashers are nonmigratory birds that reside in the same territory annually.
house sparrow *Passer domesticus*	The house sparrow is a bird of the sparrow family Passeridae, found in most parts of the world. It is a small bird that has a typical length of 16 cm and a mass of 24–39.5 g. Females and young birds are coloured pale brown and grey, and males have brighter black, white, and brown markings.

mourning dove *Zenaida macroura*	The mourning dove is a member of the dove family, Columbidae. The bird is also known as the American mourning dove, the rain dove, colloquially as the turtle dove, and it was once known as the Carolina pigeon and Carolina turtledove.
European starling *Sturnus vulgaris*	The common starling, also known as the European starling in North America and simply as the starling in Great Britain and Ireland, is a medium-sized passerine bird in the starling family, Sturnidae.
sagebrush sparrow *Artemisiospiza nevadensis*	The sagebrush sparrow is a medium-sized sparrow of the western United States and northwestern Mexico. It used to be placed in the genus Amphispiza, but evidence from 2007 and 2009 suggested it be placed in its own genus.
Reptiles	
common side-blotched lizard *Uta stansburiana*	The common side-blotched lizard is a species of side-blotched lizard in the family Phrynosomatidae. The species is native to dry regions of the western United States and northern Mexico.
tiger whiptail *Aspidoscelis tigris*	The western whiptail is a species of lizard in the family Teiidae. The species is found throughout most of the southwestern United States and northern Mexico. Most of its populations appear stable, and it is not listed as endangered in any of the states comprising its range.
long-nosed leopard lizard *Gambelia wislizenii*	The long-nosed leopard lizard is a species of relatively large North American lizard in the family Crotaphytidae. Gambelia wislizenii ranges in snout-to-vent length from 8.3 to 14.6 cm. It has a large head, a long nose, and a long round tail that can be longer than its body.

Table 2: Plant Species on the Project Site

Common Name (Scientific Name)	Description
cheesebush *Ambrosia salsola*	Ambrosia salsola, commonly called cheesebush, winged ragweed, burrobush, white burrobrush, and desert pearl, is a species of perennial shrub in the family Asteraceae native to deserts of the southwestern United States and northwestern Mexico.
pincushion flower *Chaenactis fremontii*	Chaenactis fremontii, with the common names Frémont's pincushion and desert pincushion, is a species of annual wildflower in the daisy family. Both the latter common name, and the specific epithet are chosen in honor of John C. Frémont.

smooth desert dandelion *Malacothrix glabrata*	Malacothrix glabrata, commonly known as the smooth desert dandelion or desert dandelion, is an annual plant in the family Asteraceae. It is common to the southwestern deserts of North America and has showy pale-yellow to white flowers.
cryptantha sp. *Cryptantha sp*	Small annual, with small, brilliant white flowers. Several species of this genus occur in the Santa Monica Mountains, and they are difficult to distinguish. There appear to be three species on CI habitats.
Tournefort's mustard *Brassica tournefortii*	Brassica tournefortii is a species of plant known by the common names Asian mustard, pale cabbage, African mustard, and Sahara mustard, and is well known as an invasive species, especially in California.
Wiggins' cholla *Cylindropuntia echinocarpa*	Cylindropuntia echinocarpa is a species of cactus known by the common names silver cholla, golden cholla, and Wiggins' cholla. It was formerly named Opuntia echinocarpa.
allscale *Atriplex polycarpa*	Atriplex polycarpa (Allscale, Cattle spinach, Allscale saltbush, Cattle saltbush) is a plant in the Amaranthaceae family. It is native to the southwestern United States and northern Mexico.
redstem stork's bill *Erodium cicutarium*	Erodium cicutarium, also known as common stork's-bill, redstem filaree, redstem stork's bill or pinweed, is a herbaceous annual – or in warm climates, biennial – member of the family Geraniaceae of flowering plants.
Great Basin langloisia *Langloisia setosissima*	Langloisia setosissima, the bristly langloisia, bristly-calico, Great Basin langloisia or lilac sunbonnets, is a flowering plant, the sole species in the genus Langloisia in the family Polemoniaceae.
Anderson’s boxthorn *Lycium andersonii*	Lycium andersonii is a species of flowering shrub in the nightshade family, Solanaceae. Its common names include water-jacket, redberry desert-thorn, Anderson thornbush, Anderson's desert thorn, Anderson boxthorn, Anderson lycium, Anderson wolfberry, and squawberry.
peach thorn *Lycium cooperi*	Lycium cooperi is a species of flowering plant in the nightshade family known by the common name peach thorn. It is native to the southwestern United States, where it grows in a variety of desert and mountain habitat types.
tamarisk *Tamarix ramosissima*	Tamarix ramosissima, commonly known as saltcedar salt cedar, or tamarisk, is a deciduous arching shrub with reddish stems, feathery, pale green foliage, and characteristic small pink flowers. The cultivar 'Pink Cascade' has gained the Royal Horticultural Society's Award of Garden Merit.

creosote bush *Larrea tridentata*	Larrea tridentata, called creosote bush and greasewood as a plant, chaparral as a medicinal herb, and gobernadora in Mexico, due to its ability to secure more water by inhibiting the growth of nearby plants. In Sonora, it is more commonly called hediondilla; Spanish hediondo = "smelly".
Arabian schismus *Schismus arabicus*	Schismus arabicus is a species of grass known by the common name Arabian schismus. It is native to northern Africa, temperate Asia, and it is also known as an introduced species in the southwestern United States. It grows in many types of habitat, including disturbed areas.

Table 3: Vegetation Communities and Land Covers within the Project Site

Vegetation Community/Land Cover Type	Ranking	Total Acreage
Allscale scrub (Atriplex polycarpha, 36.340.04)	G4, S4	77.69
Unvegetated Wash	GNR, SNR	0.86
Disturbed Habitat	GNR, SNR	0.56
	Total	**82.97**

The Project Site does not provide for regional wildlife movement or serve as a regional wildlife corridor. Ephemeral channels within the project site either dissipate, evaporating or infiltrating into the groundwater basin, or may continue to flow to Harper Dry Lake during larger storm events. There are no established wildlife corridors or habitat linkages within the Project Site. As a result, the Project Site provides open space for wildlife movement while migrating or foraging but does not appear to serve as a significant regional wildlife corridor.

3.6.1.2. Environmental Consequences

3.6.1.2.1. No Action

The No Action alternative would not impact general fish, wildlife, and vegetation resources. The habitat would not be altered, and current land use would continue.

3.6.1.2.2. Proposed Action

The Proposed Action would result in the removal of vegetation across the 80-acre Project Site as part of the initial site preparation phase, as described in Chapter 2. It is anticipated that little or no vegetation would be removed from right of ways used to interconnect the Project to the electrical grid. Other than access roads and equipment pads for batteries, switchgear, and transformers, vegetation would be allowed to grow back through natural reclamation. One re-established, existing vegetation would not interfere with normal operations of the Project and accordingly

no vegetation management actives are planned. There are no vegetation communities considered sensitive biological resources by CDFW within the Project Site. Therefore, no impacts to sensitive biological resources would occur.

Furthermore, the Proposed Action is not expected to contribute to the impediment of local or seasonal movement of wildlife through the surrounding habitat.

3.6.1.3. Mitigation

No mitigation measures are proposed for general fish, wildlife, and vegetation resources.

3.6.2. Federally Listed Threatened and Endangered Species

The Endangered Species Act (16 U.S.C Ch. 35) is enforced by the U.S. Fish & Wildlife Service (USFWS) and provides the protection and recovery of species threatened with extinction and ensures federal agencies use their authorities to further the purpose of the ESA to protect and conserve endangered and threatened species. The following terms are used in the evaluation:

- *Endangered species* are defined as "any species that is in danger of extinction throughout all or a significant portion of its range" [16 U.S.C. § 1532(6)].
- *Threatened species* are defined as "any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range" [16 U.S.C. § 1532(20)].
- *Candidate species* are any species being considered by USFWS for listing as threatened or endangered but not yet listed pursuant to 16 U.S.C 1533. Although candidate species have no legal status and are accorded no protection under ESA, these species receive consideration for possible listing in the future.
- *Critical habitat* is defined as "(i) the specific areas within the geographical area occupied by the species, at the time it is listed in accordance with the provisions of section 4 of this Act, on which are found those physical or biological features (I) essential to the conservation of the species and (II) which may require special management considerations or protection; and (ii) specific areas outside the geographical area occupied by the species at the time it is listed in accordance with the provisions of section 4 of this Act, upon a determination by the Secretary that such areas are essential for the conservation of the species" [16 U.S.C. § 1532(5)].

3.6.2.1. Affected Environment

To identify the potential presence of federally protected species, a search of Project Site was completed using the USFWS Information for Planning and Consultation (IPaC) consultation tool. The IPaC Official Species List generated from the search is

provided in Appendix F. IPaC identified one endangered species, two threatened species and one candidate species as potentially present on the Project Site which are summarized in Table 4. There is no USFWS-designated critical habitat for any listed, proposed, or candidate species within or directly adjacent to the Project Site (USFWS 2022b).

Table 4: ESA Listed and Candidate Species

Scientific Name	Common Name	Federal Status
Empidonax traillii extimus	Southwestern Willow Flycatcher	Endangered
Gopherus agassizii	Mojave desert tortoise	Threatened
Charadrius alexandrinus nivosus (nesting)	western snowy plover	Threatened
Danaus plexippus	Monarch Butterfly	Candidate

3.6.2.1.1. Southwestern Willow Flycatcher

The southwestern willow flycatcher (*Empidonax traillii extimus*) is a small neotropical migratory bird, whose nesting habitat is restricted to relatively dense growths of trees and shrubs in riparian ecosystems in the arid southwestern United States and possibly extreme northwestern Mexico. The riparian habitats for the species are associated with rivers, swamps, and other wetlands, including lakes and reservoirs. Most of these habitats are classified as wetlands including palustrine and lacustrine forested wetlands and scrub-shrub wetlands. Some are non-wetland riparian forests. Surface water or saturated soil are typically, but not always, present year-round or seasonally and ground water is generally at a depth of less than 6.5 to 9 feet within or adjacent to nesting habitat (USFWS 2002). Field surveys of the Project Site did not identify suitable habitat for the species in the area.

3.6.2.1.2. Mojave Desert Tortoise (Gopherus agassizii)

The Mojave population of desert tortoise (*Gopherus agassizii*) includes all tortoises north and west of the Colorado River in Arizona, Utah, Nevada, and California. Listed as threatened in 1990, these tortoises are impacted by ongoing threats, including loss, degradation, and fragmentation of habitat due to development. They are also impacted by increased wildfire due to non-native invasive vegetation, disease, road mortality and predation of their eggs and hatchlings.

Desert tortoise is a federally and state-listed threatened species. Throughout most of the Mojave Desert, desert tortoises occur most commonly on gently sloping terrain with sandy gravel soils and where there is sparse cover of low-growing shrubs, which

allows for the establishment of herbaceous plants. Soils must be friable enough for digging burrows, but firm enough so that burrows do not collapse (USFWS 2008).

The Mojave Desert Tortoise has a moderate potential to occur in the Project area. Therefore, protocol-level surveys were conducted within the Project Site for desert tortoise. There are local, recent records of the Mojave Desert Tortoise and suitable habitat is present; however, no recent sign of the species were observed during the initial survey of the site by biologists. No desert tortoise signs (e.g., feathers, whitewash, scat, carapace), individuals, or suitable tortoise burrows were observed. Five burrows were mapped during the initial survey. However, these burrows were all partially collapsed, inactive (i.e., cobwebs present), and deemed not suitable for desert tortoise.

The USFWS has identified a Desert Tortoise Conservation Area/Least Cost Corridor approximately 1,330 feet west of the Project Site. The Corridor can provide a habitat mosaic containing viable populations of smaller terrestrial species (e.g., desert tortoise) and allow for gene flow through diffusion of populations over a period of generations.

3.6.2.1.3. Western Snowy Plover (Charadrius alexandrinus nivosus)

The Western Snowy Plover (*Charadrius alexandrinus nivosus*) is a small shorebird with moderately long legs and a short neck. Their back is pale tan while their underparts are white and have dark patches on the sides of their neck which reach around onto the top of their chest. Juveniles are similar to nonbreeding adults but have scaly pale edging on their back feathers. The bird's habitat occurs on coasts nests on sandy marine and estuarine shores, in the interior nests on sandy, barren, or sparsely vegetated flats near saline or alkaline lakes, reservoirs, and ponds.

Suitable habitat for the Western Snowy Plover is not present on the Project Site or in the vicinity. Western Snowy Plovers are unlikely to occur in the Project area.

3.6.2.1.4. Monarch Butterfly (Danaus plexippus)

Adult monarch butterflies during breeding and migration require a diversity of blooming nectar resources, which they feed on throughout their migration routes and breeding grounds (spring through fall). Monarchs also need milkweed (for both oviposition and larval feeding) embedded within this diverse nectaring habitat. The correct phenology, or timing, of both monarchs and nectar plants and milkweed is important for monarch survival. The position of these resources on the landscape is important as well. In western North America, nectar and milkweed resources are often associated with riparian corridors, and milkweed may function as the principal nectar source for monarchs in more arid regions. Field surveys of the Project Site did not identify suitable habitat for the species in the area.

3.6.2.2. Environmental Consequences

3.6.2.2.1. No Action

The No Action alternative would not impact listed threatened, endangered, candidate, or proposed species. The habitat would not be altered, and current management would continue.

3.6.2.2.2. Proposed Action

The Proposed Action alternative would have no effect on the Mojave Desert Tortoise as protocol level surveys found no desert tortoise signs (e.g., feathers, whitewash, scat, carapace), individuals, or suitable tortoise burrows present on the Project Site. Once the site re-vegetates it would be suitable for the Mojave Desert Tortoise, should the species attempt to populate the area.

The Proposed Action alternative would have no direct or indirect effects on the Western Snowy Plover because there is no suitable habitat present on the Project Site.

The Proposed Action alternative would have no direct or indirect effects on the Monarch Butterfly because there is no suitable habitat present on the Project Site.

Table 5: Effect Determinations for Endangered Species Act-listed Species Potentially Occurring at Project Site and Surrounding Vicinity

Common Name	Potential for Occurrence in Project Area	Determination of Effect
Southwestern Willow Flycatcher	Unlikely to occur	No effect
Mojave desert tortoise	Moderate likelihood to occur. Protocol level survey found no species present.	No effect
Western snowy plover	Unlikely to occur	No effect
Monarch Butterfly	Unlikely to occur	No effect

3.6.2.3. Mitigation

No mitigation measures are proposed for ESA-listed threatened or endangered species.

3.6.3. Migratory Birds

The Migratory Bird Treaty Act (MBTA) regulates or prohibits taking, killing, possession of, or harm to migratory bird species listed in Title 50, Section 10.13 of the

Code of Federal Regulations (CFR). The MBTA is an international treaty for the conservation and management of bird species that migrate through more than one country and is enforced in the United States by USFWS.

3.6.3.1. Affected Environment

No active or inactive nests for migratory birds were identified during the field surveys. There is a potential for birds to nest on the Project Site, however, including the special-status species LeConte's thrasher.

3.6.3.2. Environmental Consequences

3.6.3.2.1. No Action

The No Action alternative would not impact migratory birds. The site would maintain its current habitat and management, and no additional alteration would occur.

3.6.3.2.2. Proposed Action

Breeding birds could be affected by short-term construction-related noise, which can result in the disruption of foraging, nesting, and reproductive activities. Some bird species present or potentially present adjacent to work areas may nest within the shrubs on site and within 250 to 500 feet of work areas.

Under the Proposed Action, impacts to migratory birds are expected to be negligible based on the lack of migratory birds expected to utilize or otherwise visit the Project Site, as well as the lack of suitable nesting and foraging habitat, and with mitigation incorporated. Ground mounted solar arrays also pose little to no risk to migratory birds. Additionally, the solar panels proposed for use at this facility are designed to absorb the sunlight (photovoltaic panels) versus reflect the light; therefore, a reflective glare is not a concern for this facility.

3.6.3.3. Mitigation

In the event that construction activities occur during the nesting bird breeding season (February 1 through September 1), a qualified biologist shall conduct pre-construction survey within 7 days prior to any on-site grading and construction activities in accordance with the Migratory Bird Treaty Act and California Fish and Game Code Sections 3503, 3503.5, and 3513. Pre-construction nesting bird surveys shall also cover a 500-foot buffer around the Project Site, as feasible.

If occupied nests are found, then limits of construction to avoid occupied nests shall be established by the qualified biologist in the field with flagging, fencing, or other appropriate barriers (e.g., 250 feet around active passerine nests to 500 feet around active non-listed raptor nests), and construction personnel shall be instructed on the

sensitivity of nest areas. The nest area shall be avoided until the nest is vacated and the juveniles have fledged and are no longer reliant upon the nest or parental care for survival, construction may proceed in the setback areas. If migratory birds are not detected during the pre-construction survey, no further measures would be required, and construction activities may proceed.

3.6.4. Bald and Golden Eagles

The Bald and Golden Eagle Protection Act (BGEPA) is enforced by the USFWS and makes it illegal for anyone to take, possess, import, export, transport, sell, purchase, barter, or offer for sale, purchase, or barter any bald or golden eagle or the parts, nests, eggs of such bird except under the terms of a valid permit issued. The BGEPA also prohibits any activity that could cause injury to the species, nest abandonment or a decrease in productivity.

3.6.4.1. Affected Environment

Golden Eagles nest and winter in hilly, open/semi-open areas, including shrublands, grasslands, pastures, riparian areas, mountainous canyon land, open desert rimrock terrain; nests in large trees and on cliffs in open areas and forages in open habitats. Suitable habitat for the Golden Eagle is not present on the Project Site or in the vicinity. Therefore, Golden Eagles are unlikely to occur in the Project area.

Bald eagles live within two and a half miles of the coast, bays, rivers, lakes, or other bodies of water, reflecting the availability of their main food source (Center for Biological Diversity undated). Suitable habitat for the Bald Eagle is not present on the Project Site or in the vicinity. Therefore, Bald Eagles are unlikely to occur in the Project area.

3.6.4.2. Environmental Consequences

3.6.4.2.1. No Action

The No Action alternative would not impact Bald or Golden Eagles. The site would maintain its current habitat and management, and no additional alteration would occur.

3.6.4.2.2. Proposed Action

The Proposed Action alternative would have no direct or indirect effects on the Golden Eagle or Bald Eagles because there is no suitable habitat present on the Project Site.

3.6.4.3. Mitigation

No mitigation measures are proposed for the Bald or Golden Eagle, other than the proposed affecting all migratory birds set forth in Section 3.6.3.3.

3.6.5. Invasive Species

EO 13112, Invasive Species, directs federal agencies to not authorize, fund or carry out actions believed to cause or promote the introduction or spread of invasive species unless the Agency determines that the benefits of such actions outweigh the potential harm caused by invasive species.

3.6.5.1. Affected Environment

The field surveys identified four non-native species in the project areas, including Brassica tournefortii (Tournefort's mustard); Erodium cicutarium (Redstem stork's bill); Tamarix ramosissima (saltcedar/tamarisk); and Schismus arabicus (Arabian schismus).

Saltcedar (also called tamarisk) is a non-native invasive plant species regulated as a noxious weed under the California Code of Regulations (3 CCR § 4500). Saltcedar is a shrubby tree that was brought to the U.S. in the nineteenth century. One mature plant is capable of producing 500,000 seeds per year. It can be found along streams and lake shores, throughout California (University of California 2010). The most common native plants displaced by a saltcedar invasion are cottonwoods, mesquites, and willows growing along rivers and streams (University of California 2010). Saltcedar can also negatively affect native wildlife because it impedes access to water.

3.6.5.2. Environmental Consequences

3.6.5.2.1. No Action

The No Action alternative would not impact invasive species. No significant invasive species have been identified in the Project area, and it is not anticipated that new such species will be introduced into the nearby environment.

3.6.5.2.2. Proposed Action

Site preparation and grading will require clearing of vegetation remaining in the Project Site. While ground disturbance creates an opportunity for noxious weeds or invasive species populations to increase, potential colonization by noxious weeds or invasive species would be considered temporary because the Allscale Scrub will be allowed to repopulate throughout the Project Site, other than along access roads and where equipment pads are located. Moreover, due to the lack of invasive species observed in the review of the literature and from site surveys and the abundance of

Allscale Scrub throughout the surrounding region, it is not anticipated that temporary disturbances from construction will result in invasive species supplanting current ground cover.

3.6.5.3. Mitigation

The Project contractor would implement standard best management practices to minimize the introduction of invasive species, including using weed free straw for erosion control; avoid or minimize use of mulch, and fiber rolls must be premanufactured and filled with weed-free rice or wheat straw, wood excelsior, or coconut fiber.

3.7. Cultural Resources and Historic Properties

3.7.1. Affected Environment

This section addresses the evaluation and consideration of the proposal's potential effects on cultural resources and historic properties. NEPA mandates the integration of the NHPA (54 USC 300101 et seq) and its implementing regulations (36 CFR 800,). Section 106 of the NHPA (54 USC 306108) requires any federal agency that has direct or indirect jurisdiction over an undertaking consider the effect of the undertaking on historic properties.

The objective of this section is to evaluate and document the project's potential impacts to cultural resources as required under NEPA and to consider the project's effects on historic properties under Section 106 of the NHPA. In addition this section summarizes Tribal consultation efforts for the proposed project.

Cultural resources refer to historic, aesthetic, and cultural aspects of the human environment. The NHPA defines historic properties as a subset of cultural resources that includes prehistoric or historic districts, sites, buildings, structures, or objects included in or eligible for the National Register of Historic Places (NRHP), which the U.S. Secretary of the Interior maintains.

A property is significant if it meets at least one of the following four criteria (36 CFR 60):

a) It is associated with events that have made a significant contribution to the broad patterns of our history.

b) It is associated with the lives of persons significant in our past

c) It embodies the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction.

d) It has yielded or may be likely to yield, information important in prehistory or history.

To convey its significance, a property must retain aspects of integrity that contribute to its eligibility. Aspects of integrity include location, setting, design, workmanship, materials, feeling, and association (36 CFR 60). The Area of Potential Effects (APE) is used as the area of analysis to assess potential impacts and effects of the proposed project on cultural resources and historic properties.

3.7.1.1. Cultural Resources

A Cultural Resources Inventory and Evaluation Report dated November 2022 was prepared for the Proposed Action by Dudek. The report is on file at RUS. On May 18, 2022, Dudek requested a search of the California Historical Resources Information System CHRIS records held at the South-Central Coastal Information Center (SCCIC), located on the campus of California State University, Fullerton. On August 25, 2022, the staff at the SCCIC returned the results of the search to Dudek. The search of the proposed Project Site and a 1-mile radius included collections of mapped pre-contact, post-contact, and built environment resources; Department of Parks and Recreation (DPR) site records; technical reports; and ethnographic references. The search also included historical maps of the Project Site, the NRHP, the California Register of Historical Resources (CRHR), the California Historic Property Data File, the lists of California State Historical Landmarks, California Points of Historical Interest, the Archaeological Determinations of Eligibility, and the Built Environment Resources Directory.

The archival research identified three previously recorded resources on the Project Site. All three of these resources were isolated finds. Dudek was unable to relocate these resources on the Project Site. The intensive survey identified two previously unidentified archaeological resources on the Project Site: an isolated find and a historic-era refuse scatter. These resources are determined not eligible for listing in the NRHP or the CRHR.

3.7.1.2. Historic Buildings

A Built Environment Inventory and Evaluation Report, dated November 2022, was prepared for the Proposed Action by Dudek. The report is on file at RUS. The Project Site contains buildings and structures over the age of 45, including a former residence, agricultural outbuilding, Quonset Hut and shed. All of these resources have been determined not eligible for the NRHP or CRHR.

3.7.1.3. Consultation

Section 106 of the NHPA requires federal agencies to consult with the relevant Tribal Historic Preservation Officer (THPO) or official Tribal designees on historic

properties of religious or cultural significance that may be affected by the Proposed Action (undertaking). Federal agencies are also required to consult with SHPO regarding effects on historic properties.

On September 20, 2023, RUS submitted a finding of No Historic Properties Affected to the SHPO; Kern Valley Indian Community; Morongo Band of Mission Indians; Quechan Tribe of the Fort Yuma Reservation; San Fernando Band of Mission Indians; San Manuel Band of Mission Indians (Yuhaaviatam of San Manuel Nation); Serrano Nation of Mission Indians; and Twenty-Nine Palms Band of Mission Indians. On October 6, 2023, Yujaaviatam of San Manuel Nation responded concurring with the recommendation for archaeological and Tribal monitoring during construction. On December 15, 2023, SHPO responded with no objections. On March 18, 2024, Kern Valley Indian Community (KVIC) responded, concurring with the recommendation for archaeological and tribal monitoring during construction, which has been addressed in the mitigation described Section 3.7.3. RUS received no objections from any of the other consulting parties. All correspondence is on file at RUS.

3.7.2. Environmental Consequences

3.7.2.1. No Action

The No Action alternative would not change the current conditions. Ground disturbance from potential farming could occur and may further affect existing cultural resources within the Project Site. Effects on cultural resources such as those known to exist in the Project's physical and visual Area of Potential Effect (APE) are considered long term. Weather would continue to cause structural deterioration of the abandoned and dilapidated structures, and erosion and vegetation growth would continue to alter cultural resources. Under the No Action alternative, these effects on cultural resources in the APE would continue at the existing rate. As there are no known historic properties in the APE, the No Action alternative will have no effect on historic properties.

3.7.2.2. Proposed Action

No significant cultural resources were identified on the Project Site. The resources identified within the Project Site are not eligible for listing in the NRHP, CRHR, or local registers as a significant cultural resource under any of the criteria. These resources have been documented on DPR forms and are assigned a California Historical Resource Status Code of 6Z (found ineligible for the NRHP, CRHR, or local designation through survey evaluation).

Due to the low and insignificant finds made during the records search, sacred lands file search, and pedestrian survey, it is unlikely that unanticipated intact subsurface cultural resources will be identified during construction. In the unlikely event that resources are encountered during construction, local regulations outlined in Section

2.2 for cultural resources under the County of San Bernardino General Plan's Conservation Element, Goal CO-3, in addition to standard protection measures pursuant to 36 CFR § 800.13, will be implemented to ensure that unanticipated archaeological resources or human remains are treated properly. Additionally, archaeological and Tribal monitors will be present during construction to ensure appropriate measures are taken in the event of a post-review discovery.

The Proposed Action will not adversely affect potential cultural resources with implementation of the mitigation measures in Section 3.7.3. No historic properties will be affected as a result of the Proposed Action. If cultural resources (e.g., lithic tools, pottery, human remains, etc.) are discovered during construction, then earth‐moving activity within and around the immediate discovery area will be diverted until a qualified archaeologist can assess the nature and significance of the find in consultation with interested Native American tribes (as applicable). Unexpected discoveries will be handled pursuant to 36 CFR § 800.13 and applicable California laws, which prohibit the destruction or desecration of human remains including Native American burial grounds or mounds.

3.7.3. Mitigation

3.7.3.1. Unanticipated Discovery of Archaeological Resources.

A worker environmental awareness program training shall be prepared and conducted prior to ground-disturbing activities to inform all construction personnel working on the Proposed Action about the archaeological sensitivity of the area. The purpose of the worker environmental awareness program training is to provide specific details on the kinds of archaeological materials that may be identified during construction of the Proposed Action and explain the importance of and legal basis for the protection of cultural resources. Each worker shall also learn the proper procedures to follow in the event that cultural resources or human remains are uncovered during ground-disturbing activities. These procedures include work curtailment or redirection and immediately contacting the appropriate County of San Bernardino personnel upon discovery or suspected discovery of cultural resources and RUS historic preservation staff.

In the event that potential archaeological resources (sites, features, or artifacts) are exposed during construction activities for the Proposed Action, all construction work occurring within 100 feet of the find shall immediately stop until a qualified archaeologist, meeting the Secretary of the Interior's Professional Qualification Standards, can evaluate the significance of the find and determine whether additional study is warranted. Furthermore, the archaeologist responding must report their assessment to RUS and RUS shall determine if work can continue or if consultation is needed with Indian tribes/SHPO.

3.7.3.2. Unanticipated Discovery of Human Remains.

In accordance with Section 7050.5 of the California Health and Safety Code, if human remains are found, the county coroner, local law enforcement and RUS shall be immediately notified of the discovery. No further excavation or disturbance of the Project Site or any nearby area reasonably suspected to overlie adjacent remains shall occur until the county coroner has determined the appropriate treatment and disposition of the human remains.

3.7.3.3. Archaeological & Tribal Monitoring.

At the recommendation of interested Tribes, archaeological and Tribal monitors shall be present at the discretion of the tribes for all ground-disturbing activities that occur within the proposed project area (which includes, but is not limited to, tree/shrub removal and planting, clearing/grubbing, grading, excavation, trenching, compaction, fence/gate removal and installation, drainage and irrigation removal and installation, hardscape installation, benches, signage, boulders, walls, seat walls, fountains, etc., and archaeological work). At the discretion of the consulting tribes, a reasonable number of tribal monitors may be present each workday to ensure that simultaneously occurring ground disturbing activities receive thorough levels of monitoring coverage. Prior to ground-disturbing activities, a Monitoring Plan prepared by the applicant will be developed and submitted to RUS and Yuhaaviatam of San Manuel Nation for review and approval.

3.8. Aesthetics

3.8.1. Affected Environment

A Visual Impact Analysis was prepared for the Proposed Action in September 2022 (see Appendix G). The Project Site comprises primarily undeveloped, flat desert terrain. Specifically, the southern portion of the Project Site (approximately 45 acres) is undeveloped (a single steel lattice tower supporting a regional transmission line is located in the southwest corner) and covered by low and dry desert shrubs (generally no taller than 2-4 feet high) that present as a stippled appearance across the Project Site. (*See* Photos A and B on Figure 10). A desert wash/drainage also occurs on the southern portion and generally extends from the southwest to the northeast corner of the Project Site. The northern portion of the Project Site displays a similar terrain and vegetation character as the southern portion however, a former housing compound comprised of two dilapidated structures (and the remnants of up to four others) is also present. (*See* Photo C on Figure 10). The northern portion is also crossed by several dirt access roads associated with the former compound and several trees ostensibly planted to provide wind breaks. In addition to electrical transmission infrastructure, existing trees and dirt roads on the northern portion of the Project Site are shown on Photos C and D (Figure 10).

Land uses in the surrounding area include flat undeveloped terrain (to the immediate east and west of the Project Site), electrical transmission lines, limited scattered residences (to the north, northwest, and west, Harper Dry Lake, and solar farm development. Existing terrain and electrical transmission lines are shown in Photos E and F, Figure 11. Specifically, multiple utility- scale solar farm developments are located to the east (along Roy Road), north, and northeast and include the 250 MW Mojave Solar Project (a concentrated solar power facility featuring solar steam generators and auxiliary boilers) and the Solar Energy Generating System VIII-IX (Solar Energy Generating System VIII-IX) solar power plants. In total, there is over 2,000 acres of operating solar farm development within a 5-mile area from the Project Site (*See* Photos F and G), which include surrounding solar development to the east and north. Lastly, existing residences along Edie Road to the north of the Project Site are captured in Photo G. (Figure 11).

Lighting and Glare

In addition, new light and glare sources within the Project Site would generally be limited to low-elevation security lighting at the site's ingress/egress gate(s). All lighting installed on the Project Site would be directed downwards and shielded to control illumination of off-site areas (including nearby residential lands) and reduce skyglow. Regarding glare, panels would be angled such that reflected light from inbound sun rays would be projected at a similar angle and would generally be "above" the typical height of nearby residences and motorists on roads in the immediate surrounding area of the Project Site.

3.8.2. Environmental Consequences

3.8.2.1. No Action

The No Action alternative would not impact the aesthetics of the surrounding landscape and would therefore have no short- or long-term impacts on the existing visual environment.

3.8.2.2. Proposed Action

Solar arrays ranging from three to nine feet in height would cover the Project Site. Also, two small sheds approximately ten feet in height, housing the battery storage systems, and two equipment pads with transformers and switchgear would be present. Two transmission line would also be constructed. The presence of Project components in future views from local roads in the surrounding area would not substantially interrupt views to distant hillside and ridgeline terrain the region.

The Project Site is not adjacent to a state scenic highway and would not be readily visible from the nearest state scenic highway (State Route 58; located nearly 5 miles to the south of the Project Site). Due to the presence of existing solar development in

the immediate area (approximately 2,000 acres of solar development is present within a 5-mile distance of the Project Site), construction and operation of the Proposed Action would not degrade the existing character of the landscape.

3.8.3. Mitigation

No mitigation measures are proposed for aesthetics.

3.9. Air Quality

The EPA Office of Air Quality Planning and Standards set National Ambient Air Quality Standards (NAAQS). Ambient air quality standards define the allowable concentrations of criteria pollutants in ambient air. The EPA has set air quality standards for the following criteria pollutants: nitrogen dioxide (NO_2), sulfur dioxide (SO_2), carbon monoxide (CO), particulate matter smaller than 10 microns in aerodynamic diameter (PM_{10}), particulate matter smaller than 2.5 microns in aerodynamic diameter ($PM_{2.5}$), ozone (O_3), and lead (Pb).

The federal and state governments have been empowered by the federal and state Clean Air Acts to regulate the emission of airborne pollutants and have established NAAQS for the protection of public health. The USEPA is the federal agency designated to administer national air quality regulations, while CARB is the state equivalent in the California Environmental Protection Agency. Local control over air quality management is provided by CARB through multi-county and county-level Air Pollution Control Districts (APCDs) (also referred to as Air Quality Management Districts). Under the Clean Air Act, San Bernadino County is non-attainment for the 8-hour Ozone 2008 standard and 8-hour Ozone 2015 standard.

CARB establishes statewide air quality standards and is responsible for the control of mobile emission sources, while the local APCDs are responsible for enforcing standards and regulating stationary sources. CARB has established 15 air basins statewide. The Project Site is located in the Mojave Desert Air Basin (MDAB), which is under the jurisdiction of the Mojave Desert Air Quality Management District (MDAQMD). The MDAQMD has developed regional significance thresholds for regulated pollutants, shown in Table 7.

The EPA assigns classifications to geographic areas based on monitored ambient air quality conditions. Areas that meet both the primary and secondary standards of a pollutant subject to NAAQS are classified as being in attainment for that pollutant. Areas that do not meet the NAAQS for a pollutant are designated as being in nonattainment for that pollutant. Areas that cannot be classified based on available information for a pollutant are designated as being unclassified. An area's attainment status is designated separately for each criteria pollutant; one area may have all three classifications. Previously designated nonattainment areas for one of the NAAQS that have since met the NAAQS standards are referred to as attainment areas with a

maintenance plan. Ensuring that the air quality in those areas continues to meet the standards requires the development and implementation of a maintenance plan. As of May 20, 2021, the EPA designates Beaverhead County as in attainment or unclassified for all criteria pollutants, meaning that the air in Beaverhead County meets the NAAQs (EPA 2021b).

3.9.1. Affected Environment

Existing air quality is measured at established MDAQMD air quality monitoring stations. The purpose of the monitoring stations is to measure ambient concentrations of pollutants, including criteria pollutants, ozone precursors and TACs, and to determine whether the CAAQS and the NAAQS are met. Monitored air quality is evaluated in the context of ambient air quality standards. These standards are the levels of air quality that are considered safe, with an adequate margin of safety, to protect the public health and welfare.

Relative to the Project Site, the nearest long-term air quality monitoring site for NO2, O3 and PM10 was obtained from the MDAQMD Barstow monitoring station, located approximately 18 miles southeast of the Project site. Data for PM2.5 was obtained from the MDAQMD Victorville-Park Avenue, located approximately 35 miles South of the Project site. The most recent three (3) years of data available is shown in Table 6 and identifies the number of days ambient air quality standards were exceeded for the study area, which is considered to be representative of the local air quality at the Project site. Data for CO and SO2 has been omitted as attainment is regularly met and few monitoring stations in the area measure CO or SO2 concentrations.

Table 6: Ambient Air Background Pollutant Concentrations / Exceedances/Standards

Pollutant	2019	2020	2021
Ozone (O3)			
State maximum 1-hour concentration (ppm)	0.090	0.117	0.099
National maximum 8-hour concentration (ppm)	0.082	0.098	0.087
State maximum 8-hour concentration (ppm)	0.082	0.098	0.088
Number of Days Standard Exceeded			
CAAQS 1-hour (>0.09 ppm)	0	3	2
CAAQS 8-hour (>0.070 ppm)/NAAQS 8-hour (>0.070 ppm)	10/9	26/25	21/20
Respirable Particulate Matter (PM10)			

Pollutant	2019	2020	2021
National maximum 24-hour concentration (ug/m3)	209.5	213.5	372.7
State maximum 24-hour concentration (ug/m3)	*	*	*
Annual federal average concentration (ug/m3)	24.8	33.3	29.9
Annual or Days Standard Exceeded			
NAAQS 24-hour (>150 ug/m3)	1	1	1
Fine Particulate Matter (PM2.5)			
National maximum 24-hour concentration (ug/m3)	17.8	48.4	87.1
State maximum 24-hour concentratin (ug/m3)	20.0	48.7	87.1
Annual average concentration (ug/m3)	7.0	9.7	10.2
Annual or Days Standard Exceeded			
NAAQS 24-hour (>35 ug/m3)	0/No	4	1
CAAQS Annuyal (>12 ug/m3)	7	10.4	10.3
Nitrogen Dioxide (NO2)			
National maximum 1-hour concentration (ppb)	59.8	62.8	62.4
State maximum 1-hour concentration (ppb)	59	62	62
Annual average concentration (ppb)	13	14	14

Source: Air Quality & Greenhouse Gas Study dated October 17, 2022, BlueScape Environmental

3.9.2. Environmental Consequences

3.9.2.1. No Action

Under the No Action alternative, the solar facility would not be developed. No surface disturbance would occur, and air resources would not be affected. Climate change would continue under current trends.

3.9.2.2. Proposed Action

An Air Quality & Greenhouse Gas Study dated October 17, 2022, was prepared for the Proposed Action. This is provided as Appendix H. As previously discussed, the MDAQMD has developed regional significance thresholds for regulated pollutants,

shown below in Table 7. The MDAQMD's Guidelines indicate that any projects in the MDAB with daily regional emissions that exceed any of the indicated thresholds may be considered as having an individually and cumulatively significant air quality impact. The MDAQMD's Guidelines indicate that any projects in the MDAB with daily regional emissions that exceed any of the indicated thresholds may be considered as having an individually and cumulatively significant air quality impact.

Table 7: Significant Emissions Thresholds

Criteria Pollutant	Annual Threshold (tons)	Daily Threshold (pounds)
Carbon Monoxide (CO)	100	548
Oxides of Nitrogen (NO_x)	25	137
Volatile Organic Compounds (VOC)	25	137
Sulfur Oxides (SO_x)	25	137
Particulate Matter (PM_{10})	15	82
Particulate Matter ($PM_{2.5}$)	12	65

Source: Air Quality & Greenhouse Gas Study dated October 17, 2022, BlueScape Environmental

Air quality modeling was performed in general accordance with the methodologies outlined in the MDAQMD CEQA Guidelines (MDAQMD 2020) to identify construction emissions associated with the Proposed Action. Emissions were calculated using the California Emissions Estimator Model (CalEEMod) software version 2020.4.0 which incorporates current air emission data, planning methods and protocol approved by CARB (CAPCOA 2022). The purpose of this model is to calculate construction-source and operational-source criteria pollutant (VOC/ROG, NOX, CO, SOX, PM10, PM2.5) and Green House Gas (GHG) emissions from direct and indirect sources; and quantify applicable air quality and GHG reductions achieved from best management practices and project design features.

Construction of the Proposed Action would generate temporary air pollutant emissions. For the purpose of estimating emissions, it was assumed that 53 acres within the parcel would be disturbed and graded for overall development of the Project Site. No haul trips are expected because import or export of soils will not be required to achieve final grades. Construction phases would generally consist of demolition, the Project Site preparation and grading, and construction of the solar PV energy storage system and the associated racking system.

Construction is anticipated to occur over six months. As shown in Table 8, below, construction emissions for the Proposed Action would not exceed MDAQMD's daily emissions thresholds as demonstrated in Table 8. Thus, the Proposed Action construction would not violate an air quality standard or result in a cumulatively

considerable increase in particulate matter emissions or expose receptors to substantial pollutant concentrations.

Table 8: Maximum Daily Construction Emissions with Control Measures (lbs/day)

	VOC	NO_x	CO	SO_2	PM_{10}	$PM_{2.5}$
Summer Daily Maximum	6.10	32.3	63.8	.211	15.7	4.87
Winter Daily Maximum	5.98	33.1	57.1	.201	15.7	4.87
Significance Thresholds	**13**	**137**	**548**	**137**	**82**	**65**
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

Source: Air Quality & Greenhouse Gas Study dated October 17, 2022, BlueScape Environmental

Table 9 summarizes the Proposed Action maximum annual construction emissions, including dust control measures. Based on the emissions shown, construction of the Proposed Action would not exceed the MDAQMD regional construction emission thresholds for annual emissions.

Table 9: Maximum Annual Construction Emissions with Control Measures (tons/year)

	VOC	NOx	CO	SO2	PM10	PM2.5
Annual Maximum	0.206	1.27	2.03	0.007	0.548	0.177
Significance Thresholds	**25**	**25**	**100**	**25**	**15**	**12**
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

Source: Air Quality & Greenhouse Gas Study dated October 17, 2022, BlueScape Environmental

Therefore, construction of the Proposed Action would not violate an air quality standard or result in a cumulatively considerable increase in ozone or particulate matter emissions or expose receptors to substantial pollutant concentrations (MD thresholds 1 and 2).

In addition, the Proposed Action would involve the use of diesel-powered construction equipment. Diesel exhaust may be noticeable temporarily at adjacent properties; however, construction activities would be temporary. Construction activity, however, would cease to occur after construction is completed. No other sources of objectionable odors have been identified for the Proposed Action.

The Proposed Action could release localized odors during operations. The Proposed Action, however, does not include industrial or agricultural uses that are typically

associated with objectionable odors. Moreover, such odors, if any, would be confined primarily to the Project Site and would readily dissipate.

The Proposed Action has also been evaluated to determine if it will result in a significant GHG impact. Land uses such as the Proposed Action affect GHGs through construction-source and operational-source emissions. The MDAQMD has established 100,000 tons of CO2e per year or 548,000 pounds per day as the District's significant emissions threshold for greenhouse gases. The Proposed Action's construction activities would generate CO2, CH4, and N2O emissions. As shown in Table 10, the Proposed Action would result in 21,958 lbs CO2e per day and 725.2 tons CO2e per year, without accounting for applicable regulatory requirements and renewable energy. GHG emission impacts before regulatory requirements are well below the MDAQMD significance thresholds.

Table 10: Construction GHG Emissions

	CO_2	CH_4	N_2O	CO_2e	Total	Significance Threshold
Maximum Daily Construction Total (lb CO_2e/day)	21,543	1.61	1.25	21,958	21,958	548,000
Annual Construction Total ($MTCO_2e$/year)	645.1	0.056	0.038	657.9	752.2	100,000

Source: Air Quality & Greenhouse Gas Study dated October 17, 2022, BlueScape Environmental

Over its lifetime, the Proposed Action will comply with the regulations set forth by the MDAQMD Rule Book and Federal Conformity Guidelines. Electricity generation via the use of photovoltaic solar systems does not generate chemical emissions that would negatively contribute to air quality. Once operational, the facility would be operated remotely, generating limited traffic. Periodic maintenance visits will not exceed once per month on average. Thus, potential emissions from operations would not likely adversely impact air quality.

3.9.3. Mitigation

No mitigation measures are proposed for air quality.

3.10. Socio-Economic Impact Assessment / Environmental Justice

EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires federal agencies to consider impacts that may arise from human health or environmental effects of a project on minority and low-

income populations. The EO states that, “each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health of environmental effects of its programs, policies, and activities on minority populations and low-income populations.” EO 12898 defines “minority” as individual(s) who are members of the following population groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic. The EO defines "low-income” using the US Census Bureau definition for poverty.

The Council on Environmental Quality (CEQ) has prepared guidance for federal agencies to comply with EO 12898 (CEQ 1997). The CEQ guidance advises agencies to define an area that could be affected by the Proposed Action, determine whether minority populations and low-income populations are present in the area, and evaluate if the Proposed Action would have any disproportionately high and adverse effects on those populations. The CEQ guidance provides thresholds for identifying minority and low-income populations in the affected area: when either 50 percent of the population of the affected area is minority or low income; or when the population of minority and low-income individuals in the area affected by an action is “meaningfully greater” when compared to larger comparison areas such as the county or state where the project is located. “Meaningfully greater” is defined by CEQ as exceeding 10 percent of the population of the larger comparison area used for the analysis (San Bernadino County, California).

3.10.1. Affected Environment

The EA used the census tract where the Project Site is located as the affected area for the analysis. The Project Site is located in Census Tract No. 06071011602 in San Bernardino County. The census tract extends from northern Barstow to the County’s boarders in the west. The census tract encompasses a region of unincorporated San Bernardino County with little population. The Census Tract covers approximately 1,326 square miles with a total population of 1,871. Table 11 provides a comparison of racial and poverty data for the census tract and the larger comparison area of San Bernardino County.

As shown in Table 11, the total minority population in Census Tract 06071011602 is lower (27 percent) than the County as a whole (75 percent). The percentage of residents in the Census Tract that are below the poverty level (13 percent) is also below the County average (14 percent). Therefore, the affected area would not be considered a minority or low-income census tract using the CEQ definitions.

Table 11: Comparative Data for Environmental Justice Analysis

Race	*Census Tract No. 06071011602 Percentage*	*San Bernardino County Percentage*
White	73	25
Black	n/a	8
Native American & Alaskan	n/a	0
Asian	7	8
Native Hawaiian & Pacific Islanders	n/a	0
Mixed	1	3
Hispanic	19	56
Other	n/a	0
Total Minority	27	75
Percentage of Population with Income Below Poverty Level	13	14

Source: U.S. Census Bureau, 2021 American Community Survey 5-Year Estimates

3.10.2. Environmental Consequences

3.10.2.1. No Action

Under the No Action alternative, RUS would not provide financial assistance for the proposed Project and no related socioeconomic impacts would occur. Population, employment, and income trends in San Bernardino County would be expected to follow existing trends under the No Action alternative. No environmental justice impacts would occur under the No Action alternative.

3.10.2.2. Proposed Action

The Proposed Action is not anticipated to have highly disproportionate and adverse effects on minority and low-income populations. It would not divide an established community. No long-term effects from noise, air quality, or traffic are anticipated. No residents or businesses would be displaced or relocated if the Proposed Action is implemented.

3.10.3. Mitigation

No mitigation measures are proposed for social resources or environmental justice.

3.11. Noise

Noise is defined as any loud, discordant or disagreeable sound or sounds. The proximity of construction and project activities to other land uses can produce sounds that could create noise impacts to sensitive sound receptors, such as schools, hospitals, or residences. San Bernadino County regulates noise through its Development Code. Section 83.01.080 of the Development Code provides a noise standard of 55 decibels (dBA; metric not stated) at residences from 7:00 am to 10:00 pm and 45 decibels from 10:00 pm to 7:00 am (San Bernardino County 2014).

3.11.1. Affected Environment

The largest contributors to the existing noise sources within the project area are from the neighboring solar thermal plants and vehicular traffic. The nearest residence is over 200 feet from the area designated for proposed construction work. The distance from the construction area to the other residence located north of the Project Site exceeds 300 feet. No other noise receptors, including additional residences, schools, hospitals or parks are located within 300 feet of the Project Site.

3.11.2. Environmental Consequences

3.11.2.1. No Action

Under the No Action alternative, the project would not be developed. No new noise would occur, and current noise levels would not be affected.

3.11.2.2. Proposed Action

Construction noise generated by the Proposed Action will be temporary. Noise generated by construction equipment will include a combination of trucks, concrete mixers, power tools, and portable generators that when combined can reach high levels. The number and mix of construction equipment are expected to occur during the Project Site preparation, grading and installation of the solar generation and battery storage equipment.

The degree of construction noise will vary depending on the phase of construction and type of construction activity. Table 12 shows the typical noise levels generated by construction equipment.

Table 12: Typical Construction Equipment Notice levels, dBA

Equipment	100 ft.	200 ft.	300 ft.
Excavator	75	69	65
Front End Loader	73	67	63
Pneumatic Tools	79	73	69
Dozer	76	70	66
Rollers	74	68	64
Trucks	80	72	70
Scrapers	81	75	71
Portable Generators	74	68	64
Backhoe	80	74	70
Grader	80	74	70

Source: *Noise Control for Buildings and Manufacturing Plants*, Bolt, Beranek & Newman, 1987

Noise levels from construction would diminish with distance from the construction site at a rate of 6 dBA per doubling of distance. The nearest residence is over 200 feet from the area designated for proposed construction work. The distance from the construction area to the other residence located north of the Project Site exceeds 300 feet. All other surrounding properties are either industrial uses or vacant. Construction noise sources are regulated within San Bernardino County under Section 83.01.090 (G) of the Development Code, which states that temporary construction, maintenance, repair, or demolition activities between 7AM to 7PM, except Sundays and Federal Holidays are exempt from the County's noise regulations. All construction activities would follow County regulations and guidelines.

Construction activity can also result in varying degrees of ground vibration, depending on the equipment and methods used, distance to the affected structures and soil type. It is expected that ground-borne vibration would result from the use of heavy construction equipment, pile drivers, and trucks during construction. Although all heavy mobile construction equipment has the potential of causing at least some perceptible vibration while operating close to buildings, the vibration is usually short-term and is not of sufficient magnitude to cause building damage. Temporary construction, maintenance, repair, or demolition activities would be limited to 7AM and 7PM, except Sundays and Federal holidays, however, are exempt from vibration standards, as defined in sub-section 83.01.090(c)(2) of the County Code.

Once in operation, the Proposed Action would not be a source of any noticeable increase in noise. The Proposed Action is not a manufacturing, earth moving and/or distracting business, and therefore is not anticipated to be a source of vibration. The

proposed solar generation and battery storage system would not likely adversely affect noise levels.

3.11.3. Mitigation

No mitigation measures are proposed for noise.

3.12. Transportation

3.12.1. Affected Environment

The Project area can be accessed from Harper Lake Road, a County maintained and paved road. The road serves multiple solar thermal facilities to the north of the Project Site and a few scattered residential residences. Roy Road, which is presently an unpaved dirt road, provides access from Harper Lake Road to the northern border of the Project Site. The County of San Bernardino and the California Department of Transportation (Caltrans) does not currently maintain average daily traffic counts for Harper Lake Road. In 2017, the average daily traffic count for State Highway 58, approximately 5.25 miles due south from the Project area was 12,000 vehicles.

3.12.2. Environmental Consequences

3.12.2.1. No Action

The No Action alternative would not impact transportation or associated facilities, as there would not be additional development or activities to generate additional traffic beyond current levels along Harper Lake Road.

3.12.2.2. Proposed Action

During construction, additional trips would be added to area roads including but not limited to Harper Lake Road. A Construction Management Plan, dated February 16, 2023, was prepared for the Proposed Action (See Appendix I). The Project Site borders established roadways and nearby thoroughfares are capable of providing adequate emergency access to the Project Site, and the surrounding areas. Accordingly, no special permits would be required in connection with construction of the Proposed Action.

Delivery trucks would use CA-91, I215, I-15, CA-15, National Trails Highway, Helendale Rd, Harper Lake Rd, Lockhart Ranch Rd, and Edie Rd. to access the Project Site. It is anticipated that deliveries will principally be via Harper Lake Rd. It is anticipated that construction will occur over an eight (8) month period with two deliveries per week.

Construction would require a workforce, peaking at 60 persons at maximum deployment, which would not generate enough daily trips to noticeably alter existing conditions along the Project Site area roads. Construction workers would typically arrive at the Project Site in the morning and leave during the early afternoon during the work week. Also, the Project contractor would utilize traffic control (flaggers) on Harper Lake Road to the extent necessary during the construction phase.

Once operational, the facility will be operated remotely, generating limited traffic. Periodic maintenance visits would not exceed once per month on average. While the Project may minimally affect traffic patterns during construction, the increase in traffic once operational would likely not adversely affect traffic levels and impact the neighboring transportation infrastructure.

3.12.3. Mitigation

No mitigation measures are proposed for transportation.

3.13. Human Health and Safety

3.13.1. Electromagnetic Fields and Interference

3.13.1.1. Affected Environment

Land uses in the surrounding area include flat undeveloped terrain (to the immediate east and west of the Project Site), electrical transmission lines, limited scattered residences (to the north, northwest, and west, Harper Dry Lake, and solar farm development. Two residences are located north of the Project Site. One residence is located approximately 200 feet from Project Site's border. The other residence's location exceeds 300 feet from the Project Site border.

3.13.1.2. Environmental Consequences

3.13.1.2.1. No Action

The No Action alternative would not impact human health and safety. The existing transmission lines would continue to emit low levels of EMF radiation in the Project area and surrounding area.

3.13.1.2.2. Proposed Action

The International Commission on Non-Ionizing Radiation Protection has a recommended exposure limit of 4,200 V/m for the general public. In a study of several utility scale solar PV generation systems found electric field levels along the fenced PV array boundary, and at the locations set back 50 to 150 feet from the boundary, were not elevated above background levels (< 5 V/m). Electric fields near the

inverters were also not elevated above background levels (< 5 V/m) (Tech Environmental, Inc., Study of Acoustic and EMF Levels from Solar Photovoltaic Projects, December 17, 2012). The Project arrays and other equipment will be set back by at least 100 feet from the property lines.

The International Commission on Non-Ionizing Radiation Protection has a recommended exposure limit of 833 mG for the general public. At the utility scale sites, the study found magnetic field levels along the fenced PV array boundary were in the very low range of 0.2 to 0.4 mG. Magnetic field levels at the locations 50 to 150 feet from the array boundary were not elevated above background levels (<0.2 mG). There are significant magnetic fields at locations a few feet from inverters, in the range of 150 to 500 mG. At a distance of 150 feet from these utility-scale inverters, however, these fields drop back to very low levels of 0.5 mG or less, and in many cases to background levels (<0.2 mG). The variation of magnetic field with distance generally shows the field strength is proportional to the inverse cube of the distance from equipment. Thus, the Proposed Action would not generate electric and magnetic fields at levels higher than background levels in regions beyond the Project Site borders and accordingly it would have no impact.

3.13.1.3. Mitigation

No mitigation measures are proposed for electromagnetic fields and interference.

3.13.2. Hazards and Hazardous Materials

This section evaluates the presence of hazardous materials that may be present on the Project Site and evaluates substances or wastes that may be released at, generated by, or required for the operation of the Proposed Action in accordance with federal and state laws including the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Resource Conservation and Recovery Act (RCRA), Toxic Substances Control Act (TSCA), Emergency Planning and Community Right-to-Know Act (EPCRA), and State of California hazardous materials laws.

3.13.2.1. Affected Environment

The Project Site was not identified on lists compiled by the U.S. Environmental Protection Agency, the California Environmental Protection Agency, the State Water Resources Control Board, the California Department of Toxic Substances Control, and the CalRecycle Waste Management Board Solid Development Waste Information System.

3.13.2.2. Environmental Consequences

3.13.2.2.1. No Action

The No Action alternative would not result in impacts from hazardous waste or other related environmental conditions.

3.13.2.2.2. Proposed Action

Small amounts of potentially hazardous materials would be used in this Proposed Action such as fuel, lubricants, and cleaning materials. The potential for accidental releases and spills of hazardous materials during construction is a standard risk on all construction sites, and there would be no greater risk for improper handling, transportation, or spills associated with the Project Site's development that would be of a reasonably greater consequence of the Proposed Action than would occur on any other similar construction site. Operational activities will not include handling, storage, or dispensing hazardous or potentially hazardous materials.

Under normal use, the battery storage system is not expected to expose users to hazardous materials. The battery is an "article" pursuant to 29 CFR 1910.1200 and, as such, is not subject to the OSHA Hazard Communication Standard requirement. The batteries have been designed for over 30 years use without rupture. The contents of the battery consists of Nickel dihydroxide, Nickel, Water, Potassium hydroxide and Polytetrafluorethylene.

Construction and long-term operation of the Proposed Action would be in compliance with local, state, and federal hazardous materials laws including RCRA and the EPCRA. Requirements in the construction documents would minimize the potential for accidental releases or emissions from hazardous materials. These procedures would minimize risks and potential adverse impacts to the human or biological environment.

3.13.2.3. Mitigation

No mitigation measures are proposed for hazards or hazardous materials.

4.0 Cumulative Effects

The CEQ Regulations (40 CFR Parts 1500-1508) implementing the procedural provisions of NEPA defines cumulative effects as:

> The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other action. (40 CFR § 1508.7).

The cumulative effects analysis presented in Table 13 is based on guidance provided by the CEQ (CEQ, 1997). The analysis uses natural ecological, regional, and sociocultural boundaries as well as temporal scales relevant to the regional vicinity of the Project. Cumulative impacts have been assessed in a qualitative manner and in the context of each inventoried resource, ecosystem, or human community that might be affected. Thus, this cumulative analysis evaluates the Project in the context of other development in the region, which are summarized in Table 14.

The Project is not a commitment to a larger action, and it is not intended to facilitate substantial population growth in the region. It is part of Juniper Energy's renewable energy portfolio expansion.

The EA determined that the Proposed Action would have no long-term direct effects on floodplains, water resources, coastal resources, threatened and endangered species, cultural resources, air quality, environmental justice populations, noise, and transportation. Therefore, the project would have no cumulative effects and these resources are not evaluated further in this section.

Table 13: Summary of Cumulative Impacts Assessment

Resource	Cumulative Impacts	Contribution to Proposed Action to Cumulative Effects
Land use	Past, present and future conversion of land for development of solar generation facilities in the North Desert Region of San Bernadino County	80 acres of undeveloped land converted for solar generation.
Wetlands	Past, present and future development of solar generation facilities in the watershed	0.86 acres impact on non-jurisdictional ephemeral streams
Biological Resources	Past, present and future conversion of habitat for development of solar generation facilities in the area	Conversion of habitat for the solar facility
Aesthetics	Past, present and future construction of solar facilities in the area	80 acres of solar arrays having minor effects

Table 14: Summary of Current and Future Projects in the Vicinity

Project	Location Relative to Project Site	Description
Solar Thermal Generation Systems	Northwest, North, Northeast, and East of Project Site	Three solar thermal generation systems covering over 2,382 acres
Northern Residences	North of Project Site	Four rural residences ranging from 200 feet to a half mile from site
Western Residences	West, Northwest, and Southwest of Project Site	Four rural residences at least 0.75 miles from the site
Multiple High-voltage Utility Transmission Lines	Southeast, South, and Southwest of Project Site	High-voltage transmission lines running along the site's southern border
Proposed Solar Generation System	Northwest of Project Site	Proposed 150 MW solar generation system on 822 acres
Proposed Manufacturing Plant	Northeast of Project Site	Proposed manufacturing plant east of existing solar thermal plants on 320 acres
Proposed Solar Generation System	East of Project Site	Proposed 150 MW solar generation system on 528 acres

4.1. Land Use

Land in the cumulative effects analysis area is primarily either developed with solar facilities, undeveloped vacant agricultural land, or residences. Development of other solar facilities surrounding the Project Site converted land used for agriculture. The Proposed Action would convert an abandoned residence and vacant land to solar power generation. Additional projects, including a potential solar development, approximately 1.5 miles south of the Project Site, have or will convert vacant land to energy generation.

4.2. Wetlands

Cumulative effects on surface waters could occur from past, present and reasonably foreseeable future development in the watershed where the Project Site is located. Construction of past and future solar facilities have and could contribute cumulatively to impacts on wetland resources. The existing solar facility to the north of the Project Site may block the flow of water of an ephemeral stream bed. Construction of the Project, however, would not alter the existing stream bed.

4.3. Water Resources

Similar to the proposed Project, the majority of land areas affected by past and future projects have or would create small areas of impervious surface housing switchgear, inverters, transformers, and battery storage systems. These surfaces would be dispersed throughout the region and sufficiently separated from one and another to allow the surrounding groundcover to absorb runoff, minimizing impacts.

4.4. Biological Resources

Approximately 3,650 acres of natural desert habitat (e.g. allscale scrub and ephemeral surface waters) in the cumulative effects analysis area has been or will be converted for solar energy facilities (solar thermal and solar photovoltaic facilities). Other land in the analysis area has also been converted for agricultural uses in the past. The Proposed Action would have a minor incremental impact on biological resources through the conversion of 80 acres of habitat along with other past and future actions.

4.5. Aesthetics

Any projects that would result in modification of the landscape, such as new energy development, could contribute to the cumulative adverse impacts to visual quality and aesthetics when combined with other existing and planned development. Existing solar facilities and utility transmission lines have converted the aesthetics of the surrounding area from a natural desert environment to an area with thousands of acres of solar thermal or solar photovoltaic arrays. Existing solar generation systems have affected over 2,300 acres and proposed solar projects would affect an additional 1,350 acres. The Proposed Action would cover approximately 80 acres (2% of the land area of the existing solar thermal facilities). The Proposed Action would therefore have a minor incremental impact to a region already characterized by utility infrastructure.

4.6. Summary of Mitigation

As described in Chapter 3, Juniper Energy would implement numerous mitigation measures to aid in minimizing the potential environmental impacts arising from the construction and operation of the Proposed Action. The following list provides a summary of the mitigation measures that Juniper Energy would implement:

Land Use

- The applicant will obtain conditional use permit and approval of a general plan amendment from San Bernadino County changing the zoning designation of the Project Site to Resource Conservation (RC).

Floodplains

- To mitigate impacts during a flood event, two water detention basins to collect runoff from a 100-year storm event will be located within the project site in accordance with San Bernadino County requirements.

- The batteries, electrolyte storage tanks, and critical electrical equipment would also be mounted on concrete pads and placed above the 100-year water surface elevation or have secondary containment.

Biological Resources

- A qualified biologist shall complete a nesting bird survey two weeks prior to construction during the nesting season.

- The Project contractor would implement standard best management practices to minimize the introduction of invasive species.

Cultural Resources

- If human remains are found, the county coroner shall be immediately notified of the discovery.

- If previously unidentified paleontological resources are unearthed during construction activities, construction work in the immediate area of the find shall be halted and directed away from the discovery until a qualified Paleontologist assesses the significance of the resource.

- At the recommendation of interested Tribes, archaeological and Tribal monitors shall be present at the discretion of the tribes for all ground-disturbing activities that occur within the proposed project area.

5.0 Coordination, Consultation and Correspondence

5.1. Tribal Consultation

Consultation letters were sent to the following tribes who may have an interest in the Project as a part of the Section 106 consultation process described in Section 3.7:

- Kern Valley Indian Community
- Morongo Band of Mission Indians;
- Quechan Tribe of the Fort Yuma Reservation
- San Fernando Band of Mission Indians
- San Manuel Band of Mission Indians (Yuhaaviatam of San Manuel Nation)

- Serrano Nation of Mission Indians
- Twenty-Nine Palms Band of Mission Indians

These tribes are identified as having an ancestral interest in the area. The Yuhaaviatam of San Manuel Nation (formerly known as the San Manuel Band of Mission Indians) and the Kern Valley Indian Community responded, each requesting that certain mitigation be incorporated into the Environmental Assessment. No other tribe responded within the comment period.

5.2. Agency Consultation

The applicant has been coordinating with the County of San Bernadino on the project since 2022. The County is the lead agency for an environmental review being prepared under the California Environmental Quality Act (CEQA). The CEQA analysis is being prepared in connection with the general plan amendment and conditional use permit being sought by the applicant for the Proposed Action as described in Section 3.1. The County contacted the following agencies about the Proposed Action in December 2022.

- Surrounding Property Owners within 700 feet of the Project Site
- Supervisor District 1, San Bernardino County Board of Supervisors
- Jonathan Weldy, San Bernardino County Planning Commissioner
- San Bernardino County, EDA (Renewable Energy Projects): Soua Vang
- U.S. Military Bases located in San Bernardino County
- San Bernardino County Geothermal Projects
- Tribal Notification pursuant to AB 52, which governs California's tribal notification procedures

Responses from the agencies and property owners' comments have been incorporated to the EA. A copy of the notice sent is provided in Appendix J.

The consultant for the biological survey, Dudek, held a meeting with the USFWS and the CDFW on August 19, 2022. The purpose of the meeting was to discuss the field survey conducted and potential impacts of the project. A copy of the meeting notes is provided in Appendix J.

The applicant also consulted with the USACE Los Angeles District to obtain a Jurisdictional Determination (JD) for the Project Site as described in Section 3.3.1. The applicant obtained a JD from the USACE in March 2023 (see Appendix D for relevant correspondence).

5.3. Public Involvement

Public involvement is an integral part of the NEPA process. A local newspaper advertisement announcing the availability of the EA was published in the Victorville Daily Press in December 2024. An electronic copy of the EA was made available for public review at *https://www.rd.usda.gov/resources/environmental-studies/assessments* and a hardcopy of the EA was made available at the Hinkley Community & Senior Center, 35997 Mountain View Road, Hinkley, CA 92347. Comments were accepted by email at *ruspubliccomments@usda.gov*. The comment period for the EA was 14 days from publication of the notice of availability.

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7.0 Preparers

The following have contributed to the preparation of this Environmental Assessment and/or the accompanying reports and studies, as follows:

Alan Hachey, USDA, Rural Utilities Service, Environmental and Historic Preservation Division

Jeffrey Larson, USDA, Rural Utilities Service, Environmental and Historic Preservation Division

Keith McDaniels, Juniper Energy LLC

David Wickens, Dudek

Danielle Mullen, Dudek

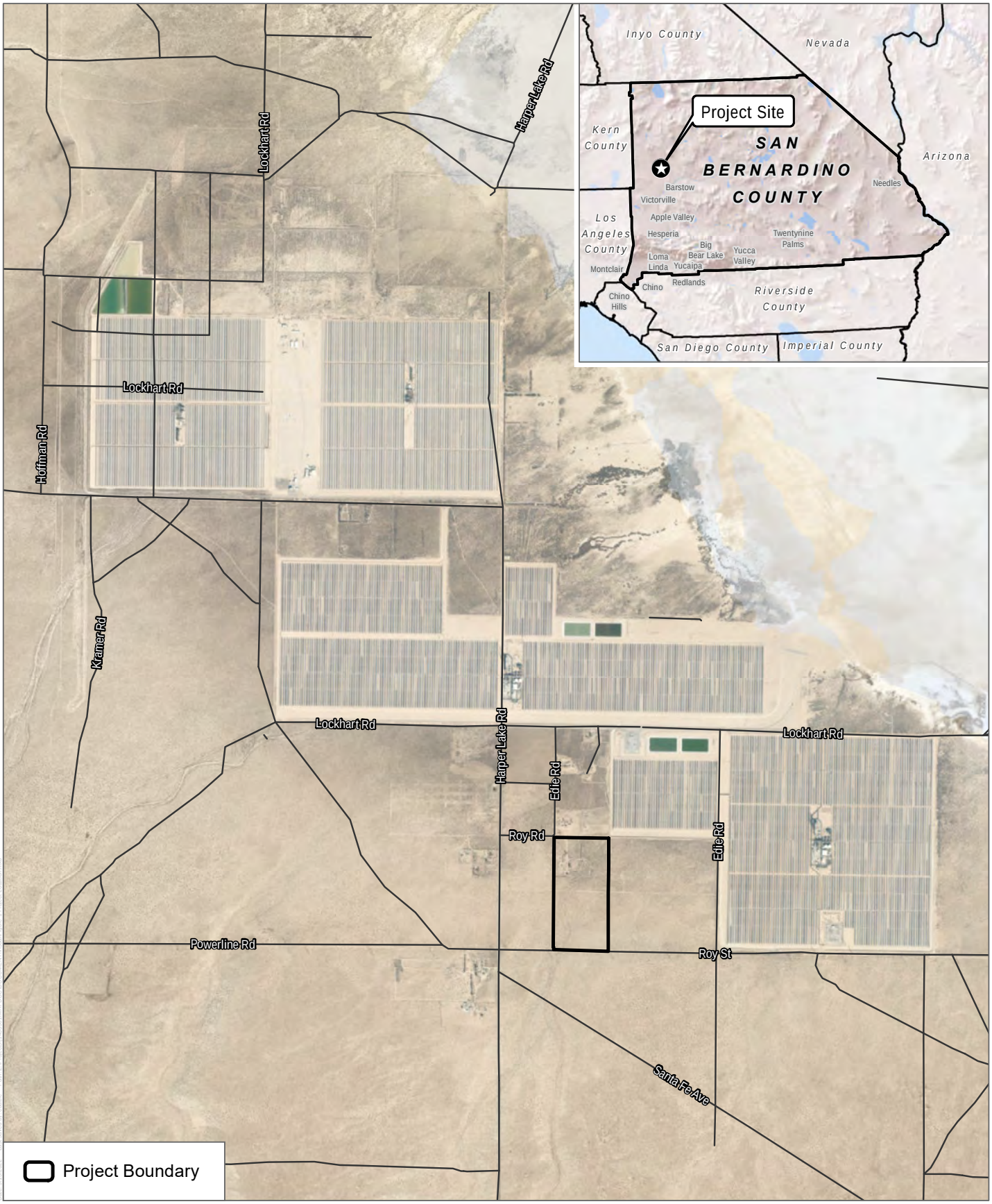
Josh Saunders, Dudek

Jeffrey Szabo, Partner Assessment Corporation

James A. Westbrook, BlueScape Environmental

APPENDIX A

Figures



SOURCE: ESRI Imagery 2022, County of San Bernardino 2021

DUDEK

0 1,550 3,100 Feet

FIGURE **1**

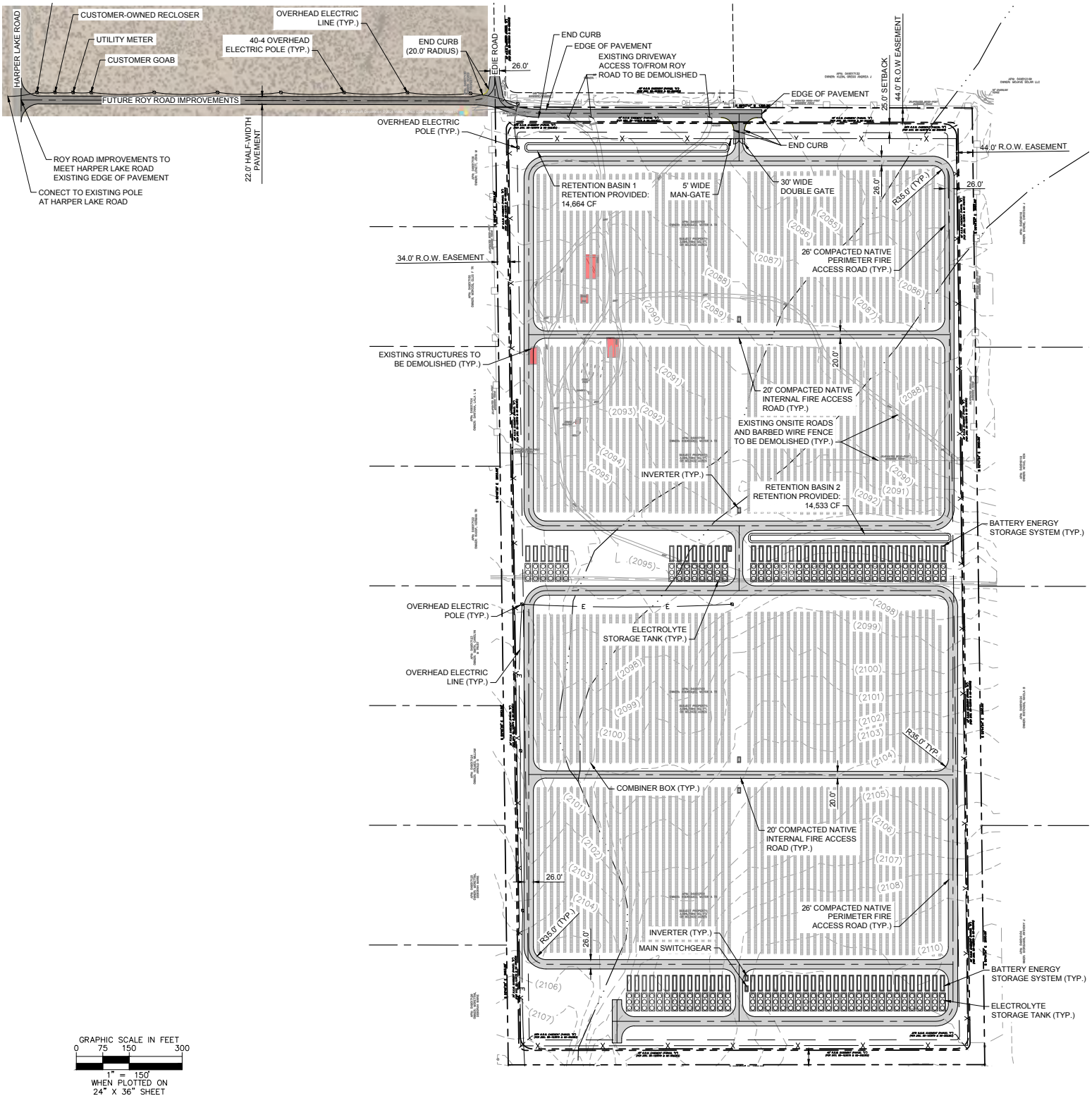
Project Location

Lockhart Solar Project

Source: Apple Maps v.3.0 (2012-22)

FIGURE 2
Vicinity Map
Lockhart Solar Project

Juniper Energy



Source: Kimley-Horn

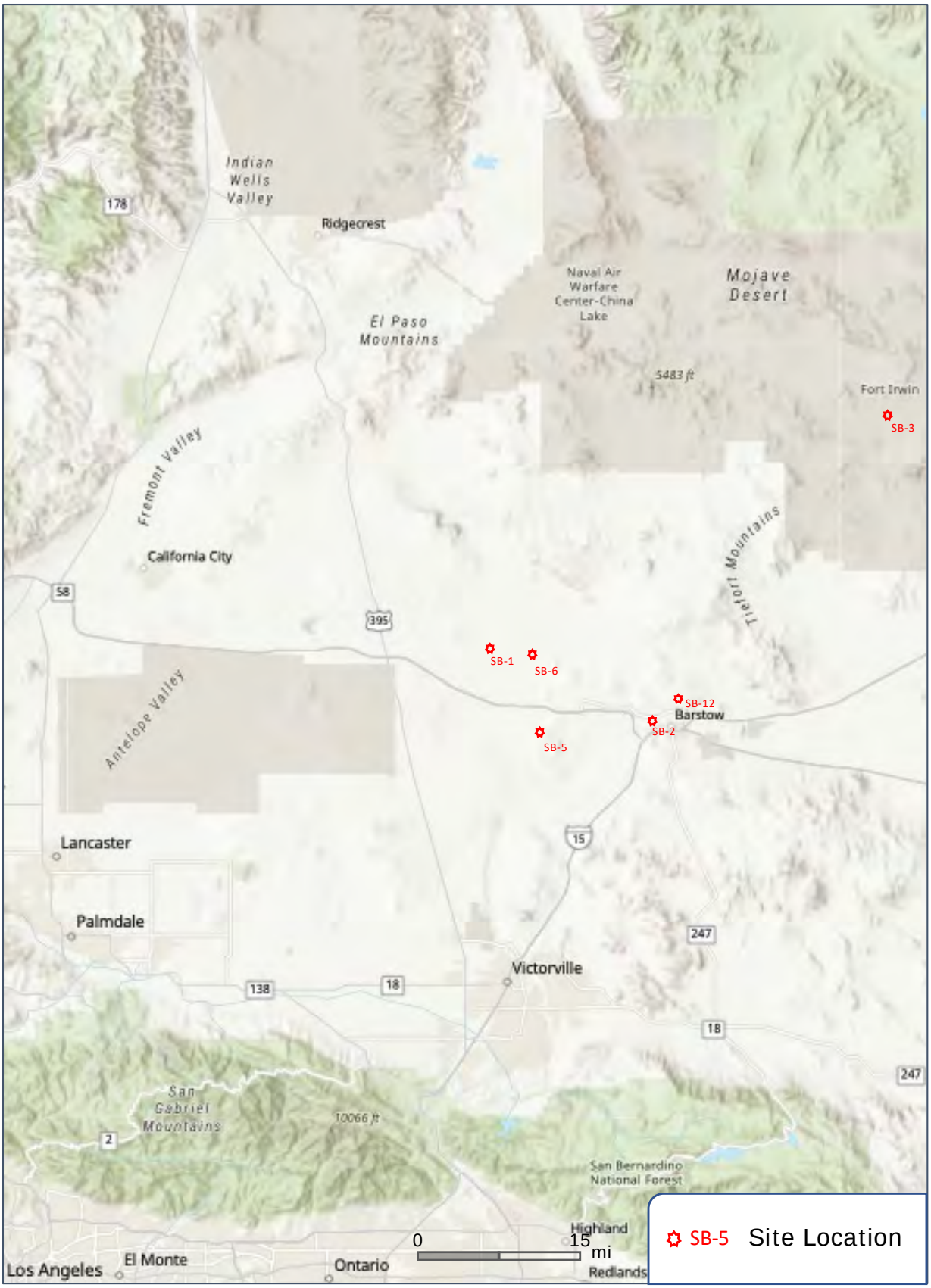
FIGURE 3
Site Plan
Lockhart Solar Project

Juniper Energy

Source: Partners Engineering & Science, Inc.

FIGURE 4
Site Plan
Lockhart Solar Project

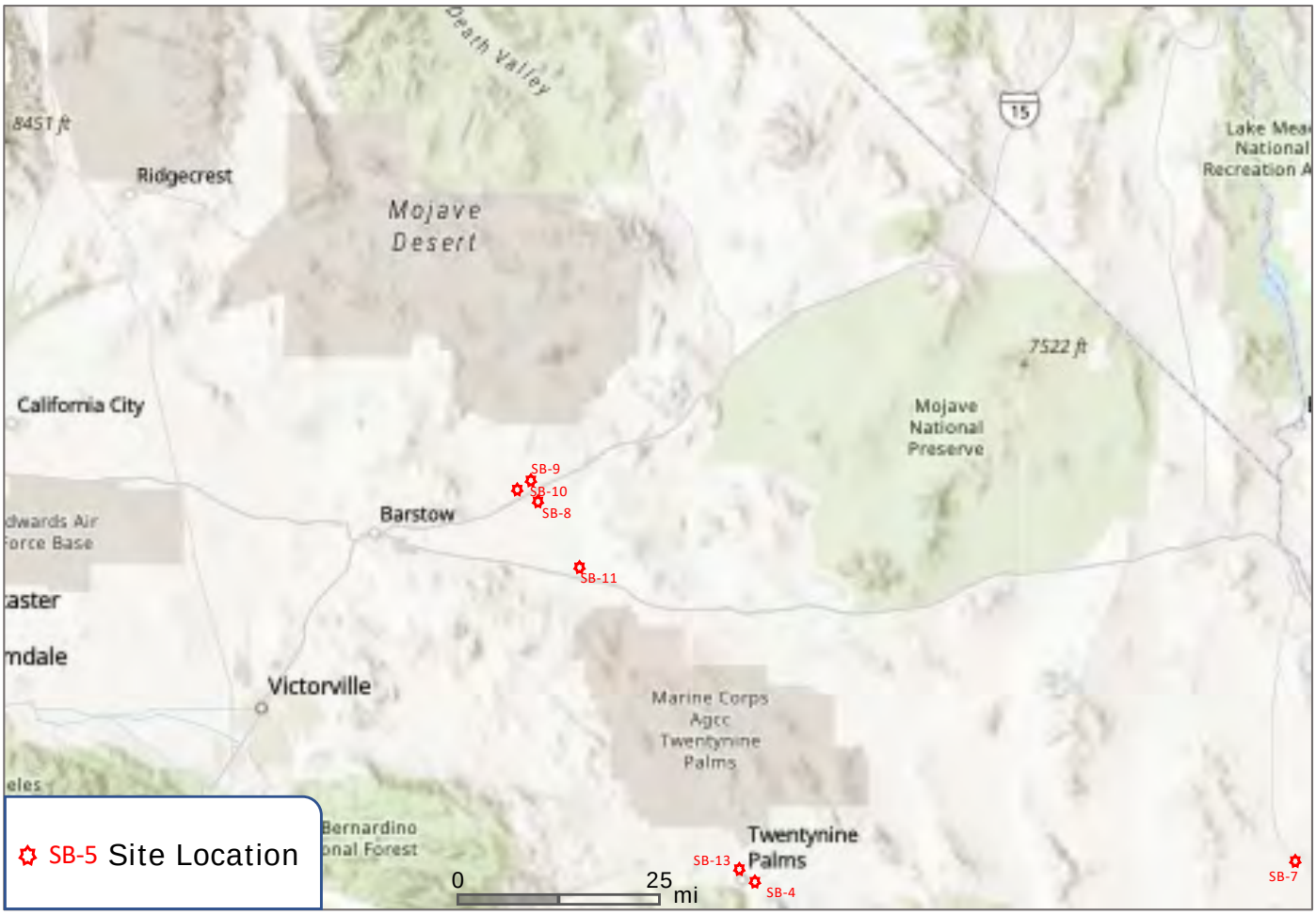
Juniper Energy



Source: California State Parks, Esri 2022

FIGURE 5
Sites Subject to Further Evaluation
Lockhart Solar Project

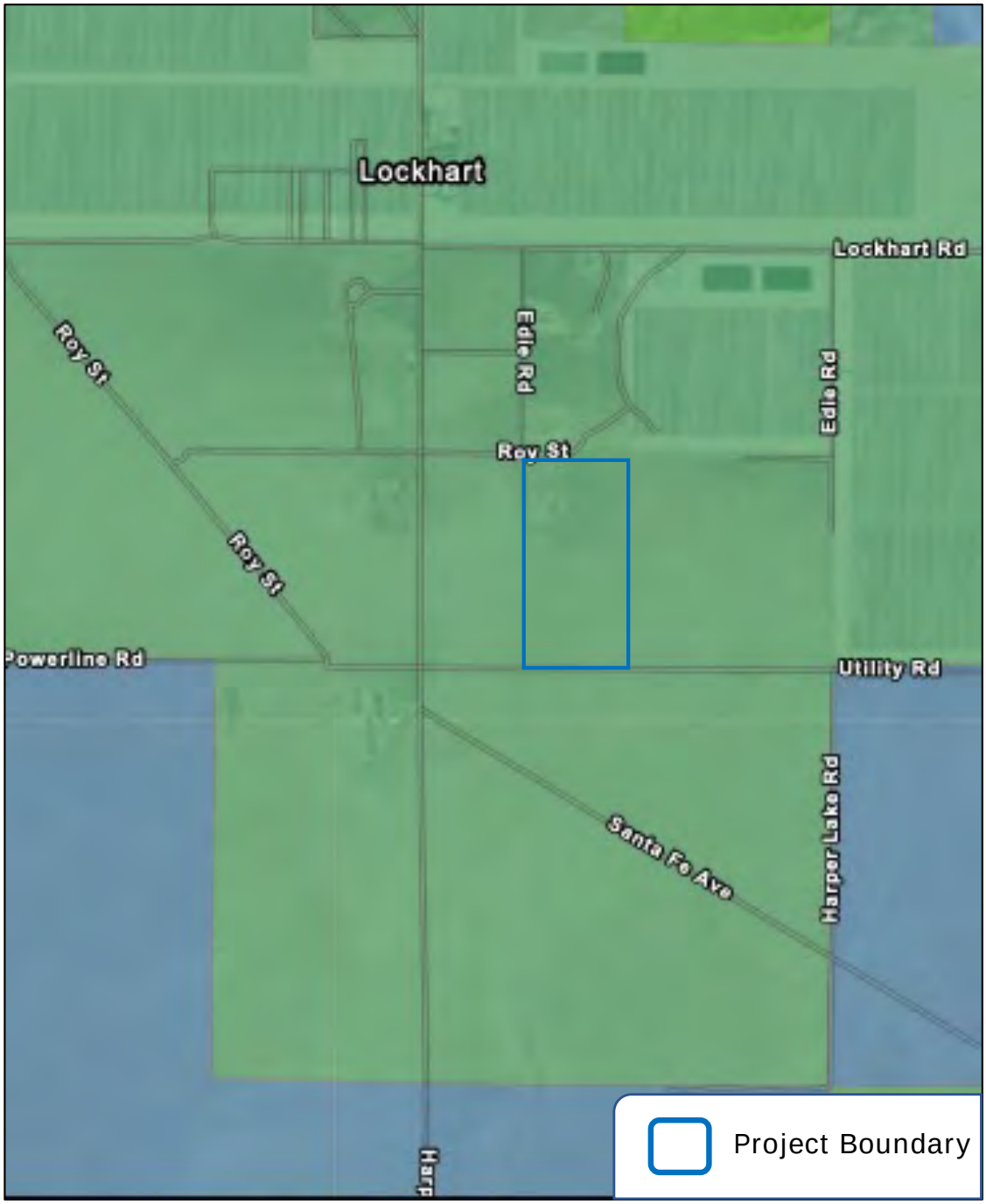
Juniper Energy



Source: California State Parks, Esri 2022

FIGURE 6
Sites Subject to Further Evaluation (Expanded View)
Lockhart Solar Project

Juniper Energy



Source: California State Parks, Esri 2022

Zoning Codes
San Bernardino County

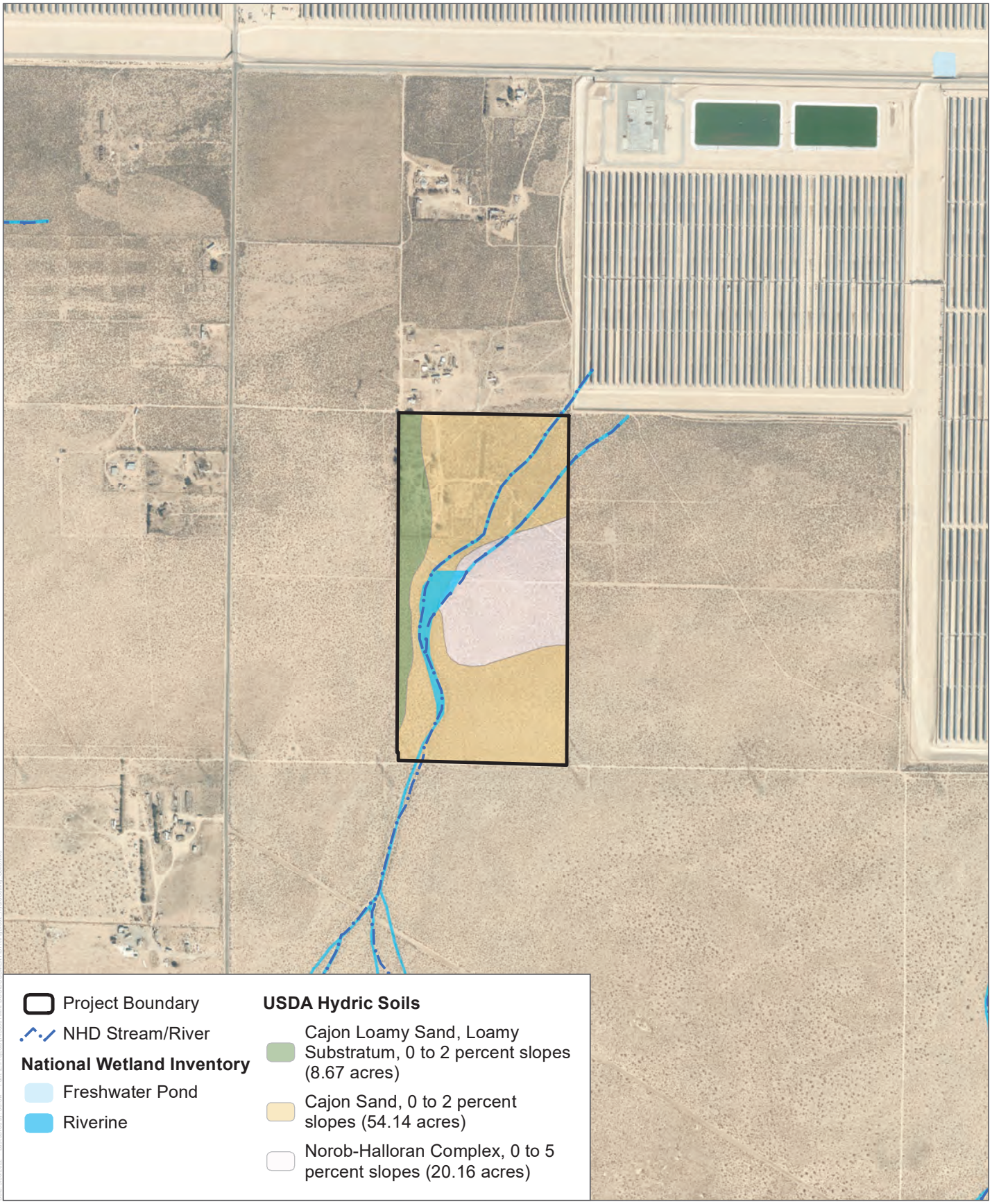
RL
RL-40
RC

0 0.25 0.5 1 mi
0 0.4 0.8 1.6 km

FIGURE 7
Zoning Map

Juniper Energy

Lockhart Solar Project



SOURCE: ESRI Imagery 2022, County of San Bernardino 2021, USGS 2021, USFWS 2021, USDA 2008

DUDEK

0 500 1,000 Feet

Figure 7

Soils and Hydrology

Biological Technical Report for the Juniper Energy Project at 315 Roy Street, Hinkley, San Bernardino County

SOURCE: ESRI Imagery 2022, County of San Bernardino 2021

DUDEK

0 250 500 Feet

Figure 8

Existing Conditions - Key Map

Visual Impact Analysis - Lockhart Solar Project

Photo A

Photo B

Photo C

Photo D

Figure 9

Existing Conditions - Project Site

Lockhart Solar Project

DUDEK

Photo E

Photo F

Photo G

Photo H

Figure 10

Existing Conditions - Surrounding Area

Lockhart Solar Project

DUDEK

APPENDIX B

NRCS AD-1006 Form

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*		Date Of Land Evaluation Request 3/1/22	
Name of Project Lockhart Solar		Federal Agency Involved Rural Utilities Service	
Proposed Land Use Construct solar farm + storage		County and State San Bernardino County, California	
PART II *(To be completed by NRCS)*		Date Request Received By NRCS 3/1/2022	Person Completing Form: P. Fahnestock
Does the site contain Prime, Unique, Statewide or Local Important Farmland? *(If no, the FPPA does not apply - do not complete additional parts of this form)*	YES ☑ NO ☐	Acres Irrigated 22,205	Average Farm Size 64 acres
Major Crop(s) Milk, Cattle & Calves (Meat), and E	Farmable Land In Govt. Jurisdiction Acres: 906,721% 7	Amount of Farmland As Defined in FPPA Acres: 686,88% 5.3	
Name of Land Evaluation System Used	Name of State or Local Site Assessment System Storie	Date Land Evaluation Returned by NRCS March 4, 2022	

PART III *(To be completed by Federal Agency)*	Alternative Site Rating Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly	40			
B. Total Acres To Be Converted Indirectly	0			
C. Total Acres In Site	73.8			
PART IV *(To be completed by NRCS)* Land Evaluation Information				
A. Total Acres Prime And Unique Farmland	0			
B. Total Acres Statewide Important or Local Important Farmland	49			
C. Percentage Of Farmland in County Or Local Govt. Unit To Be Converted	0.0005			
D. Percentage Of Farmland in Govt. Jurisdiction With Same Or Higher Relative Value	38			
PART V (To be completed by NRCS) Land Evaluation Criterion Relative Value of Farmland To Be Converted (Scale of 0 to 100 Points)	50			

PART VI *(To be completed by Federal Agency)* Site Assessment Criteria *(Criteria are explained in 7 CFR 658.5 b. For Corridor project use form NRCS-CPA-106)*	**Maximum Points**	Site A	Site B	Site C	Site D
1. Area In Non-urban Use	(15)	15			
2. Perimeter In Non-urban Use	(10)	10			
3. Percent Of Site Being Farmed	(20)	0			
4. Protection Provided By State and Local Government	(20)	0			
5. Distance From Urban Built-up Area	(15)	15			
6. Distance To Urban Support Services	(15)	0			
7. Size Of Present Farm Unit Compared To Average	(10)	5			
8. Creation Of Non-farmable Farmland	(10)	0			
9. Availability Of Farm Support Services	(5)	5			
10. On-Farm Investments	(20)	0			
11. Effects Of Conversion On Farm Support Services	(10)	0			
12. Compatibility With Existing Agricultural Use	(10)	0			
TOTAL SITE ASSESSMENT POINTS	160	0	0	0	0
PART VII ***(To be completed by Federal Agency)***					
Relative Value Of Farmland *(From Part V)*	100	50	0	0	0
Total Site Assessment *(From Part VI above or local site assessment)*	160	50	0	0	0
TOTAL POINTS ***(Total of above 2 lines)***	260	100	0	0	0

Site Selected:	Date Of Selection	Was A Local Site Assessment Used? YES ☐ NO ☐

Reason For Selection:

Name of Federal agency representative completing this form:	Date:

(See Instructions on reverse side) **Form AD-1006 (03-02)**

STEPS IN THE PROCESSING THE FARMLAND AND CONVERSION IMPACT RATING FORM

Step 1 - Federal agencies (or Federally funded projects) involved in proposed projects that may convert farmland, as defined in the Farmland Protection Policy Act (FPPA) to nonagricultural uses, will initially complete Parts I and III of the form. For Corridor type projects, the Federal agency shall use form NRCS-CPA-106 in place of form AD-1006. The Land Evaluation and Site Assessment (LESA) process may also be accessed by visiting the FPPA website, http://fppa.nrcs.usda.gov/lesa/.

Step 2 - Originator (Federal Agency) will send one original copy of the form together with appropriate scaled maps indicating location(s)of project site(s), to the Natural Resources Conservation Service (NRCS) local Field Office or USDA Service Center and retain a copy for their files. (NRCS has offices in most counties in the U.S. The USDA Office Information Locator may be found at http://offices.usda.gov/scripts/ndISAPI.dll/oip_public/USA_map**,** or the offices can usually be found in the Phone Book under U.S. Government, Department of Agriculture. A list of field offices is available from the NRCS State Conservationist and State Office in each State.)

Step 3 - NRCS will, within 10 working days after receipt of the completed form, make a determination as to whether the site(s) of the proposed project contains prime, unique, statewide or local important farmland. (When a site visit or land evaluation system design is needed, NRCS will respond within 30 working days.

Step 4 - For sites where farmland covered by the FPPA will be converted by the proposed project, NRCS will complete Parts II, IV and V of the form.

Step 5 - NRCS will return the original copy of the form to the Federal agency involved in the project, and retain a file copy for NRCS records.

Step 6 - The Federal agency involved in the proposed project will complete Parts VI and VII of the form and return the form with the final selected site to the servicing NRCS office.

Step 7 - The Federal agency providing financial or technical assistance to the proposed project will make a determination as to whether the proposed conversion is consistent with the FPPA.

INSTRUCTIONS FOR COMPLETING THE FARMLAND CONVERSION IMPACT RATING FORM

(For Federal Agency)

Part I: When completing the "County and State" questions, list all the local governments that are responsible for local land use controls where site(s) are to be evaluated.

Part III: When completing item B (Total Acres To Be Converted Indirectly), include the following:

1. Acres not being directly converted but that would no longer be capable of being farmed after the conversion, because the conversion would restrict access to them or other major change in the ability to use the land for agriculture.
2. Acres planned to receive services from an infrastructure project as indicated in the project justification (e.g. highways, utilities planned build out capacity) that will cause a direct conversion.

Part VI: Do not complete Part VI using the standard format if a State or Local site assessment is used. With local and NRCS assistance, use the local Land Evaluation and Site Assessment (LESA).

1. Assign the maximum points for each site assessment criterion as shown in § 658.5(b) of CFR. In cases of corridor-type project such as transportation, power line and flood control, criteria #5 and #6 will not apply and will, be weighted zero, however, criterion #8 will be weighed a maximum of 25 points and criterion #11 a maximum of 25 points.

2. Federal agencies may assign relative weights among the 12 site assessment criteria other than those shown on the FPPA rule after submitting individual agency FPPA policy for review and comment to NRCS. In all cases where other weights are assigned, relative adjustments must be made to maintain the maximum total points at 160. For project sites where the total points equal or exceed 160, consider alternative actions, as appropriate, that could reduce adverse impacts (e.g. Alternative Sites, Modifications or Mitigation).

Part VII: In computing the "Total Site Assessment Points" where a State or local site assessment is used and the total maximum number of points is other than 160, convert the site assessment points to a base of 160.
Example: if the Site Assessment maximum is 200 points, and the alternative Site "A" is rated 180 points:

$$\frac{\text{Total points assigned Site A}}{\text{Maximum points possible}} = \frac{180}{200} \text{ X } 160 = 144 \text{ points for Site A}$$

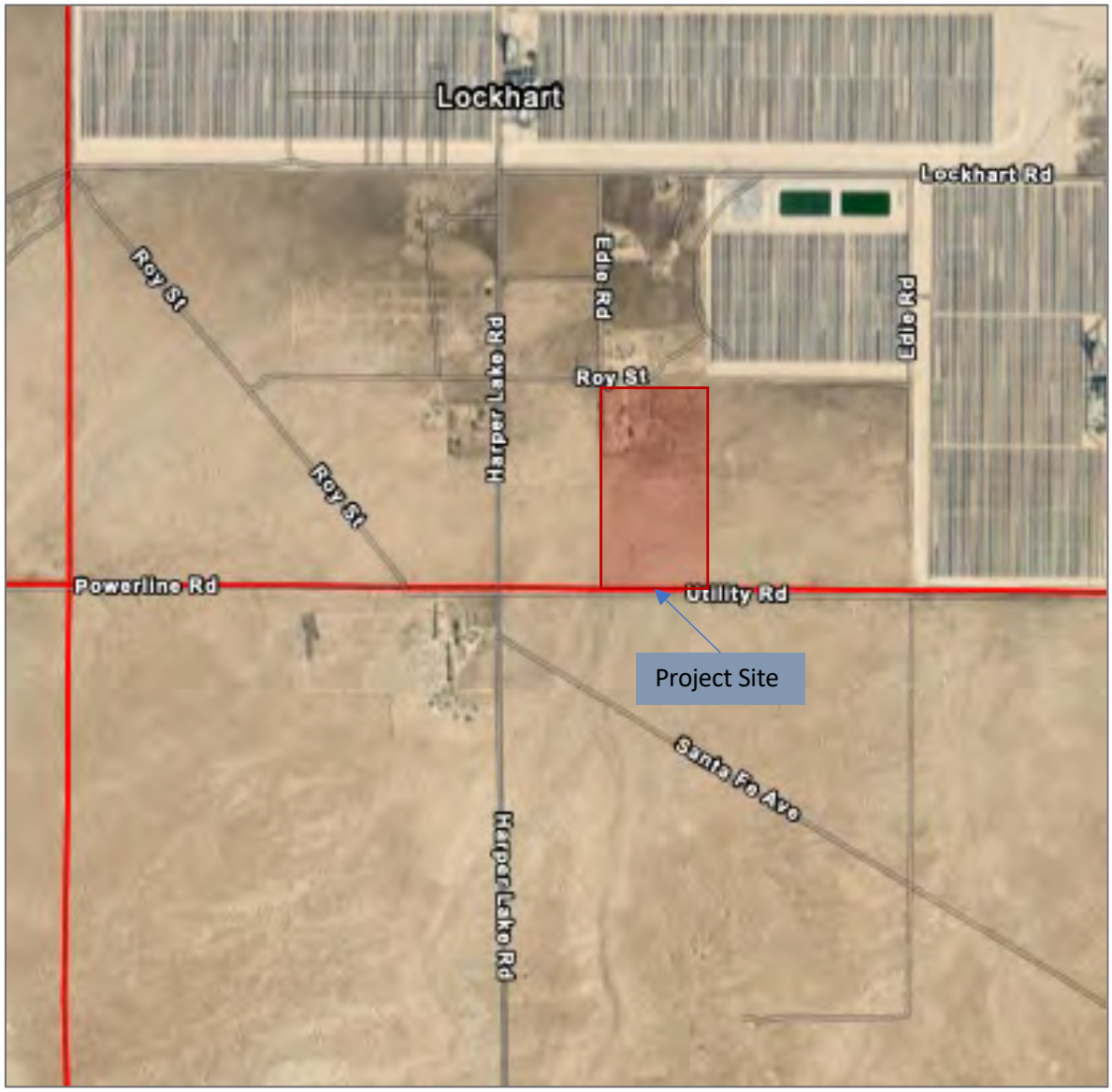
For assistance in completing this form or FPPA process, contact the local NRCS Field Office or USDA Service Center.

NRCS employees, consult the FPPA Manual and/or policy for additional instructions to complete the AD-1006 form.

Figure 1-1, Regional Map

Source: California State Parks, Esri 2022

Figure 1-2, Vicinity Map



Source: San Bernardino County, Maxar / Compiled by the Bureau of Land Management (BLM), National Operations Center (NOC), 2022

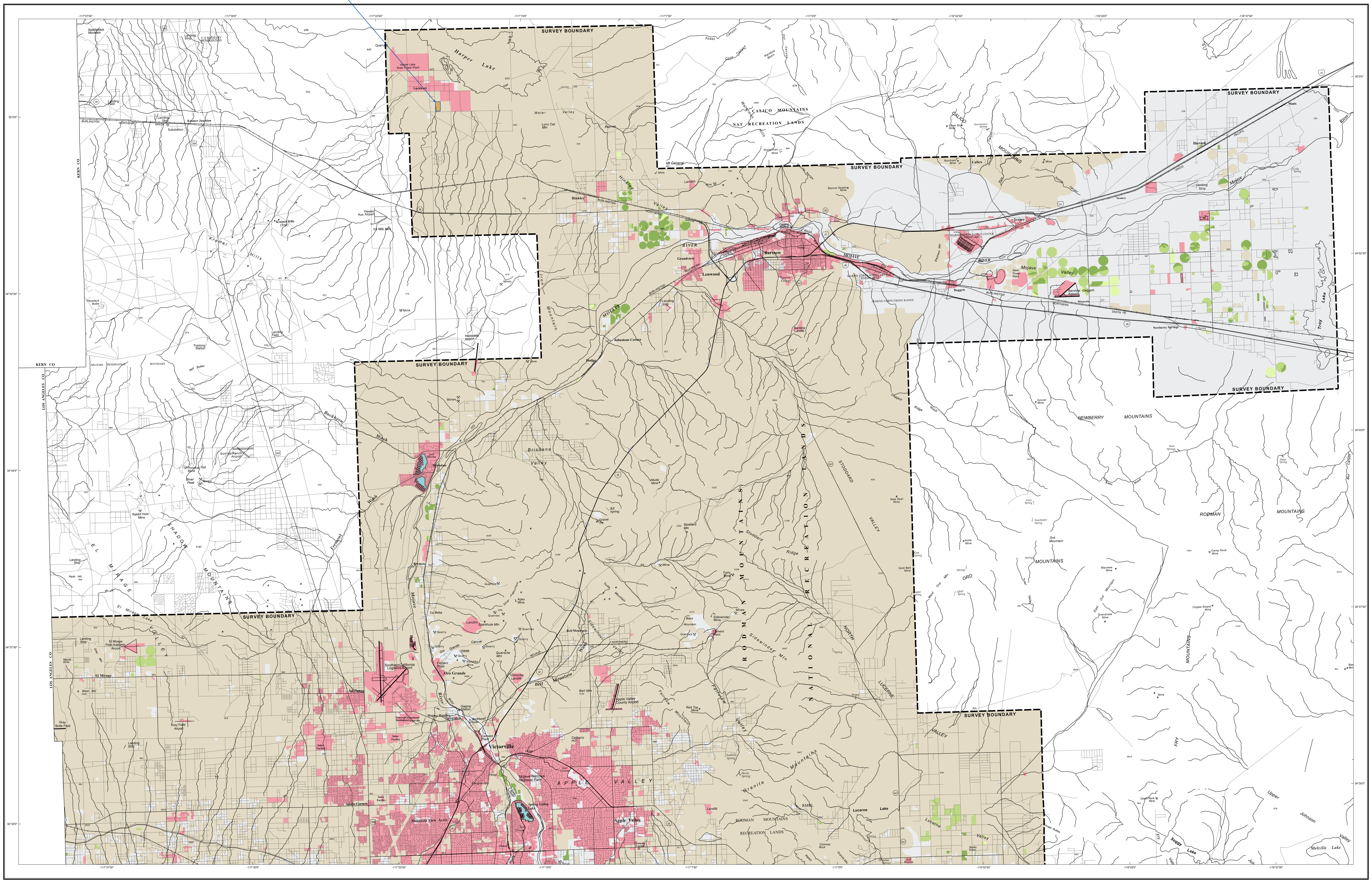
Figure 1-3, Aerial View of Project Site

Source: San Bernardino County, Maxar / Compiled by the Bureau of Land Management (BLM), National Operations Center (NOC), 2022

STATE OF CALIFORNIA
Gavin Newsom, *Governor*
THE NATURAL RESOURCES AGENCY
Wade Crowfoot, *Secretary*
DEPARTMENT OF CONSERVATION
David Shabazian, *Director*

SAN BERNARDINO COUNTY IMPORTANT FARMLAND 2018
SHEET 1 OF 2

CALIFORNIA DEPARTMENT OF CONSERVATION
DIVISION OF LAND RESOURCE PROTECTION
FARMLAND MAPPING AND MONITORING PROGRAM



PRIME FARMLAND

PRIME FARMLAND HAS THE BEST COMBINATION OF PHYSICAL AND CHEMICAL FEATURES ABLE TO SUSTAIN LONG-TERM AGRICULTURAL PRODUCTION. THIS LAND HAS THE SOIL QUALITY, GROWING SEASON, AND MOISTURE SUPPLY NEEDED TO PRODUCE SUSTAINED HIGH YIELDS. LAND MUST HAVE BEEN USED FOR IRRIGATED AGRICULTURAL PRODUCTION AT SOME TIME DURING THE FOUR YEARS PRIOR TO THE MAPPING DATE.

FARMLAND OF STATEWIDE IMPORTANCE

FARMLAND OF STATEWIDE IMPORTANCE IS SIMILAR TO PRIME FARMLAND BUT WITH MINOR SHORTCOMINGS, SUCH AS GREATER SLOPES OR LESS ABILITY TO STORE SOIL MOISTURE. LAND MUST HAVE BEEN USED FOR IRRIGATED AGRICULTURAL PRODUCTION AT SOME TIME DURING THE FOUR YEARS PRIOR TO THE MAPPING DATE.

UNIQUE FARMLAND

UNIQUE FARMLAND CONSISTS OF LESSER QUALITY SOILS USED FOR THE PRODUCTION OF THE STATE'S LEADING AGRICULTURAL CROPS. THIS LAND IS USUALLY IRRIGATED, BUT MAY INCLUDE NONIRRIGATED ORCHARDS OR VINEYARDS AS FOUND IN SOME CLIMATIC ZONES IN CALIFORNIA. LAND MUST HAVE BEEN CROPPED AT SOME TIME DURING THE FOUR YEARS PRIOR TO THE MAPPING DATE.

FARMLAND OF LOCAL IMPORTANCE

FARMLANDS WHICH INCLUDE AREAS OF SOILS THAT MEET ALL THE CHARACTERISTICS OF PRIME, STATEWIDE, OR UNIQUE AND WHICH ARE NOT IRRIGATED.

FARMLANDS NOT COVERED BY ABOVE CATEGORIES BUT ARE OF HIGH ECONOMIC IMPORTANCE TO THE COMMUNITY. THESE FARMLANDS INCLUDE DRYLAND GRAINS OF WHEAT, BARLEY, OATS, AND DRYLAND PASTURE.

GRAZING LAND

GRAZING LAND IS LAND ON WHICH THE EXISTING VEGETATION IS SUITED TO THE GRAZING OF LIVESTOCK.

URBAN AND BUILT-UP LAND

URBAN AND BUILT-UP LAND IS OCCUPIED BY STRUCTURES WITH A BUILDING DENSITY OF AT LEAST 1 UNIT TO 1.5 ACRES, OR APPROXIMATELY 6 STRUCTURES TO A 10-ACRE PARCEL. COMMON EXAMPLES INCLUDE RESIDENTIAL, INDUSTRIAL, COMMERCIAL, INSTITUTIONAL FACILITIES, CEMETERIES, AIRPORTS, GOLF COURSES, SANITARY LANDFILLS, SEWAGE TREATMENT, AND WATER CONTROL STRUCTURES.

OTHER LAND

OTHER LAND IS LAND NOT INCLUDED IN ANY OTHER MAPPING CATEGORY. COMMON EXAMPLES INCLUDE LOW DENSITY RURAL DEVELOPMENTS, BRUSH, TIMBER, WETLAND, AND RIPARIAN AREAS NOT SUITABLE FOR LIVESTOCK GRAZING, CONFINED LIVESTOCK, POULTRY, OR AQUACULTURE FACILITIES, STRIP MINES, BORROW PITS, AND WATER BODIES SMALLER THAN 40 ACRES. VACANT AND NONAGRICULTURAL LAND SURROUNDED ON ALL SIDES BY URBAN DEVELOPMENT AND GREATER THAN 40 ACRES IS MAPPED AS OTHER LAND.

WATER

PERENNIAL WATER BODIES WITH AN EXTENT OF AT LEAST 40 ACRES.

SCALE: 1:100,000
1 inch represents approximately 1.6 miles

The minimum land use mapping unit is 10 acres, except Water, which is mapped to a minimum of 40 acres.

1 square mile = 640 acres.

SHEET 1 OF 2

Total County Area - 12,867,789 acres
Mapped Area - 1,449,545 acres

Important Farmland Maps are compiled by the Farmland Mapping and Monitoring Program (FMMP) pursuant to Section 65570 of the California Government Code. To create the maps, FMMP combines current land use information with U.S. Department of Agriculture-Natural Resources Conservation Service (NRCS) soil survey data. Soil units qualifying for Prime Farmland and Farmland of Statewide Importance are determined by the NRCS. Changes to soil profiles subsequent to publication of NRCS Gridded Soil Survey Geographic (gSSURGO) Database for California, September 25, 2018 are not reflected on this map. This map was developed using NRCS gridded digital soil data (gSSURGO) and may contain individual soil units less than one acre.

Land use status is determined using current and historic aerial imagery, supplemental GIS data, and field verification. Imagery sources may include public domain datasets, web-based information, and commercially purchased data, depending on data availability. Supplemental data on land management status is obtained from federal, state, and local governments. Map reviewers at the local level contribute valuable information with their comments and suggestions.

County boundaries for the 2018 Important Farmland Series are from the California Department of Forestry and Fire Protection's Fire and Resource Assessment Program (FRAP) 2018 version of California Counties GIS data.

Cultural base information for the Important Farmland Maps was derived from public domain data sets, based upon design of the U.S. Geological Survey, with updates generated by digitizing over current imagery.

This map should be used within the limits of its purpose - as a current inventory of agricultural land resources. This map does not necessarily reflect general plan or zoning designations, city limit lines, changing economic or market conditions, or other factors which may be taken into consideration when land use policies are determined. This map is not designed for parcel-specific planning purposes due to its scale and the ten-acre minimum land use mapping unit. Classification of important farmland and urban areas on this map is based on best available data. The information has been delineated as accurately as possible at 1:24,000-scale, but no claim to meet 1:24,000 National Map Accuracy Standards is made due to variations in the quality of source data.

The Department of Conservation makes no warranties as to the suitability of this product for any particular purpose.

Additional data is available at www.conservation.ca.gov/dlrp/fmmp, including detail on the program, statistics, and GIS data for download. Contact the:

Farmland Mapping and Monitoring Program
801 K Street, MS 14-15
Sacramento, CA 95814
Phone: (916) 324-0850
e-mail: fmmp@conservation.ca.gov

Map published November 2021.

APPENDIX C

Floodplain Information

Eight-Step Decision Document

Preliminary Drainage Report, Lockhart Solar (August 2024)

Flood Insurance Rate Map (FIRM# 06071C3250H and 06071C3875H)

NRCS Flooding Frequency Class Report

Eight-Step Decision Document
Executive Order 11988: Floodplain Management

Lockhart and Harper Solar Projects
Hinkley, San Bernardino County, California

INTRODUCTION

Executive Order (EO) 11988 Floodplain Management requires federal agencies "…to avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative." EO 11988, in Section 2(a), outlines an eight-step decision-making process for floodplain impacts. The Rural Utilities Service (RUS) follows this eight-step decision-making process for all actions involving new construction or substantial improvement in the floodplain.

Juniper Energy (applicant) seeks RUS funding to construct, own, and operate a solar photovoltaic (PV) facility in San Bernadino County, California. The Project Site is located in the Mohave Desert area of San Bernardino County, California approximately nine miles northwest of the City of Hinkley. The approximate geographic coordinates of the Project Site are Latitude, Longitude 34.999732, -117.323827.

The Proposed Action would design and construct two 4 megawatts alternating current (MWac) solar PV power generating facilities with battery storage capabilities on approximately 73 acres. Arrays of solar modules approximately three to nine feet in height would be arranged in rows spanning on a north-south axis, will cover almost the entire Project Site with a few exceptions. Solar modules mounted to metal beams, which can pivot east to west, would sit atop pile driven supports posts. The posts supporting the solar arrays and approximately four equipment pads would create less than one acre of impervious surface. Figure 1 provides a project concept of the solar facility and Battery Energy Storage System (BESS).

Power from the modules would connect to the battery system, switchgear and other equipment via electrical wiring laid in 30-inch wide by 42-inch-deep trenches. Pads would be constructed to hold switchgear, inverters, transformers, and the battery system. An interior perimeter all-weather unpaved road will provide access to the system. Minimal grading would be required to construct the equipment and storage pads and to lay the access road. Power generated by the PV systems would interconnect to the Southern California Edison controlled grid via 33 kilovolt (kV) distribution lines running for approximately 0.25 miles from Harper Lake Road to the Project Site. A water detention basin to collect runoff from a 100-year storm event would be located along the northern border. Security fencing would be installed along the perimeter of the Project Site.

To ensure the Proposed Action is consistent with EO 11988, development in the floodplain is evaluated below using the eight-step decision-making process.

STEP 1 – DETERMINE WHETHER THE PROPOSED ACTION IS LOCATED IN A FLOODPLAIN

FEMA Flood Insurance Rate Maps (FIRM) of the area indicate that the Project Site is located in an Area of Undetermined Flood Hazard (Zone D). The Hazard Overlays Map (Ridgecrest/Cuddeback Lake region) of the San Bernardino County General Plan 2020 indicates that the Project Site is not located in a 100- year flood hazard area. The Hazards Overlay Map also shows that the Project Site is not in an area subject to flooding because of dam failure. An NRCS Web Soil Survey Flooding Frequency Class Report was also created to evaluate if the Project Site is located in a floodplain. The Flooding Frequency Class Report indicates that the Project Site is located in an area where "flooding is not probable. The chance of

Figure 1: Project Concept

flooding is nearly 0 percent in any year. Flooding occurs less than once in 500 years." See Appendix C of the EA for copies of the maps and NRCS report.

To better understand the risk of flooding in the area and on the Project Site, a preliminary drainage report was prepared in August 2024 (see Appendix C of the EA). The drainage report determined that the project area contains areas of shallow flooding (three-foot depths or less) during a 100-year flood event. The Project Site could potentially receive peak discharge during a 100-year storm event of approximately 41.34 cubic feet per second (cfs). The modeled inundation depths and water velocities during a 100-year flood event on the Project Site are shown in Figure 2 and 3. (see Appendix C of the EA).

STEP 2 – PRELIMINARY PUBLIC NOTICE

The publication of the Notice of Availability (NOA) for the EA will serve as the Preliminary Public Notice of RUS intent to carry out an action in a floodplain and involve the affected and interested public in the decision-making process. Interested parties will be invited to submit comments to RUS during the 14-day public comment period following publication of the NOA.

STEP 3 – SEARCH FOR PRACTICABLE ALTERNATIVES

Action Alternative

Proper siting of a solar generation system requires substantial evaluation and due diligence. Appropriate evaluation and analysis of factors influential in siting a large facility can reduce costs, eliminate delays, minimize potential impacts and opposition, and streamline the regulatory process. Conversely, improper siting can have the opposite effect.

Among the constraints of siting a solar PV generation facility is proximity to suitable electrical transmission lines. While the cost to construct miles of transmission lines may represent a smaller percentage of the total construction cost for a large generation facility (hundreds or more MWs), the same infrastructure represents a larger percent of the cost for a relatively small utility scale generating facility such as the Proposed Action. Another constraint of siting, especially during the construction phase of the Proposed Action, is the need for suitable surface transportation infrastructure (roads/highways) the presence of which minimizes the need for access road construction. In addition to being costly, infrastructure construction also represents additional development risks to a project. Construction of this infrastructure may involve negotiating property acquisitions with multiple owners, which can be a long and expensive process. Therefore, proximity of the site to transmission and transportation infrastructure is important, as well as the avoidance of negative social, and environmental impacts.

A suitable site will also have sufficient developable land to meet the objectives for the proposed development. Several considerations can affect how much of any given site may be developed cost effectively. The property should have a relatively level topography to minimize grading. Single axis tracking systems like the one proposed for the Proposed Action have limited slope tolerances. In addition, sites should allow for a clear southern facing exposure to maximize solar coverage throughout the day. Shading from nearby hills, trees or structures must be evaluated too, as they can adversely limit production levels and undermine a potential site's economic viability.

Juniper Energy engaged in preliminary feasibility studies for over 180 sites. Many sites were immediately rejected due to costs, multiple zoning issues or geography. Approximately 13 sites, having passed certain initial screens were evaluated in-depth. See Figure 4 and 5 of the EA which show the locations of the 13 sites.

In one case (Site SB-13) the site was located within the city limits of Twentynine Palms, which presented several developmental hurdles due to its proximity to residential neighborhoods. Site SB-2 is near a residential community, which would result in aesthetic concerns from the County. Sites SB-2, SB-3, SB-4, SB-5, SB-6, SB-7, and SB-11 would require either substantial interconnection upgrades or the

Figure 2: 100-Year Flood Event - Site Inundation Map

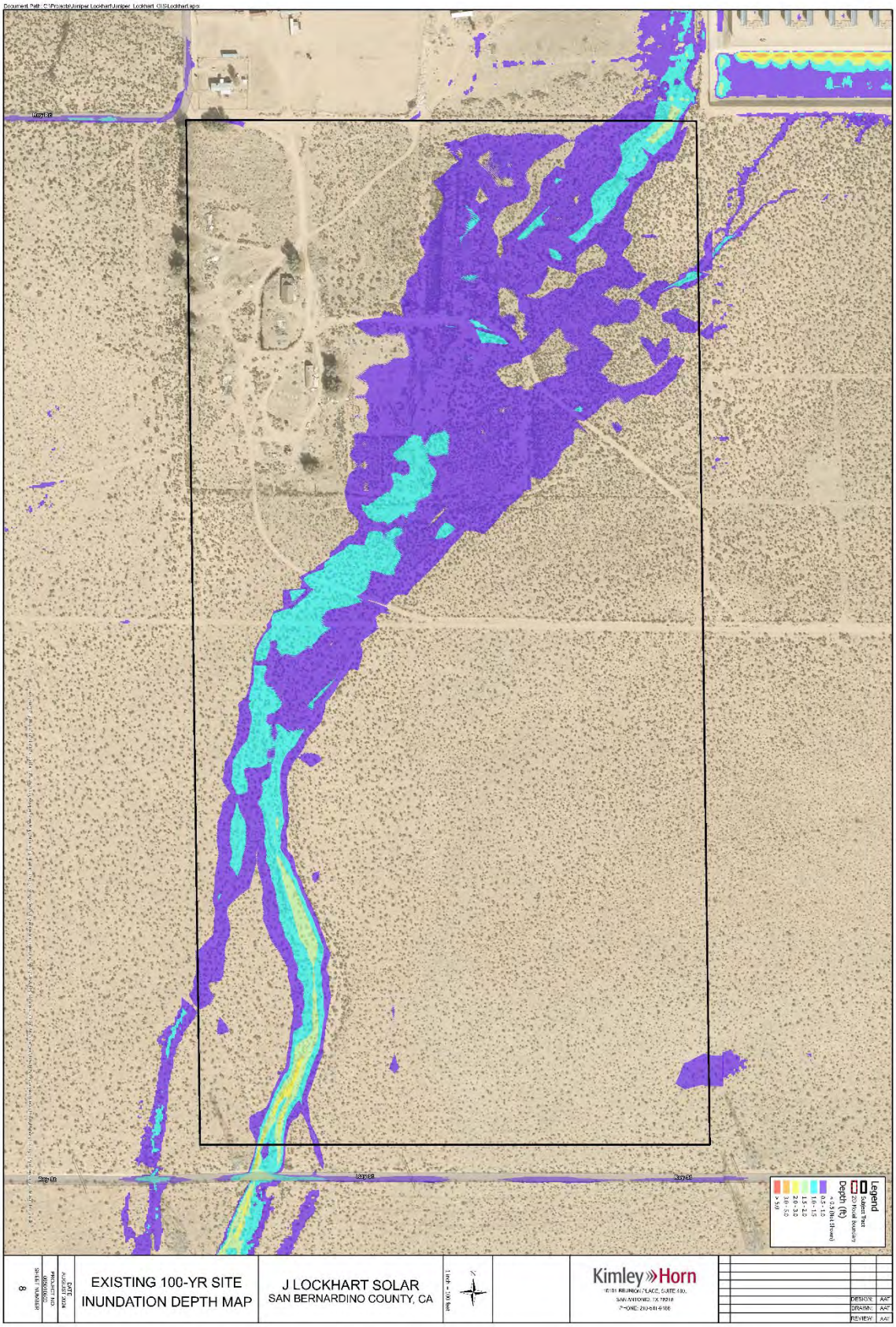
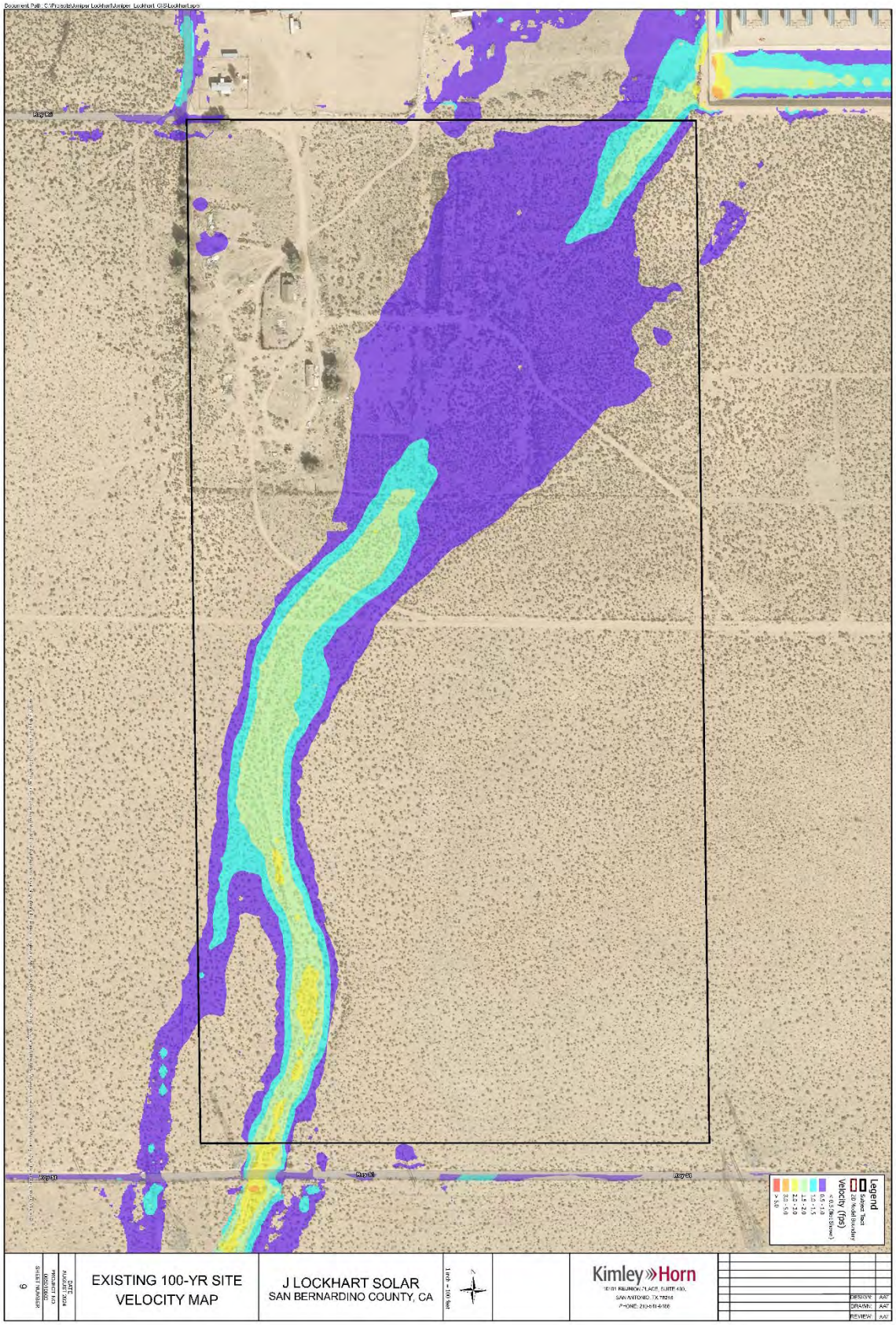


Figure 3: 100-Year Flood Event - Water Velocities



installation of new distribution lines. An initial review of the interconnection capacity and potential upgrades identified these sites as presenting significant challenges and likely resulting in unsupportable costs. Another site (SB-12) sits on a floodway and could be subject to damage or unforeseen operating costs.

Finally, sites SB-6 and SB-7 met the environmental criteria and were located near distribution lines. These sites, however, covered over 100 acres, materially larger than required for the Proposed Action. Also, each site sits next to or near very high-voltage lines, which would require the construction of a substation to interconnect a generation system to the grid. Given the site's size and the costs of interconnection, these sites are better suited for larger projects than being contemplated for this project.

After conducting preliminary feasibility studies for these selected sites, only one site meets the criteria for continuing with development of the Proposed Action as initially envisioned.

No Action Alternative

Under the "No Action" alternative, the proposed solar PV generating system would not be constructed. Without this facility, Pioneer Energy could not meet the increasing demand for electricity by the residents and businesses in its service territory. The No Action alternative would not achieve the objectives of the Proposed Action.

STEP 4 – IDENTIFY IMPACTS AND BENEFICIAL VALUES/FUNCTIONS

Natural floodplains provide flood risk reduction benefits by slowing runoff and storing water. Floodplains are also areas of high biological productivity. Other benefits include wildlife habitat protection, flood and erosion control, groundwater recharge, and surface water quality maintenance by filtering sediment and contaminants. The base floodplain within the project area is associated with an ephemeral wash, with measurable flows only following infrequent, large-scale precipitation events. The base floodplain within the project area provides for foraging and migratory bird habitat.

The unnamed ephemeral drainage path runs through the southern half of the Project Site, after which the drainage path is not discernable from the existing topography. It also appears that the drainage path was rerouted by previous development through an existing channel along the southerly portion of the existing photovoltaic farm northeast of the Project Site. The United States Geological Survey identifies the ephemeral drainage path in the National Hydrographic Dataset as a "blue line stream." The United States Army Corps of Engineers has determined that stream is not subject to their jurisdiction.

The preliminary drainage report determined that the Proposed Action would slightly increase the volume of runoff generated by a 100-year storm event. The Proposed Action could increase peak flows during a 100-year storm event from 41.34 cfs to approximately 44.38 cfs.

STEP 5 – MITIGATE ADVERSE IMPACTS

The Proposed Action would be built in accordance with the development requirements of San Bernadino County including any requirements for development in floodplain areas. To mitigate impacts during a flood event, a water detention basin to collect runoff from a 100-year storm event would be located along the northern border in accordance with San Bernadino County requirements. The batteries, electrolyte storage tanks, and critical electrical equipment would be mounted on concrete pads and placed above the 100-year water surface elevation or have secondary containment.

To mitigate impacts during a 100-year storm event, the proposed drainage report recommends the construction of two water detention basins to collect runoff from a 100-year storm event. The preliminary drainage report determined that approximately 28,902 cubic feet of storage is required for the change in runoff due to the increase in imperviousness of the proposed site design. The site plan for the Project includes two detention basins, which can retain approximately 29,197 cubic feet of water. The batteries,

electrolyte storage tanks, and critical electrical equipment would be mounted on concrete pads and placed above the 100-year water surface elevation or have secondary containment.

STEP 6 – REEVALUATE ALTERNATIVES

The applicant explored alternative locations in the site selection process, based on proximity to suitable electric transmission lines and transportation infrastructure (roads/highways); developable land (i.e. level topography and clear southern exposure); the avoidance of negative social, and environmental impacts; and local land use laws, guidelines, and policies (see Section 2.2 of the EA). The applicant engaged in preliminary feasibility studies for over 180 sites. Many sites were immediately rejected due to costs, multiple zoning issues or geography. Approximately 13 sites, having passed certain initial screens, were evaluated in-depth. The 13 sites were eliminated due to factors such as proximity to residential neighborhoods, limitations of the existing transmission infrastructure, environmental constraints, or greater land requirements. After conducting preliminary feasibility studies for the alternative sites, only one site met the criteria for continuing with development of the Proposed Action as initially envisioned.

The No Action Alternative is not practicable because it fails to meet the purpose and need for the project.

STEP 7 – FINAL PUBLIC NOTICE

A final public notice would be published with the NOA for the finding of no significant impact (FONSI). The final public notice would provide the public with a finding of the RUS' final decision that the Proposed Action is the only practicable alternative and an explanation for the significant need for the Proposed Action.

STEP 8 – IMPLEMENT PROPOSED ACTION WITH APPROPRIATE MITIGATION

Upon issuance of the FONSI/final public notice, the Proposed Action would be constructed and operated in accordance with applicable floodplain management procedures. Juniper Energy would obtain all required federal, state, and local building and site development permits for impacts on the floodplain before construction to preserve function and value.

Other implementation measures and mitigation are contingent on final permits/authorizations and commitments documented in the EA and FONSI.

PRELIMINARY DRAINAGE REPORT

Lockhart Solar

APN: 0490-171-01-0000

315 Roy Street, Hinkley
San Bernardino County, CA

Permit #: TBD

August 2024

PREPARED FOR

Juniper Energy, LLC
8181 Crystal Springs Road
Hillsborough, California 94010
(650) 288-6810

PREPARED BY

Project Manager: Ashley Teani, PE (CA RCE #90172)
10101 Reunion Place, Suite 400
San Antonio, TX 78216
(210) 541-9166

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INTRODUCTION

Juniper Energy, LLC is proposing a solar project capable of producing up to 8 MW. The subject tract is to be located at 315 Roy Street in Hinkley, CA at APN 0490-171-01-0000. The subject tract is bounded by Harper Lake Road to the west and Roy Street to the north, directly south/southwest of the existing utility scale Atlantica Mojave Solar Project in Lockhart, Cl. The subject tract location is shown on the Vicinity Map in **Appendix A**.

PURPOSE

The purpose of this report is to summarize the results of the hydrologic and hydraulic analysis conducted for the subject tract for the 100-year storm and 85th percentile storm water quality events. Juniper Solar, LLC is intending to develop the property as a ground-mount photovoltaic solar power generation facility. This analysis includes offsite runoff from the nearby mountains. The hydrologic analysis was used to develop a hydraulic analysis to determine the site drainage limits and characteristics.

This report summarizes the hydrology study performed for the proposed development. The purpose of this study is to identify inundation depth and velocity within the Lockhart BESS subject tract in the 100-Year storm event. This report describes the methodology used to perform this analysis and determine existing drainage patterns.

METHODOLOGY

Hydrologic calculations were completed per the Natural Resources Conservation Service (NRCS) National Engineering Handbook (NEH) Part 630 – Hydrology and the San Bernardino County Hydrology Manual and Addendum. The Floodscx option within the Hydrowin Advanced Engineering Software (AES) program was used to calculate the loss rate values, effective rainfall, S-graph, and onsite hydrologic model based on arid region San Bernardino County guidelines. Hydrologic calculations were performed using the Natural Resources Conservation Service (NRCS) Curve Number and County specific S-graphs in accordance with the Manual.

The U.S. Army Corps of Engineers HEC-RAS 2D (Hydrologic Engineering Center River Analysis System) v. 6.2.0 modeling program was used to complete the two-dimensional hydraulic analysis. This software is a two-dimensional (2D) hydrodynamic routing model that preforms hydraulic routing using the Implicit Finite Volume solution to the 2D unsteady flow equations. This type of model is generally used to estimate flooding limits and velocity distributions for both confined and unconfined flow.

The following parameters and/or assumptions were used for the hydrologic and hydraulic models:

- Watersheds were delineated utilizing USGS 1-meter National Elevation Dataset (NED) digital elevation models (DEM).
- Hydrologic Soil Data was downloaded from Web Soil Survey. Any missing data were digitized and geo-referenced from the San Bernardino County Hydrology Manual Hydrologic Soils Group Maps.
- Existing land uses were based on the 2021 National Land Cover Database (NLCD) from the Multi-Resolution Land Characteristics Consortium (MRLC).

- Rainfall data from National Oceanic and Atmospheric Administration (NOAA) Atlas 14.
- The San Bernardino County Desert S-Graph 24-hour synthetic storm pattern was used to model the precipitation for the model.
- The San Bernardino County Hydrology Manual design storm loss rate method was used to estimate rainfall losses and direct runoff.
- Curve numbers were assigned based on existing land use, defined by aerial imagery and the National Land Cover Database in **Appendix B**.

FEMA FLOODPLAIN CLASSIFICATIONS

The Special Flood Hazard Areas (SFHA) are outlined in the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps. The subject tract within FEMA Special Flood Hazard Area (SFHA) Zone D, which is an area with reduced risk due to levee. The subject tract is located on FEMA Flood Insurance Rate Map FIRM Community Panel No. 06071C3875H, effective August 28, 2008. Refer to the FEMA FIRM panel for the site in **Appendix A**.

HYDROLOGY

A detailed hydrologic analysis was completed for the subject tract and the contributing offsite watershed in accordance with San Bernardino County Criteria.

Site Characteristics

The subject tract is generally undeveloped, with a few existing buildings that will be demolished. The subject tract generally drains from south to north, with a concentrated wash flowing through the site form the southwest to northwest corner. The soil data collection from Web Soil Survey and the Manual indicated that the site contains hydrologic soil group type A and C. A Hydrologic Soil Group Map is included in **Appendix B**.

Rainfall

The 100-year, 24-hour storm event was modeled for this analysis. Per the San Bernardino County Hydrology Manual, the synthetic storm pattern was used to model the precipitation for onsite flows. Refer to Table 1 and **Appendix B** for the NOAA 14 precipitation data.

Table 1: 100-Year Storm Event Rainfall Depths

Duration	2D (in)	Onsite (in)
5 min.	0.333	0.331
30 min.	0.791	0.791
1 hr.	1.06	1.07
3 hr.	1.49	1.51
6 hr.	1.83	1.86
24 hr.	2.84	2.91

Subbasin Delineation

The hydrologic model consists of one subbasin which encompasses the 2D mesh. The 2D subbasin covers approximately 26.68 mi^2. The drainage area boundary is shown in the Drainage Area Map in **Appendix B**.

The onsite detention calculations required a separate subbasin delineation. The onsite hydrology model delineation consists of the area of proposed impacts within the subject tract. The onsite drainage area covers approximately 80.34 acres. The drainage area boundary for the onsite hydrology model is shown in the Existing Tract Drainage Area Map in **Appendix B**. Subbasin drainage areas are listed in Table 2.

Parameters

Time of concentration was calculated using TR-55 Methodology. Subbasin lag time is related to time of concentration by 0.8 x Tc. A maximum sheet flow distance of 100 ft was used. The Land Use and HSG spatial data sets were combined into a new Curve Number data set. CNs were assigned based on San Bernardino County Figure C-3. In the absence of County data, TR-55 CNs were used. The County published an Addendum to the County Hydrology Manual in 2010 for arid regions. Per the map ADD-1, the watershed is in AMC I.

Soil losses were computed according to County Manual criteria. The individual CNs were used to develop a corresponding pervious area infiltration rate (Fp) using Table C.2 and Figure C-6. The percent pervious (Ap) was used to calculate a maximum loss rate (Fm) for each CN within the watershed. An area weighted average Fm was calculated using the AMC II rates, then converted to AMC I using Figure C-6. The County Manual details the process of calculating the lwo loss fraction, $\bar{y}$. The AMC I CNs were used to calculate S and subsequently the initial abstraction (Ia) based on Eqn C.1 and C.2 of the manual. The individual Yield fraction, Yj, for each CN was calculated using equation C.3 in the Manual. An area weighted average was then calculated to develop the overall watershed Yield fraction. The low loss fraction was then developed using equation C.5. The watershed Yield and low loss fraction are in Table 2 below. Detailed calculations are included in **Appendix B.**

The development includes proposed BESS and inverter pads, which were considered 100% impervious. Proposed roads will be gravel or compacted native and were considered 30% impervious. Proposed piles were assumed to be 100% impervious.

Table 2: Existing Condition Hydrologic Parameters

Subbasin	Area (ac)	Fm (AMC II)	Fm (AMC I)	Yield	Low Loss Fraction	Lag Time (min)
2D	17,076.89	0.51	0.705	0.06	0.94	--
Site - Existing	80.34	0.79	0.965	0.02	0.98	37.9
Site - Proposed	80.34	0.70	0.915	0.08	0.92	37.9

Results

The excess rainfall hyetograph for Subbasin 2D was developed from the hydrologic model, which produces a time-series table of the excess precipitation. The excess precipitation, the accumulated rainfall that exceeds the initial abstraction and infiltration, was generated using AES and applied as a rainfall boundary condition to the 2D mesh in the hydraulic model.

The onsite hydrographs were used to design the retention basin in PondPack. The AES Hydrosoft Floodscx outputs are provided in **Appendix B**.

HYDRAULICS

Hydraulic modeling of the subject tract was performed using the U.S. Army Corps of Engineers' HEC-RAS 2D v. 6.2 hydraulic modeling software. HEC-RAS 2D is a two-dimensional hydrodynamic routing model that performs hydraulic routing using the Implicit Finite Volume solution to the 2D unsteady flow equations. This type of model is generally used to estimate flooding limits and velocity distributions for both confined and unconfined flow.

The 2D hydraulic model was developed as part of this analysis. Digital files of the HEC-RAS 2D hydraulic model are provided in **Appendix E**.

2D Mesh

A 2D computational mesh based on the topographic information was generated in HEC-RAS to perform hydraulic modeling. A grid size of 150' x 150' was used for most of the model area. A refinement region encompassing the subject tract was added to the model, with a grid size of 80' x 80'. Breaklines were added in areas of topographic relief to align the cells with the direction of flow and capture the detail of the underlying topographic high points and low points, with a spacing of 40'. The computational grid was created for the surface to develop a group of rating tables for the stage-storage-volume relationship in each computational grid cell. HEC-RAS also cuts cross sections at each cell face of the computational grid to simulate flow more accurately between cells.

Boundary Conditions

The excess rainfall hyetograph for the 2D mesh was developed from the hydrologic model. The precipitation from the 2D mesh was applied uniformly to each cell. The runoff was routed through each cell using the Diffusion Wave 2D equation. The flow direction and depth are based on several factors, including topography and surface roughness.

Seven normal depth outflow boundary conditions were applied along all sides of the 2D mesh where flow has the potential to exit the model area in existing conditions. The assigned friction slope varied based on the terrain for each boundary condition shown in the *Overall Drainage Area Map* in **Appendix B.**

Surface Roughness

The Manning's "n" values for friction losses are based on existing land cover determined from the 2021 National Land Cover Database and engineering judgement based on the observed condition of vegetation using aerial imagery. Additional classifications were added for areas anticipated to have

flow depths deeper than 1'. After the model was run once, without changing the Manning's "n" value, the areas where depth was greater than 1' were identified. Within those areas, the reduced Manning's "n", unique to the existing land cover, was applied. Manning's Values are included in Table 3.

Table 3: Manning's "n" Values

NLCD Land Cover	Manning's "n" Value
Barren Land	0.06
Barren Land (reduced)	0.04
Cultivated Crops	0.10
Cultivated Crops (reduced)	0.06
Developed, High Intensity	0.03
Developed, Low Intensity	0.10
Developed, Medium Intensity	0.12
Developed, Open Space	0.06
Emergent Herbaceous Wetlands	0.06
Hay/Pasture	0.10
Hay/Pasture (reduced)	0.06
Herbaceous	0.12
Herbaceous (reduced)	0.07
Open Water	0.02
Shrub/Scrub	0.15
Shrub/Scrub (reduced)	0.08

2D MODEL RESULTS (OFFSITE WATERSHED)

The 100-year maximum inundation depths and maximum velocities were mapped based on the modeling results, included in **Appendix C**.

During the 100-year event, inundation occurs in the natural wash that runs from southwest to northeast through the site. The site experiences a maximum inundation depth of 0.5 feet across the majority of the site. Deeper inundation occurs in the natural wash, with maximum depths generally ranging from 0.5 feet to 2.0 feet with a few small spots up to 3.0 feet.

Most of the site experiences velocities less than one foot per second. Within the wash, velocity ranges between 0.5 and 3 feet per second.

ONSITE DRAINAGE ANALYSIS

Existing Condition

The existing unit hydrograph calculations were completed to quantify the volume and peak flow rates for the subject tract for the 100-year, 24-hour storm event. Table 4 contains a summary of the existing

conditions hydrograph for the 100-year, 24-hour event. The *Existing Tract Drainage Area Map* is included in **Appendix B**.

Table 4: Existing Conditions Peak Flow Summary

Drainage Area ID	Area (ac)	Impervious (%)	100-yr Peak Discharge (cfs)
DA-1	80.34	0.2	41.34

Proposed Condition

The proposed unit hydrograph was developed using AES and the detention routing analysis was completed in Bentley's Pondpack software. Compacted native roads were considered 30% impervious, equipment pads and paved roads were considered 100% impervious, and piles were assumed to be 6" x 6" spaced every 25 feet along tracker rows and 100% impervious. Detailed calculations are provided in **Appendix B**. Table 5 provides a summary of the 100-year, 24-hour proposed conditions peak flow. Approximately 28,902 cubic feet of storage is required for the change in runoff due to the increase in imperviousness of the proposed site design and approximately 29,197 cubic feet is provided, as summarized in Table 6. Stormwater storage areas are anticipated to be provided via a shallow detention basin. A Proposed Tract Drainage Area Map in included in **Appendix B**.

Table 5: Proposed Conditions Peak Flow Summary

Drainage Area ID	Area (ac)	Impervious (%)	100-yr Unmitigated Peak Discharge (cfs)
DA-1	80.34	6.3	44.38

Table 6: Detention Design Summary

Basin	Water Storage Depth (ft)	Existing Peak Discharge (cfs)	Proposed Unmitigated Peak Discharge (cfs)	Proposed Mitigated Peak Discharge (cfs)	Weir Length (ft)	Storage Required (Cu-Ft)	Storage Provided (Cu-Ft)
1	1.25	41.34	44.35	41.33	112	28,902	29,197

See additional calculations in PondPack output in **Appendix C**.

WATER QUALITY DESIGN

The subject tract is located within unincorporated San Bernardino County, California and within the boundaries of the Colorado River Regional Water Quality Control Board (RWQCB). Per the California Stormwater Quality Association (CASQA) Low Impact Development (LID) Manual, and the Mojave River Watershed Region Stormwater Quality Best Management Practice Design Handbook for Low Impact Development, project development must include sufficient water quality design to mimic the pre-development hydrology to the maximum extent practicable.

The proposed site must comply with the post-construction standards set forth in the NPDES General Permit for Stormwater Discharges in California NPDES NO. CAS00002 (General Permit). Within the Post-Construction Section I.U of the Construction General Permit, the post-development runoff must match the pre-development runoff for the 85th percentile, 24-hour storm event. The proposed lease limit of the subject tract is used to delineate the site area for water quality purposes. The water quality target volume required to be treated by the site is the calculated difference between the 85th percentile volume produced by the post and pre-development conditions. Per the San Bernardino County Mojave River Watershed Infiltration Basin BMP guidelines, the volume required to be treated combined with the infiltration basin drawdown parameters within Table 5-4 of the Mojave River Watershed Technical Guidance Document determines the minimum bottom surface area of the basin. See Table 7 for the summary of the water quality requirements and **Appendix D** for the detailed calculations.

Table 7: Water Quality Summary

Basin	Area (Ac)	Water Storage Depth (ft)	Pre-Development 85th Percentile Volume (cu-ft)	Post-Development 85th Percentile Volume (cu-ft)	Required Treatment Volume (cu-ft)	Volume Provided (cu-ft)	Minimum Bottom Surface Area Required (sq-ft)
1	80.34	1.25	10,300	22,024	11,724	29,197	8,698.8

Temporary erosion and sediment control best management practices (BMPs) will generally be placed on the downstream limits of the site and within and adjacent to areas of mass grading until the site is restabilized per jurisdictional requirements. BMPs that may be used on this project are stabilized construction entrances, vehicle washouts, earthen dikes, fiber rolls, silt fence, and/or erosion control matting.

DISCUSSION OF POTENTIAL IMPACTS

Juniper Energy, LLC is proposing a 8 MW solar project. The hydrologic and hydraulic analyses were used to determine inundation limits and depths of flow for the 100-year storm in the existing conditions. The hydrologic analyses and water quality calculations were used to determine detention basin sizes for the subject tract.

As discussed in this study, approximately 28,902 cubic feet of storage would be required to account for the increase in runoff due to the 6.1% increase in imperviousness of the proposed site design. Approximately 29,197 cubic feet would be provided as stormwater storage areas in the form of a shallow detention basin. Therefore, the detention basin would accommodate the potential increase in stormwater such that development of the Project would not result in an increase of surface runoff.

Appendices

Appendix A– General

- **Vicinity Map**
- **FEMA FIRMette**

Legend
Subject Tract

Lockhart
Jimgrey
Kramer Hills
Hinkley

W 3rd St
Lockhart Rd
Hoffman Rd
Hooper Lake Rd
W Caroline Ct
Orchid Rd
Black Canyon Rd
Murphy Rd
Maltese Dr
Lockhart Rd N
Hoffman Rd
Kramer Rd
Eddy Rd
Roy St
Lawson Ave
Powerline Rd
State Highway 58
Halstead Rd
Grasshopper Rd
Hinkley Rd
Brown Ranch Rd
Grass Hopper
Friends Rd
Sunset Dr
Halsted
Santa Fe Ave
Kramer Rd
Hooper Lake Rd
Phoenix Rd
El Centro Rd
Salinas Rd
Community Blvd
Palma Rd
Linden Rd
Park Ave
Alcudia Rd
Acacia St
Ashwood Rd
Blossom
Old Bakersfield Hwy
Frontier Rd
Carson Rd
Granada Rd
Burnt Tree Rd
Echo Rd
Mountain View Rd
Fairview Rd
Sonoma St
Thompson
Flower St
Pueblo Rd
Sierra Rd
Parr Rd
Lakeview Rd
Rod Rock Rd
Valley Wells Rd
Locust Rd
Camino Rd
Fossil Bed Rd
N Arrowhead Ave
H Street Lake Rd
Santa Fe Ave

California State Parks, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, Bureau of Land Management, EPA, NPS, US Census Bureau, USDA, USFWS

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DESIGN:	AAT
DRAWN:	AAT
REVIEW:	AAT

Kimley»Horn
10101 REUNION PLACE, SUITE 400,
SAN ANTONIO, TX 78216
PHONE: 210-541-9166

N

1 inch = 3,000 feet

LOCKHART SOLAR
SAN BERNARDINO COUNTY, CA

VICINITY MAP

DATE
AUGUST 2024

PROJECT NO.
065010800

SHEET NUMBER
1

Appendix B - Hydrology

- **Overall Drainage Area Map**
- **Tract Existing Condition Drainage Area Map**
- **Tract Proposed Condition Drainage Area Map**
- **Existing Land Cover Map**
- **Hydrologic Soil Group Map**
- **Hydrology Calculations**
- **NOAA Rainfall**
- **Hydrology Manual Excerpts**
- **Onsite Existing and Proposed AES Outputs**
- **2D AES Excess Rainfall Output**

	DESIGN:	AAT
	DRAWN:	AAT
	REVIEW:	AAT

Kimley»Horn
10101 REUNION PLACE, SUITE 400.
SAN ANTONIO, TX 78216
PHONE: 210-541-9166

N

1 inch = 3,000 feet

LOCKHART SOLAR
SAN BERNARDINO COUNTY, CA

OVERALL DRAINAGE AREA MAP

DATE
AUGUST 2024

PROJECT NO.
065010800

SHEET NUMBER
2

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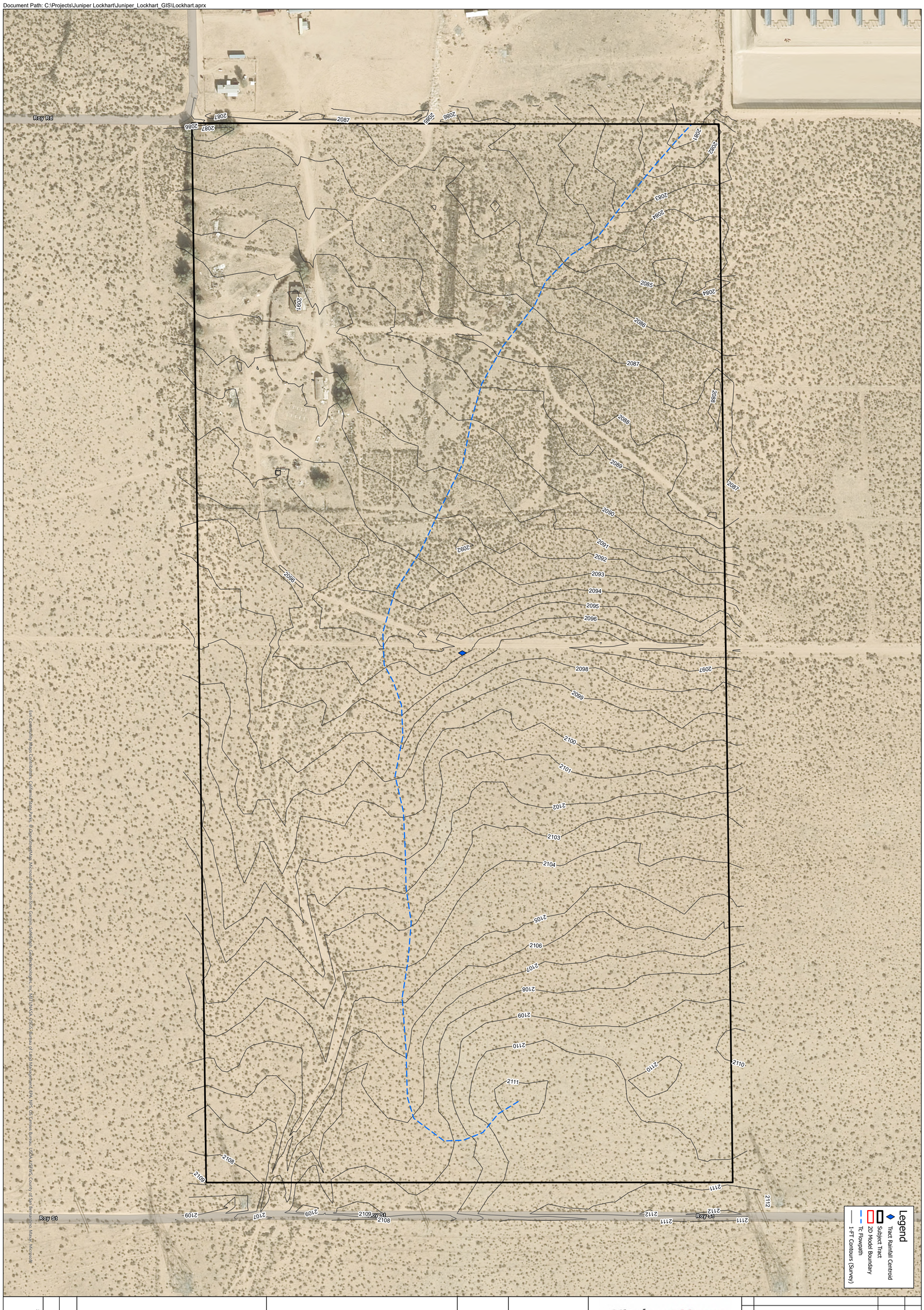

SHEET NUMBER 3	PROJECT NO. 065010800	DATE AUGUST 2024	EXISTING 100-YR SITE INUNDATION DEPTH MAP	J LOCKHART SOLAR SAN BERNARDINO COUNTY, CA	1 inch = 100 feet

Kimley»Horn
10101 REUNION PLACE, SUITE 400,
SAN ANTONIO, TX 78216
PHONE: 210-541-9166

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SHEET NUMBER 4	PROJECT NO. 065010800	DATE AUGUST 2024	PROPOSED TRACT DRAINAGE AREA MAP	J LOCKHART SOLAR SAN BERNARDINO COUNTY, CA	1 inch = 100 feet	Kimley»Horn 10101 REUNION PLACE, SUITE 400, SAN ANTONIO, TX 78216 PHONE: 210-541-9166

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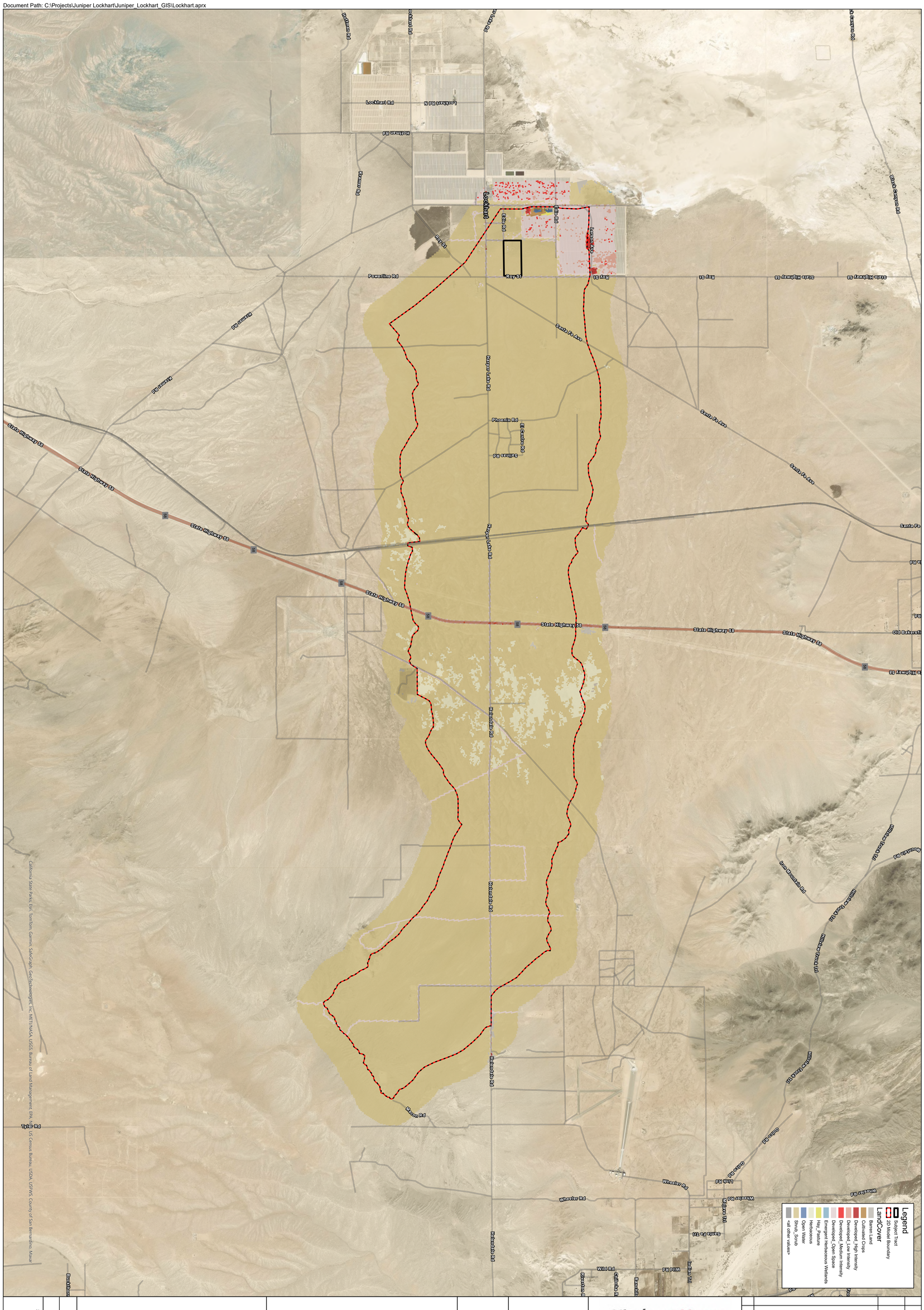

SHEET NUMBER 5	PROJECT NO. 065010800	DATE AUGUST 2024	OVERALL DRAINAGE AREA MAP	LOCKHART SOLAR SAN BERNARDINO COUNTY, CA	1 Inch = 3,000 feet

Kimley»Horn
10101 REUNION PLACE, SUITE 400,
SAN ANTONIO, TX 78216
PHONE: 210-541-9166

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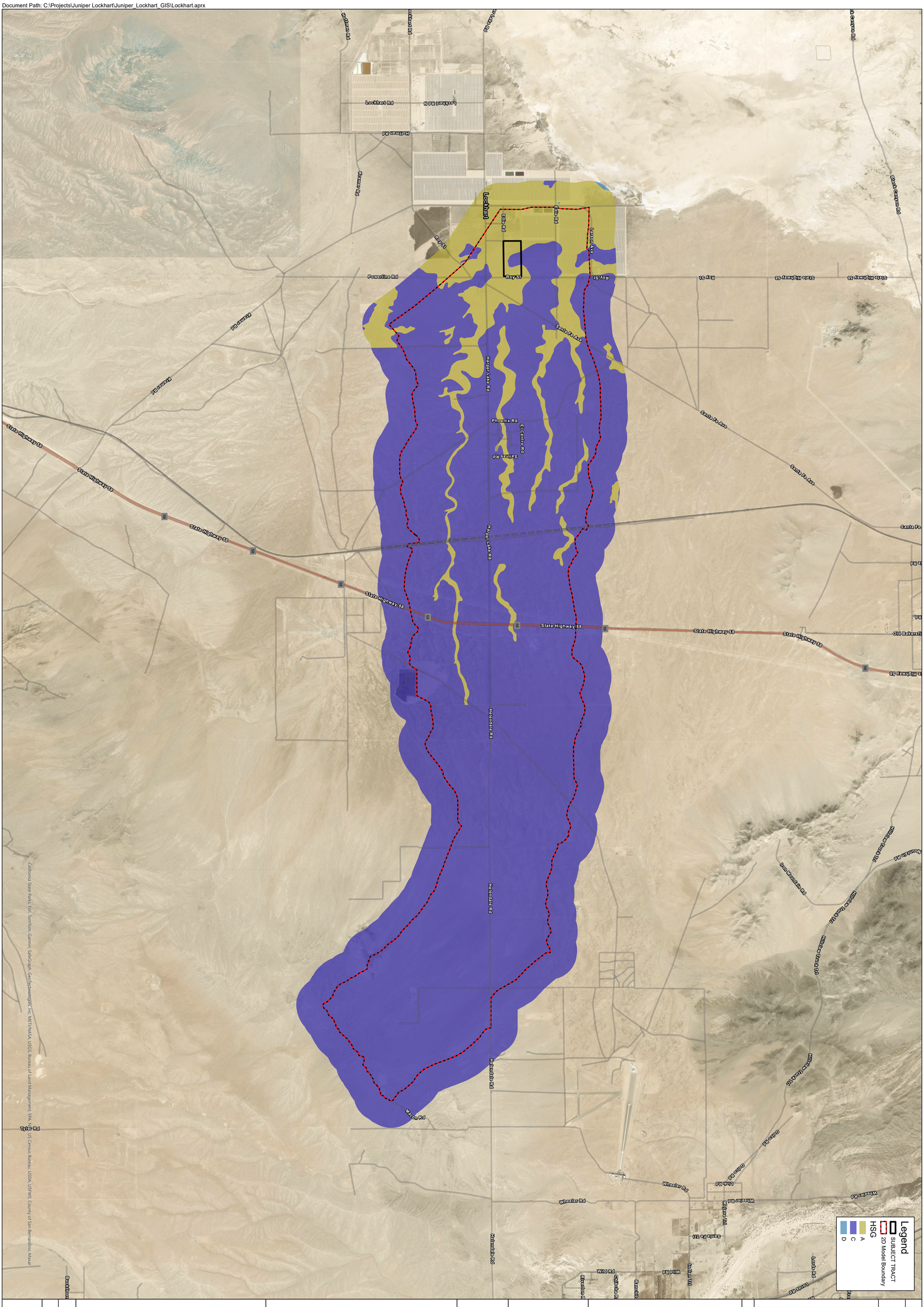

SHEET NUMBER 6	PROJECT NO. 065010800	DATE AUGUST 2024	HYDROLOGIC SOIL GROUP MAP	LOCKHART SOLAR SAN BERNARDINO COUNTY, CA	1 inch = 3,000 feet

Kimley»Horn
10101 REUNION PLACE, SUITE 400,
SAN ANTONIO, TX 78216
PHONE: 210-541-9166

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DRAWN:	AAT
REVIEW:	AAT

Curve Numbers

NLCD Description	San Bernardino Description	CN for HSG (AMC II)			
		A	B	C	D
Barren Land	Barren	78	86	91	93
Cultivated Crops	Row Crops, Poor Condition	72	81	88	91
Deciduous Forest	Woodland, Good Condition	25	55	70	77
Developed, High Intensity	N/A	89	92	94	95
Developed, Low Intensity	N/A	61	75	83	87
Developed, Medium Intensity	N/A	77	85	90	92
Developed, Open Space	Residential or Commercial Landscaping	32	56	69	75
Emergent Herbaceous Wetlands	Meadow, Good Condition	30	58	71	78
Evergreen Forest	Woodland, Good Condition	25	55	70	77
Hay/Pasture	Pasture, Dryland, Good Condition	39	61	74	80
Grassland/Herbaceous	Grass, Good Condition	38	61	74	80
Mixed Forest	Woodland, Good condition	25	55	70	77
Open Water	Water	100	100	100	100
Shrub/Scrub	Open Brush, Good Condition	41	63	75	81
Woody Wetlands	Woodland, Grass, Good Condition	33	58	72	79

NLCD Description	TR-55 Cover Description	TR-55 Table	CN for HSG*			
			A	*B*	*C*	*D*
Barren Land	Open Space, Poor Condition	2-2a	68	79	86	89
Cultivated Crops	Row Crops, Contoured, Poor Condition	2-2b	70	79	84	88
Deciduous Forest	Woods, Good Condition	2-2c	30	55	70	77
Developed, High Intensity	Commercial	2-2a	89	92	94	95
Developed, Low Intensity	Residential, 1/4-acre	2-2a	61	75	83	87
Developed, Medium Intensity	Residential, <1/8-acre	2-2a	77	85	90	92
Developed, Open Space	Open Space, Good Condition	2-2a	39	61	74	80
Emergent Herbaceous Wetlands	Meadow	2-2c	30	58	71	78
Evergreen Forest	Woods, Good Condition	2-2c	30	55	70	77
Grassland/Herbaceous	Meadow	2-2c	30	58	71	78
Hay/Pasture	Pasture, Good Condition	2-2c	39	61	74	80
Herbaceous	Meadow	2-2c	30	58	71	78
Mixed Forest	Woods, Good Condition	2-2c	30	55	70	77
Open Water	Water	N/A	100	100	100	100
Pasture/Hay	Pasture, Good Condition	2-2c	39	61	74	80
Shrub/Scrub	Open Space, Good Condition	2-2c	39	61	74	80
Woody Wetlands	Woods, Good Condition	2-2a	30	55	70	77

* Open water assumed 100% impervious

Loss Parameter Calculations - Existing Condition Onsite

Subbasin Name	Description	Cover Type (Table C.2)	HSG	CN (AMC II)	Area (ac)	Fp (AMC II)	ap	Fm = (Fp*ap)	Fm*A
2D	Developed_Open Space	Residential (1 DU/AC), Ap=1	A	32	1.82291	0.78	1	0.780	1.422
2D	Shrub_Scrub	Figure C-6 based on CN	A	41	58.2363	0.91	1	0.910	52.995
2D	Shrub_Scrub	Figure C-6 based on CN	C	75	20.2837	0.46	1	0.460	9.331

Total	**80.34**	**ac**

Average Fm	0.79	AMC II
Average Fm	0.965	AMC I

Subbasin Name	Description	Cover Type (Table C.2)	HSG	CN (AMC I)	Area (ac)	S (AMC I CN)	Ia = 0.2S	Yj	Yj*Aj
2D	Developed_Open Space	Residential (1 DU/AC), Ap=1	A	18	1.82291	45.5556	9.1111	0.0000	0.0000
2D	Shrub_Scrub	Figure C-6 based on CN	A	24	58.2363	31.6667	6.3333	0.0000	0.0000
2D	Shrub_Scrub	Figure C-6 based on CN	C	57	20.2837	7.5439	1.5088	0.0754	1.5300

24-hr rainfall (in)	2.91

Yavg	0.02
Ybar	0.98

Loss Parameter Calculations - 2D Model Existing Conditions

Subbasin Name	Description	Cover Type (Table C.2)	HSG	CN (AMC II)	Area (ac)	Fp (AMC II)	ap	Fm = (Fp*ap)	Fm*A
2D	Barren Land	Barren	A	78	9.20689	0.41	1	0.410	3.775
2D	Barren Land	Barren	C	91	4.26745	0.18	1	0.180	0.768
2D	Cultivated Crops	Row Crops (Good)	A	72	11.5629	0.59	1	0.590	6.822
2D	Developed_High Intensity	Commercial/Industrial	A	89	3.05939	0.10	0.1	0.010	0.031
2D	Developed_High Intensity	Commercial/Industrial	C	94	0.225988	0.06	0.1	0.006	0.001
2D	Developed_Low Intensity	Residential (2DU/AC)	A	61	21.17	0.68	0.7	0.476	10.077
2D	Developed_Low Intensity	Residential (2DU/AC)	C	75	10.2677	0.39	0.7	0.273	2.803
2D	Developed_Medium Intensity	Residential (10 DU/AC)	A	77	7.68383	0.39	0.4	0.156	1.199
2D	Developed_Medium Intensity	Residential (10 DU/AC)	C	90	2.26969	0.22	0.4	0.088	0.200
2D	Developed_Open Space	Residential (1 DU/AC), Ap=1	A	32	361.017	0.78	1	0.780	281.593
2D	Developed_Open Space	Residential (1 DU/AC), Ap=1	C	69	335.965	0.45	1	0.450	151.184
2D	Hay_Pasture	Figure C-6 based on CN	A	39	2.89072	0.92	1	0.920	2.659
2D	Herbaceous	Figure C-6 based on CN	A	38	1.16738	0.93	1	0.930	1.086
2D	Herbaceous	Figure C-6 based on CN	C	74	590.891	0.48	1	0.480	283.628
2D	Open Water	Figure C-6 based on CN	A	100	5.33671	0.00	1	0.000	0.000
2D	Shrub_Scrub	Figure C-6 based on CN	A	41	1668.11	0.91	1	0.910	1517.980
2D	Shrub_Scrub	Figure C-6 based on CN	C	75	14041.8	0.46	1	0.460	6459.228

Total	17,076.89	ac
	26.68	sq-mi

Average Fm	0.511	AMC II
Average Fm	0.705	AMC I

Loss Parameter Calculations - 2D Model Existing Conditions

Subbasin Name	Description	Cover Type (Table C.2)	HSG	CN (AMC I)	Area (ac)	S (AMC I CN)	Ia = 0.2S	Yj	Yj*Aj
2D	Barren Land	Barren	A	60	9.20689	6.6667	1.3333	0.0978	0.9004
2D	Barren Land	Barren	C	79	4.26745	2.6582	0.5316	0.3778	1.6121
2D	Cultivated Crops	Row Crops (Good)	A	53	11.5629	8.8679	1.7736	0.0403	0.4661
2D	Developed_High Intensity	Commercial/Industrial	A	73	3.05939	3.6986	0.7397	0.2678	0.8195
2D	Developed_High Intensity	Commercial/Industrial	C	80	0.225988	2.5000	0.5000	0.3984	0.0900
2D	Developed_Low Intensity	Residential (2DU/AC)	A	41	21.17	14.3902	2.8780	0.0000	0.0000
2D	Developed_Low Intensity	Residential (2DU/AC)	C	57	10.2677	7.5439	1.5088	0.0703	0.7219
2D	Developed_Medium Intensity	Residential (10 DU/AC)	A	59	7.68383	6.9492	1.3898	0.0882	0.6774
2D	Developed_Medium Intensity	Residential (10 DU/AC)	C	78	2.26969	2.8205	0.5641	0.3579	0.8122
2D	Developed_Open Space	Residential (1 DU/AC), Ap=1	A	18	361.017	45.5556	9.1111	0.0000	0.0000
2D	Developed_Open Space	Residential (1 DU/AC), Ap=1	C	48	335.965	10.8333	2.1667	0.0139	4.6611
2D	Hay_Pasture	Figure C-6 based on CN	A	24	2.89072	31.6667	6.3333	0.0000	0.0000
2D	Herbaceous	Figure C-6 based on CN	A	23	1.16738	33.4783	6.6957	0.0000	0.0000
2D	Herbaceous	Figure C-6 based on CN	C	54	590.891	8.5185	1.7037	0.0471	27.8246
2D	Open Water	Figure C-6 based on CN	A	100	5.33671	0.0000	0.0000	1.0000	5.3367
2D	Shrub_Scrub	Figure C-6 based on CN	A	24	1668.11	31.6667	6.3333	0.0000	0.0000
2D	Shrub_Scrub	Figure C-6 based on CN	C	57	14041.8	7.5439	1.5088	0.0703	987.2718

24-hr rainfall (in)	2.84

Yavg	0.06
Ybar	0.94

Loss Parameter Calculations - Proposed Condition Onsite

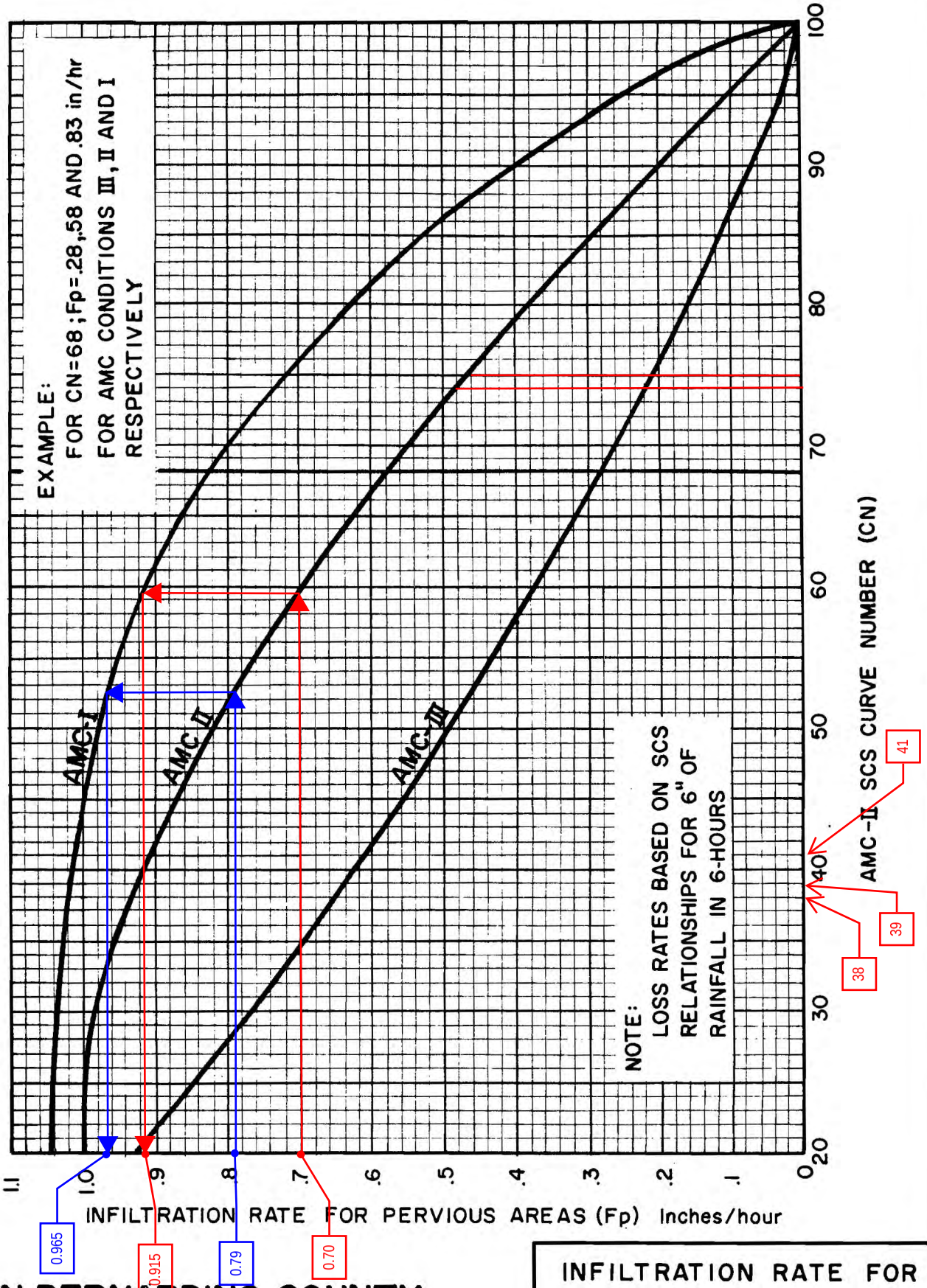
Subbasin Name	Description	Cover Type (Table C.2)	HSG	CN (AMC II)	Area (ac)	Fp (AMC II)	ap	Fm = (Fp*ap)	Fm*A
SITE	Developed_Open Space	Residential (1 DU/AC), Ap=1	A	32	1.39	0.78	1	0.780	1.086
SITE	Shrub_Scrub	Figure C-6 based on CN	A	41	51.45	0.91	1	0.910	46.822
SITE	Shrub_Scrub	Figure C-6 based on CN	C	75	17.42	0.46	1	0.460	8.013
SITE	Proposed Compactive Native Roads	Commercial	A	89	5.36	0.10	0.7	0.070	0.375
SITE	Proposed Compactive Native Roads	Commercial	C	94	1.81	0.06	0.7	0.042	0.076
SITE	Propose Paved Road	N/A	-	98	0.41	0.00	0	0.000	0.000
SITE	Proposed Pads	N/A	-	98	2.46	0.00	0	0.000	0.000
SITE	Proposed Piles	N/A	-	98	0.03	0.00	0	0.000	0.000

Total	**80.34**	**ac**	**Average Fm**	0.70	AMC II
			Average Fm	0.915	AMC I

Subbasin Name	Description	Cover Type (Table C.2)	HSG	CN (AMC I)	Area (ac)	S (AMC I CN)	Ia = 0.2S	Yj	Yj*Aj
SITE	Developed_Open Space	Residential (1 DU/AC), Ap=1	A	18	1.39	45.5556	9.1111	0.0000	0.0000
SITE	Shrub_Scrub	Figure C-6 based on CN	A	24	51.45	31.6667	6.3333	0.0000	0.0000
SITE	Shrub_Scrub	Figure C-6 based on CN	C	57	17.42	7.5439	1.5088	0.0754	1.3140
SITE	Proposed Compactive Native Roads	Commercial	A	73	5.36	3.6986	0.7397	0.2758	1.4792
SITE	Proposed Compactive Native Roads	Commercial	C	80	1.81	2.5000	0.5000	0.4065	0.7372
SITE	Propose Paved Road	N/A	-	98	0.41	0.2041	0.0408	0.9205	0.3775
SITE	Proposed Pads	N/A	-	98	2.46	0.2041	0.0408	0.9205	2.2663
SITE	Proposed Piles	N/A	-	98	0.03	0.2041	0.0408	0.9205	0.0254

24-hr rainfall (in)	2.91

Yavg	0.08
Ybar	0.92



SAN BERNARDINO COUNTY
HYDROLOGY MANUAL

INFILTRATION RATE FOR PERVIOUS AREAS VERSUS SCS CURVE NUMBERS

Figure C-6

TABLE C.2. Fm (in/hr) VALUES
FOR TYPICAL COVER TYPES

COVER TYPE	SOIL GROUP				
	A_p(1)	A	B	C	D
NATURAL:					
Barren	1.0	0.41	0.27	0.18	0.14
Row Crops (good)	1.0	0.59	0.41	0.29	0.22
Grass (fair)	1.0	0.82	0.56	0.40	0.31
Orchards (fair)	1.0	0.88	0.62	0.43	0.34
Woodland (fair)	1.0	0.95	0.69	0.50	0.40
URBAN:					
Residential (1 DU/AC)	0.80	0.78	0.60	0.45	0.37
Residential (2 DU/AC)	0.70	0.68	0.53	0.39	0.32
Residential (4 DU/AC)	0.60	0.58	0.45	0.34	0.28
Residential (10 DU/AC)	0.40	0.39	0.30	0.22	0.18
Condominium	0.35	0.34	0.26	0.20	0.16
Mobile Home Park	0.25	0.24	0.19	0.14	0.12
Apartments	0.20	0.19	0.15	0.11	0.09
Commercial/Industrial	0.10	0.10	0.08	0.06	0.05

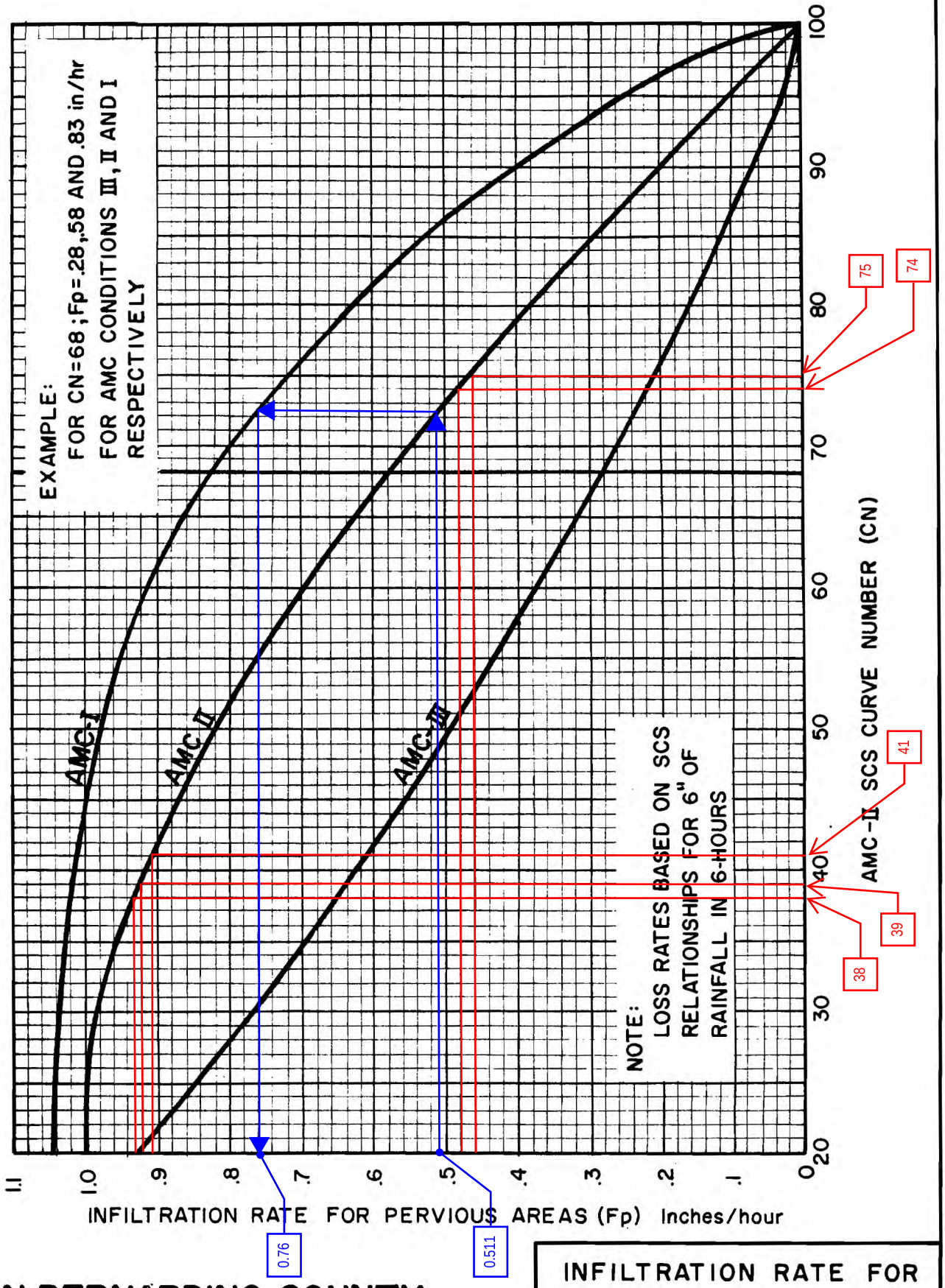
NOTES:

(1) Recommended a_p values from Figure C-4

(2) AMC II assumed for all Fm values

(3) CN values obtained from Figure C-3

(4) DU/AC=dwelling unit per acre



SAN BERNARDINO COUNTY
HYDROLOGY MANUAL

INFILTRATION RATE FOR PERVIOUS AREAS VERSUS SCS CURVE NUMBERS

Figure C-6

TABLE C.2. Fm (in/hr) VALUES
FOR TYPICAL COVER TYPES

COVER TYPE	SOIL GROUP				
	A_p(1)	A	B	C	D
NATURAL:					
Barren	1.0	0.41	0.27	0.18	0.14
Row Crops (good)	1.0	0.59	0.41	0.29	0.22
Grass (fair)	1.0	0.82	0.56	0.40	0.31
Orchards (fair)	1.0	0.88	0.62	0.43	0.34
Woodland (fair)	1.0	0.95	0.69	0.50	0.40
URBAN:					
Residential (1 DU/AC)	0.80	0.78	0.60	0.45	0.37
Residential (2 DU/AC)	0.70	0.68	0.53	0.39	0.32
Residential (4 DU/AC)	0.60	0.58	0.45	0.34	0.28
Residential (10 DU/AC)	0.40	0.39	0.30	0.22	0.18
Condominium	0.35	0.34	0.26	0.20	0.16
Mobile Home Park	0.25	0.24	0.19	0.14	0.12
Apartments	0.20	0.19	0.15	0.11	0.09
Commercial/Industrial	0.10	0.10	0.08	0.06	0.05

NOTES:

(1) Recommended a_p values from Figure C-4

(2) AMC II assumed for all Fm values

(3) CN values obtained from Figure C-3

(4) DU/AC=dwelling unit per acre

NOAA Atlas 14, Volume 6, Version 2
Location name: Hinkley, California, USA*
Latitude: 34.9997°, Longitude: -117.3236°
Elevation: 2096 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.077 (0.063-0.095)	0.109 (0.089-0.135)	0.153 (0.125-0.190)	0.190 (0.154-0.238)	0.244 (0.191-0.314)	0.286 (0.220-0.376)	0.331 (0.249-0.446)	0.380 (0.278-0.525)	0.448 (0.315-0.645)	0.504 (0.343-0.749)
10-min	0.111 (0.091-0.137)	0.157 (0.128-0.193)	0.220 (0.179-0.272)	0.273 (0.221-0.341)	0.349 (0.274-0.450)	0.410 (0.315-0.540)	0.475 (0.357-0.639)	0.544 (0.398-0.752)	0.643 (0.451-0.924)	0.722 (0.491-1.07)
15-min	0.134 (0.109-0.165)	0.189 (0.155-0.234)	0.266 (0.217-0.329)	0.330 (0.267-0.412)	0.422 (0.331-0.544)	0.496 (0.381-0.652)	0.575 (0.431-0.773)	0.658 (0.481-0.910)	0.777 (0.546-1.12)	0.874 (0.594-1.30)
30-min	0.184 (0.151-0.227)	0.261 (0.213-0.322)	0.366 (0.298-0.453)	0.454 (0.368-0.567)	0.581 (0.456-0.749)	0.683 (0.525-0.898)	0.791 (0.594-1.06)	0.906 (0.662-1.25)	1.07 (0.751-1.54)	1.20 (0.817-1.79)
60-min	0.249 (0.204-0.307)	0.352 (0.288-0.435)	0.494 (0.403-0.612)	0.614 (0.497-0.767)	0.786 (0.616-1.01)	0.923 (0.709-1.21)	1.07 (0.802-1.44)	1.22 (0.895-1.69)	1.45 (1.02-2.08)	1.62 (1.10-2.42)
2-hr	0.342 (0.280-0.422)	0.465 (0.380-0.575)	0.636 (0.518-0.787)	0.780 (0.631-0.974)	0.987 (0.774-1.27)	1.15 (0.886-1.52)	1.33 (0.998-1.79)	1.52 (1.11-2.10)	1.78 (1.25-2.57)	2.00 (1.36-2.97)
3-hr	0.399 (0.327-0.493)	0.538 (0.440-0.665)	0.729 (0.594-0.903)	0.892 (0.721-1.11)	1.12 (0.881-1.45)	1.31 (1.01-1.72)	1.51 (1.13-2.03)	1.72 (1.26-2.38)	2.02 (1.42-2.90)	2.26 (1.54-3.36)
6-hr	0.500 (0.409-0.617)	0.671 (0.549-0.830)	0.906 (0.739-1.12)	1.11 (0.894-1.38)	1.39 (1.09-1.79)	1.62 (1.24-2.12)	1.86 (1.39-2.50)	2.11 (1.54-2.91)	2.47 (1.73-3.55)	2.76 (1.87-4.09)
12-hr	0.582 (0.477-0.719)	0.799 (0.653-0.988)	1.09 (0.892-1.36)	1.34 (1.08-1.67)	1.69 (1.32-2.18)	1.96 (1.51-2.58)	2.25 (1.69-3.03)	2.55 (1.86-3.53)	2.97 (2.09-4.27)	3.30 (2.25-4.91)
24-hr	0.716 (0.636-0.823)	1.01 (0.897-1.16)	1.41 (1.24-1.62)	1.74 (1.52-2.02)	2.19 (1.86-2.63)	2.54 (2.11-3.13)	2.91 (2.36-3.66)	3.29 (2.59-4.26)	3.81 (2.88-5.15)	4.22 (3.08-5.90)
2-day	0.831 (0.738-0.955)	1.19 (1.05-1.37)	1.66 (1.47-1.92)	2.05 (1.80-2.39)	2.58 (2.19-3.10)	2.99 (2.48-3.67)	3.41 (2.76-4.29)	3.84 (3.02-4.97)	4.42 (3.34-5.97)	4.88 (3.56-6.82)
3-day	0.889 (0.789-1.02)	1.28 (1.13-1.47)	1.79 (1.58-2.07)	2.21 (1.94-2.57)	2.78 (2.35-3.34)	3.21 (2.66-3.94)	3.65 (2.96-4.60)	4.10 (3.23-5.32)	4.71 (3.56-6.37)	5.18 (3.78-7.25)
4-day	0.933 (0.829-1.07)	1.34 (1.19-1.55)	1.89 (1.67-2.18)	2.33 (2.04-2.71)	2.92 (2.48-3.52)	3.37 (2.80-4.14)	3.83 (3.10-4.82)	4.30 (3.38-5.57)	4.92 (3.72-6.65)	5.40 (3.94-7.56)
7-day	1.00 (0.888-1.15)	1.44 (1.28-1.66)	2.02 (1.79-2.34)	2.49 (2.19-2.90)	3.13 (2.65-3.76)	3.60 (2.99-4.43)	4.08 (3.31-5.14)	4.57 (3.60-5.92)	5.21 (3.94-7.04)	5.69 (4.15-7.96)
10-day	1.04 (0.927-1.20)	1.51 (1.34-1.74)	2.12 (1.88-2.45)	2.62 (2.30-3.05)	3.29 (2.79-3.96)	3.79 (3.15-4.66)	4.30 (3.48-5.41)	4.80 (3.78-6.22)	5.48 (4.14-7.40)	5.98 (4.36-8.37)
20-day	1.19 (1.05-1.36)	1.74 (1.54-2.00)	2.48 (2.19-2.86)	3.08 (2.70-3.59)	3.91 (3.32-4.71)	4.54 (3.77-5.58)	5.18 (4.20-6.52)	5.82 (4.59-7.54)	6.66 (5.04-9.00)	7.30 (5.32-10.2)
30-day	1.34 (1.19-1.54)	1.97 (1.75-2.27)	2.84 (2.51-3.27)	3.55 (3.11-4.13)	4.54 (3.85-5.47)	5.31 (4.41-6.52)	6.08 (4.92-7.65)	6.86 (5.40-8.88)	7.89 (5.96-10.7)	8.66 (6.32-12.1)
45-day	1.54 (1.36-1.77)	2.28 (2.02-2.63)	3.31 (2.93-3.82)	4.17 (3.66-4.86)	5.39 (4.57-6.48)	6.34 (5.27-7.80)	7.31 (5.92-9.21)	8.30 (6.54-10.8)	9.62 (7.27-13.0)	10.6 (7.74-14.8)
60-day	1.68 (1.49-1.93)	2.50 (2.22-2.88)	3.65 (3.22-4.21)	4.62 (4.05-5.38)	6.01 (5.09-7.23)	7.11 (5.90-8.74)	8.24 (6.68-10.4)	9.40 (7.40-12.2)	11.0 (8.28-14.8)	12.1 (8.86-17.0)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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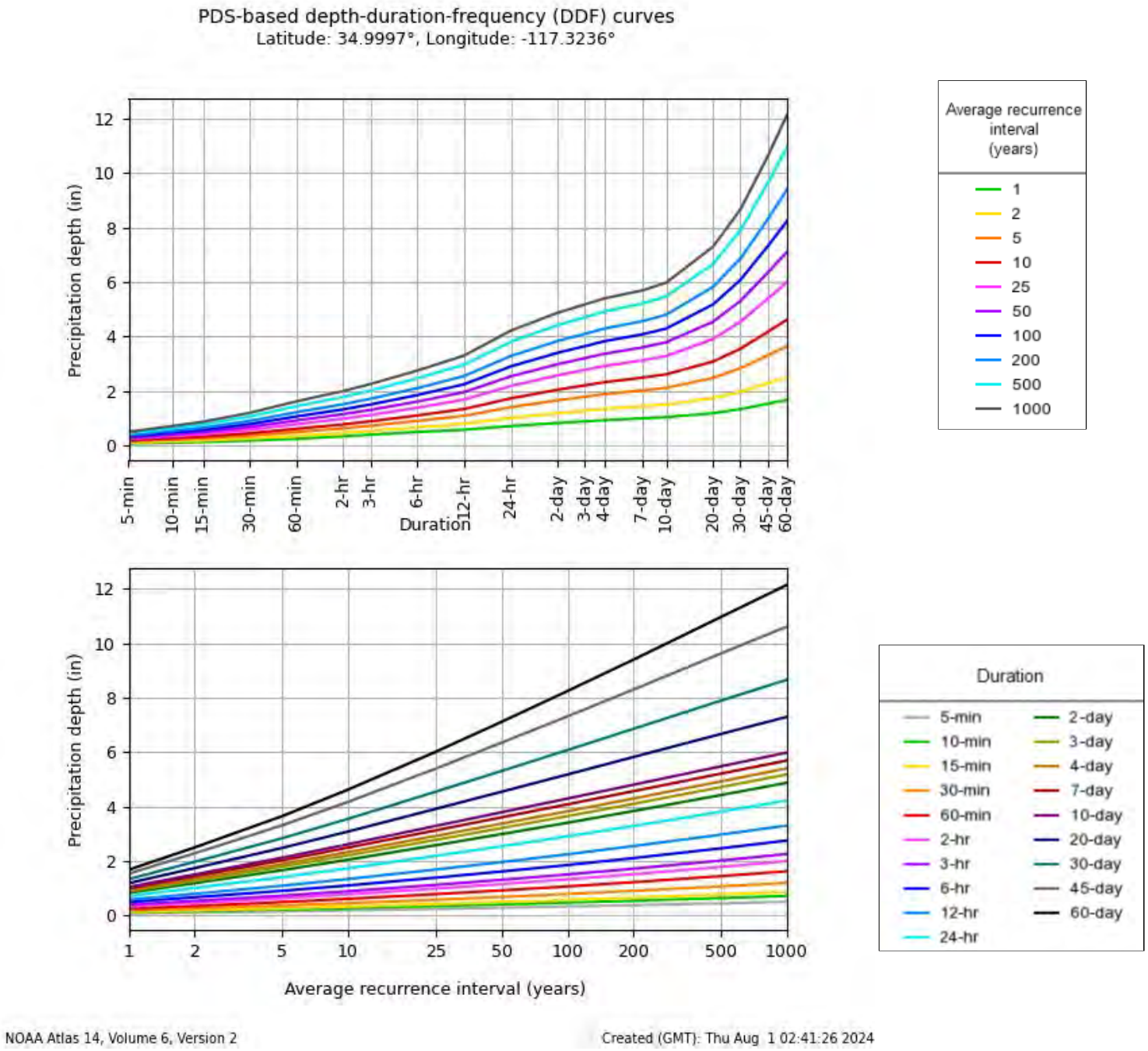
PF graphical



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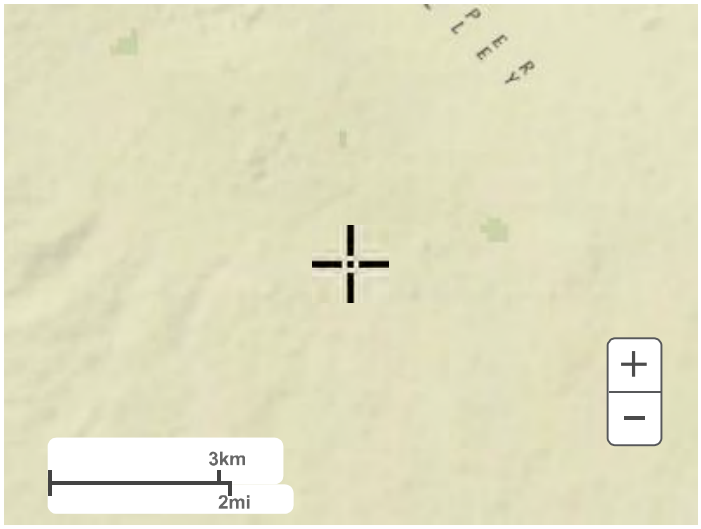
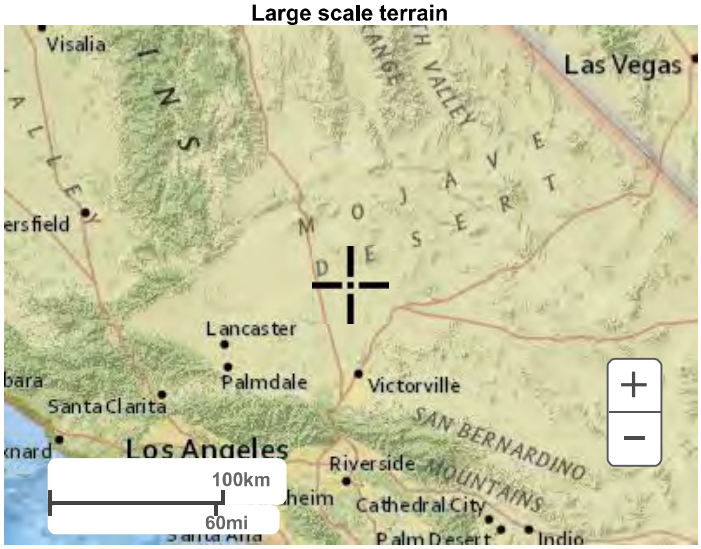
Maps & aerials

Small scale terrain

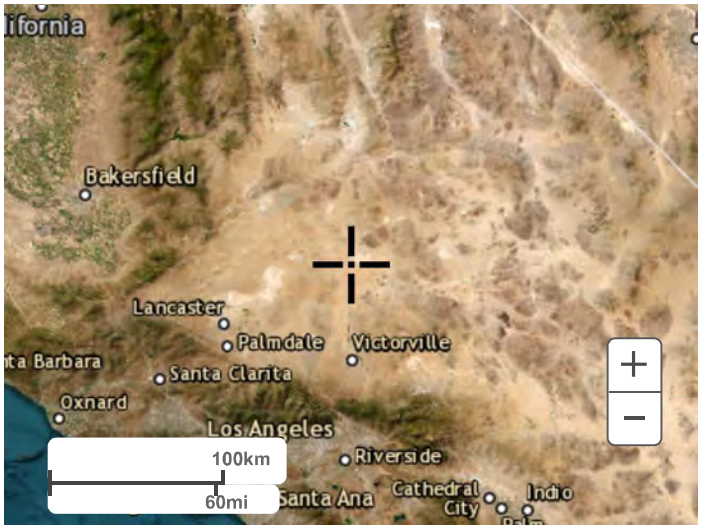


Large scale terrain



Large scale map

Large scale aerial



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National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

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NOAA Atlas 14, Volume 6, Version 2
Location name: Hinkley, California, USA*
Latitude: 34.9242°, Longitude: -117.3299°
Elevation: 2295 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.078 (0.064-0.096)	0.110 (0.090-0.135)	0.154 (0.125-0.190)	0.191 (0.155-0.238)	0.244 (0.192-0.314)	0.287 (0.221-0.377)	0.333 (0.250-0.447)	0.381 (0.279-0.527)	0.451 (0.317-0.648)	0.507 (0.345-0.753)
10-min	0.111 (0.091-0.137)	0.157 (0.129-0.194)	0.220 (0.180-0.272)	0.274 (0.222-0.341)	0.350 (0.275-0.451)	0.412 (0.317-0.541)	0.477 (0.358-0.641)	0.547 (0.400-0.755)	0.646 (0.454-0.928)	0.727 (0.494-1.08)
15-min	0.135 (0.110-0.166)	0.190 (0.156-0.234)	0.266 (0.217-0.329)	0.331 (0.268-0.413)	0.423 (0.332-0.545)	0.498 (0.383-0.654)	0.577 (0.433-0.775)	0.661 (0.483-0.913)	0.781 (0.549-1.12)	0.879 (0.597-1.31)
30-min	0.185 (0.151-0.228)	0.261 (0.213-0.322)	0.365 (0.298-0.452)	0.454 (0.368-0.567)	0.581 (0.456-0.748)	0.683 (0.525-0.897)	0.791 (0.594-1.06)	0.907 (0.663-1.25)	1.07 (0.753-1.54)	1.21 (0.820-1.79)
60-min	0.248 (0.203-0.306)	0.350 (0.287-0.432)	0.491 (0.401-0.607)	0.610 (0.495-0.761)	0.781 (0.613-1.00)	0.918 (0.706-1.21)	1.06 (0.799-1.43)	1.22 (0.891-1.68)	1.44 (1.01-2.07)	1.62 (1.10-2.41)
2-hr	0.339 (0.278-0.418)	0.462 (0.378-0.570)	0.631 (0.515-0.780)	0.774 (0.627-0.966)	0.979 (0.768-1.26)	1.14 (0.880-1.50)	1.32 (0.991-1.77)	1.51 (1.10-2.08)	1.77 (1.25-2.55)	1.99 (1.35-2.95)
3-hr	0.396 (0.324-0.488)	0.533 (0.436-0.658)	0.722 (0.589-0.893)	0.883 (0.715-1.10)	1.11 (0.873-1.43)	1.30 (0.998-1.70)	1.49 (1.12-2.01)	1.70 (1.24-2.35)	2.00 (1.40-2.87)	2.24 (1.52-3.32)
6-hr	0.495 (0.406-0.610)	0.664 (0.544-0.819)	0.895 (0.731-1.11)	1.09 (0.884-1.36)	1.37 (1.08-1.76)	1.59 (1.23-2.09)	1.83 (1.37-2.46)	2.08 (1.52-2.87)	2.43 (1.71-3.50)	2.72 (1.85-4.03)
12-hr	0.576 (0.472-0.710)	0.788 (0.645-0.973)	1.08 (0.880-1.33)	1.32 (1.07-1.64)	1.66 (1.30-2.14)	1.93 (1.48-2.53)	2.21 (1.66-2.97)	2.51 (1.83-3.46)	2.92 (2.05-4.19)	3.24 (2.20-4.82)
24-hr	0.706 (0.626-0.811)	0.994 (0.881-1.14)	1.38 (1.22-1.59)	1.70 (1.49-1.98)	2.14 (1.82-2.58)	2.49 (2.07-3.06)	2.84 (2.30-3.58)	3.21 (2.53-4.16)	3.72 (2.81-5.03)	4.12 (3.01-5.76)
2-day	0.820 (0.728-0.943)	1.17 (1.04-1.35)	1.63 (1.44-1.88)	2.01 (1.76-2.34)	2.53 (2.14-3.04)	2.93 (2.43-3.60)	3.34 (2.70-4.20)	3.76 (2.96-4.87)	4.33 (3.27-5.84)	4.76 (3.48-6.66)
3-day	0.877 (0.778-1.01)	1.26 (1.11-1.45)	1.76 (1.56-2.03)	2.17 (1.90-2.53)	2.72 (2.31-3.28)	3.15 (2.61-3.87)	3.58 (2.90-4.50)	4.02 (3.16-5.20)	4.61 (3.48-6.23)	5.07 (3.70-7.08)
4-day	0.920 (0.816-1.06)	1.32 (1.17-1.52)	1.86 (1.64-2.14)	2.29 (2.00-2.66)	2.87 (2.43-3.45)	3.31 (2.74-4.06)	3.75 (3.04-4.73)	4.21 (3.31-5.45)	4.82 (3.64-6.51)	5.28 (3.86-7.39)
7-day	0.983 (0.872-1.13)	1.41 (1.25-1.63)	1.99 (1.76-2.29)	2.45 (2.15-2.85)	3.07 (2.60-3.69)	3.54 (2.94-4.35)	4.00 (3.24-5.04)	4.48 (3.52-5.80)	5.10 (3.85-6.89)	5.57 (4.06-7.78)
10-day	1.02 (0.910-1.18)	1.48 (1.31-1.70)	2.08 (1.84-2.40)	2.57 (2.25-2.99)	3.23 (2.74-3.89)	3.73 (3.09-4.58)	4.22 (3.42-5.32)	4.72 (3.72-6.11)	5.38 (4.06-7.26)	5.87 (4.28-8.20)
20-day	1.16 (1.03-1.34)	1.71 (1.51-1.96)	2.44 (2.16-2.82)	3.04 (2.66-3.53)	3.86 (3.27-4.64)	4.49 (3.72-5.52)	5.12 (4.15-6.45)	5.76 (4.53-7.46)	6.59 (4.98-8.90)	7.21 (5.26-10.1)
30-day	1.30 (1.16-1.50)	1.93 (1.71-2.22)	2.78 (2.46-3.21)	3.49 (3.06-4.07)	4.48 (3.80-5.40)	5.24 (4.36-6.45)	6.01 (4.87-7.57)	6.79 (5.35-8.80)	7.82 (5.90-10.6)	8.57 (6.25-12.0)
45-day	1.50 (1.33-1.73)	2.24 (1.98-2.57)	3.25 (2.88-3.76)	4.11 (3.61-4.79)	5.33 (4.52-6.42)	6.29 (5.22-7.74)	7.27 (5.89-9.15)	8.26 (6.50-10.7)	9.58 (7.23-12.9)	10.6 (7.71-14.8)
60-day	1.64 (1.45-1.88)	2.44 (2.17-2.82)	3.59 (3.17-4.14)	4.56 (4.00-5.31)	5.95 (5.05-7.17)	7.07 (5.87-8.68)	8.21 (6.65-10.3)	9.38 (7.38-12.1)	10.9 (8.27-14.8)	12.1 (8.85-17.0)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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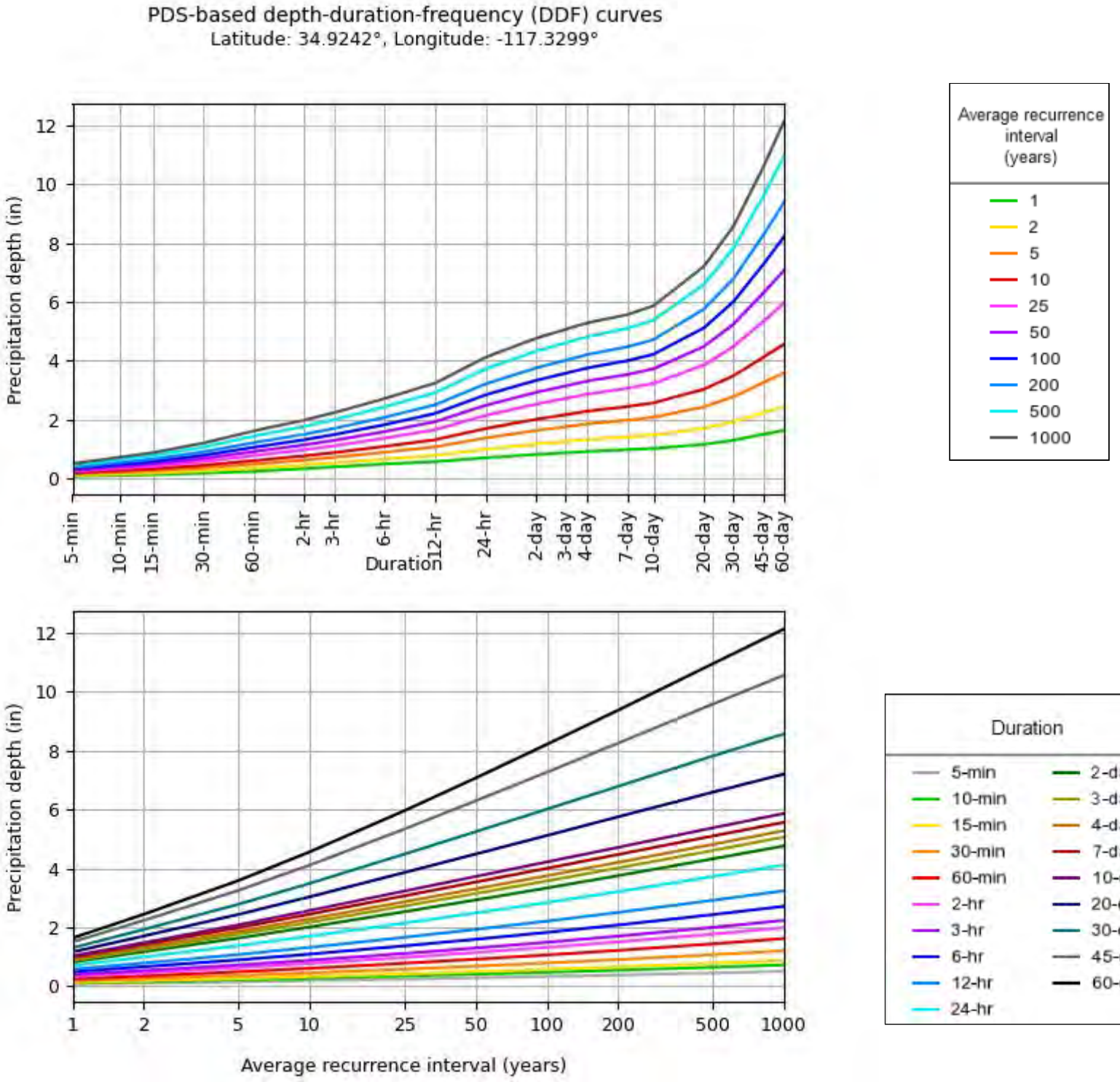
PF graphical



NOAA Atlas 14, Volume 6, Version 2 Created (GMT): Mon Jun 3 18:15:29 2024

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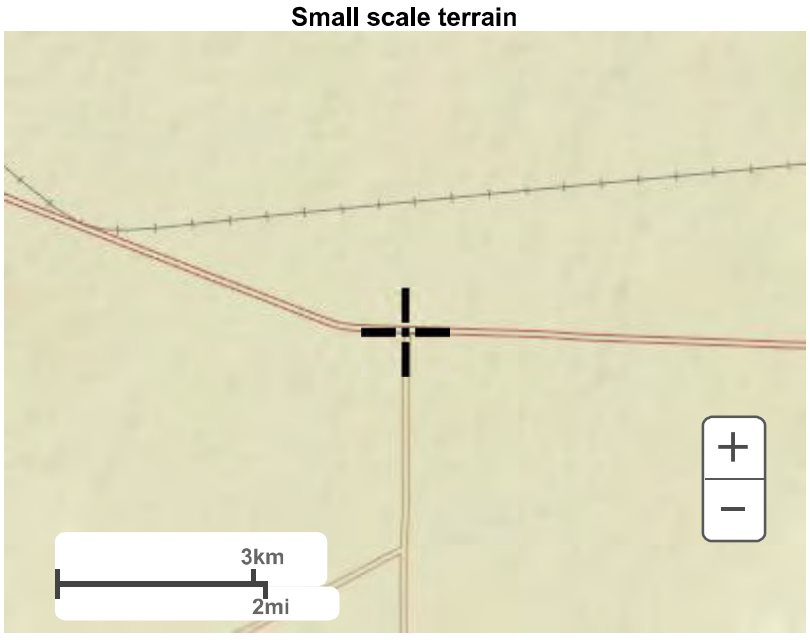
Maps & aerials

Small scale terrain



Large scale terrain

Large scale map

Large scale aerial

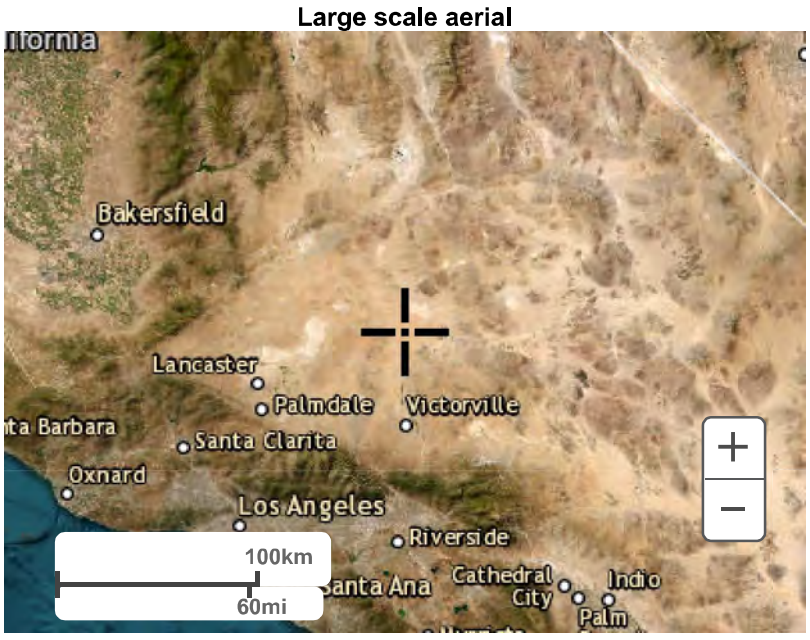


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Figure ADD-1
Antecedent Moisture Condition (AMC)

5-day Rainfall - NOAA Atlas 14
(50% of Total Rainfall Prior to Peak)*

*1/2 (11-day - 1-day) =
1/2 (([10-day] + (1/10 ([20-day] - [10-day]))) - [1-day])

5 0 5 10 15
Miles

N
W E
S

Growing Season
- AMC I
- AMC II
- AMC III

Project watershed

STATE HWY 127
I-15
US HWY 395
STATE HWY 247
I-40
STATE HWY 62

Baxter Valley
Ridgecrest
Boron
Barstow
Needles
Adelanto
Victorville
Apple Valley
Hesperia
Wrightwood
Crestline
Lake Arrowhead
Running Springs
Big Bear City
Big Bear Lake
Yucca Valley
Joshua Tree
Twentynine Palms
Morongo Valley
Claremont
Parker Dam
Blythe

```
**************************************************************************

             F L O O D    R O U T I N G    A N A L Y S I S
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             Ver. 18.0  Release Date: 05/01/2011  License ID 1499

                          Analysis prepared by:

                      Kimley-Horn and Associates, Inc.
                             765 The City Drive
                                Suite 200
                              Orange, CA 92868

 ************************* DESCRIPTION OF STUDY *************************
* JUNIPER LOCKHART                                                      *
* 100-YR ONSITE                                                         *
* EXISTING CONDITIONS                                                   *
 ************************************************************************

  FILE NAME: JL_ONEX.DAT
  TIME/DATE OF STUDY: 11:35 08/05/2024


**************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    101.00 IS CODE = 1.1
--------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
==========================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERSHED AREA =      80.340 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.580 HOURS
         DESERT(UNDEVELOPED) S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.965
         LOW LOSS FRACTION = 0.980
         *HYDROGRAPH MODEL #1 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.33
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.79
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.07
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  1.51
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  1.86
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  2.91

         *USER SPECIFIED PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
           5-MINUTE FACTOR = 1.000
          30-MINUTE FACTOR = 1.000
           1-HOUR FACTOR = 1.000
           3-HOUR FACTOR = 1.000
           6-HOUR FACTOR = 1.000
          24-HOUR FACTOR = 1.000

         UNIT HYDROGRAPH TIME UNIT =   5.000 MINUTES
         UNIT INTERVAL PERCENTAGE OF LAG-TIME =  14.368
```

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	0.642	6.237
2	2.660	19.604
3	6.004	32.497
4	11.187	50.357
5	21.045	95.779
6	34.685	132.532
7	45.756	107.566
8	54.006	80.159
9	60.150	59.693
10	64.822	45.398
11	68.673	37.417
12	72.018	32.499
13	74.804	27.062
14	77.284	24.104
15	79.400	20.556
16	81.277	18.233
17	82.903	15.807
18	84.424	14.776
19	85.817	13.536
20	87.112	12.575
21	88.261	11.170
22	89.235	9.457
23	90.092	8.335
24	90.908	7.926
25	91.689	7.588
26	92.386	6.773
27	93.053	6.476
28	93.683	6.126
29	94.222	5.240
30	94.711	4.747
31	95.199	4.746
32	95.661	4.488
33	96.041	3.688
34	96.414	3.630
35	96.786	3.606
36	97.081	2.871
37	97.340	2.512
38	97.598	2.512
39	97.827	2.222
40	97.975	1.440
41	98.119	1.397
42	98.264	1.405
43	98.427	1.593
44	98.600	1.675
45	98.772	1.675
46	98.945	1.677
47	99.117	1.675
48	99.290	1.675
49	99.462	1.675
50	99.634	1.675
51	99.807	1.675
52	99.979	1.675

53	100.000	0.204

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 16.9852
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 2.4960

```
**************************************************************************

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             Ver. 18.0  Release Date: 05/01/2011  License ID 1499

                          Analysis prepared by:

                      Kimley-Horn and Associates, Inc.
                             765 The City Drive
                                 Suite 200
                              Orange, CA 92868

 ************************* DESCRIPTION OF STUDY *************************
* JUNIPER LOCKHART                                                      *
* 2D MODEL EFFECTIVE RAINFALL                                           *
* 100-YR                                                                *
 ************************************************************************

  FILE NAME: JLH2D.DAT
  TIME/DATE OF STUDY: 11:57 08/16/2024


**************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    101.00 IS CODE = 1.1
--------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
==========================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERCOURSE LENGTH =   67774.000 FEET
         LENGTH FROM CONCENTRATION POINT TO CENTROID =   34616.000 FEET
         ELEVATION VARIATION ALONG WATERCOURSE =     878.000 FEET
         BASIN FACTOR = 0.100
         WATERSHED AREA =   17076.891 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         WATERCOURSE "LAG" TIME =    5.795 HOURS
         DESERT(UNDEVELOPED) S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.705
         LOW LOSS FRACTION = 0.940
         *HYDROGRAPH MODEL #1 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.33
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.79
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.06
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  1.49
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  1.83
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  2.84

         *USER SPECIFIED PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
           5-MINUTE FACTOR = 1.000
          30-MINUTE FACTOR = 1.000
           1-HOUR FACTOR = 1.000
           3-HOUR FACTOR = 1.000
           6-HOUR FACTOR = 1.000
          24-HOUR FACTOR = 1.000
```

UNIT HYDROGRAPH TIME UNIT = 5.000 MINUTES
UNIT INTERVAL PERCENTAGE OF LAG-TIME = 1.438

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	0.063	130.667
2	0.190	261.334
3	0.316	261.333
4	0.443	261.333
5	0.569	261.333
6	0.696	261.334
7	0.823	261.333
8	0.949	261.332
9	1.081	272.533
10	1.295	441.869
11	1.537	498.910
12	1.778	498.910
13	2.020	498.907
14	2.261	498.916
15	2.503	498.904
16	2.744	498.913
17	2.986	498.907
18	3.249	543.708
19	3.597	718.794
20	3.954	736.486
21	4.311	736.485
22	4.667	736.486
23	5.024	736.470
24	5.380	736.507
25	5.737	736.475
26	6.094	736.496
27	6.504	847.343
28	6.987	997.016
29	7.470	997.814
30	7.953	997.837
31	8.436	997.804
32	8.919	997.802
33	9.402	997.848
34	9.886	997.804
35	10.380	1021.319
36	11.170	1631.724
37	12.090	1900.583
38	13.011	1900.626
39	13.931	1900.605
40	14.851	1900.626
41	15.772	1900.583
42	16.692	1900.670
43	17.612	1900.538
44	18.612	2063.984
45	20.024	2917.758
46	21.497	3040.879
47	22.969	3040.966
48	24.442	3040.970

49	25.914	3040.879
50	27.387	3041.053
51	28.859	3040.966
52	30.331	3040.879
53	31.718	2864.068
54	32.952	2548.221
55	34.183	2542.005
56	35.414	2542.083
57	36.645	2542.091
58	37.876	2542.083
59	39.106	2541.910
60	40.337	2542.178
61	41.565	2534.812
62	42.597	2132.792
63	43.518	1900.676
64	44.438	1900.494
65	45.358	1900.668
66	46.279	1900.494
67	47.199	1900.668
68	48.119	1900.494
69	49.039	1900.676
70	49.942	1863.325
71	50.715	1597.008
72	51.463	1544.421
73	52.210	1544.059
74	52.958	1544.421
75	53.706	1544.059
76	54.454	1544.240
77	55.201	1544.240
78	55.949	1544.240
79	56.640	1426.775
80	57.197	1151.517
81	57.750	1140.298
82	58.302	1140.298
83	58.854	1140.645
84	59.406	1139.944
85	59.958	1140.653
86	60.510	1140.298
87	61.062	1139.944
88	61.556	1018.619
89	62.005	927.105
90	62.453	927.105
91	62.902	925.703
92	63.350	926.758
93	63.799	926.049
94	64.248	926.750
95	64.696	926.766
96	65.140	916.587
97	65.533	811.381
98	65.913	784.044
99	66.292	783.350
100	66.672	784.737
101	67.051	783.335
102	67.431	784.753
103	67.811	783.335
104	68.190	784.044
105	68.562	767.909
106	68.909	716.023
107	69.254	712.509
108	69.599	712.509

109	69.944	713.202
110	70.289	712.525
111	70.634	712.509
112	70.979	713.202
113	71.324	712.509
114	71.641	654.305
115	71.929	593.989
116	72.216	593.295
117	72.504	594.698
118	72.792	593.989
119	73.079	593.295
120	73.367	593.989
121	73.654	593.989
122	73.940	591.184
123	74.202	540.700
124	74.455	522.454
125	74.708	522.470
126	74.961	522.454
127	75.214	522.470
128	75.467	523.163
129	75.720	522.454
130	75.973	522.454
131	76.225	519.665
132	76.467	499.324
133	76.709	499.308
134	76.950	498.615
135	77.191	498.615
136	77.434	500.033
137	77.674	497.212
138	77.917	500.710
139	78.158	497.921
140	78.378	454.433
141	78.568	392.731
142	78.758	391.313
143	78.948	392.731
144	79.137	391.313
145	79.327	392.715
146	79.517	391.329
147	79.707	392.715
148	79.896	391.329
149	80.087	392.715
150	80.276	391.329
151	80.466	392.715
152	80.656	391.313
153	80.846	392.731
154	81.035	391.313
155	81.226	392.731
156	81.415	391.313
157	81.600	381.512
158	81.759	329.595
159	81.915	321.196
160	82.070	319.794
161	82.225	321.181
162	82.380	319.794
163	82.536	322.583
164	82.691	319.794
165	82.846	319.794
166	83.002	322.583
167	83.156	318.392
168	83.312	321.196

169	83.467	321.181
170	83.623	321.196
171	83.778	321.196
172	83.933	319.778
173	84.089	321.196
174	84.244	319.778
175	84.388	298.759
176	84.527	286.122
177	84.664	283.318
178	84.803	286.122
179	84.940	284.736
180	85.080	287.525
181	85.217	284.720
182	85.355	284.720
183	85.493	284.736
184	85.632	286.122
185	85.770	284.720
186	85.907	284.720
187	86.046	286.138
188	86.183	283.318
189	86.322	286.122
190	86.460	286.122
191	86.597	283.318
192	86.729	270.712
193	86.845	241.232
194	86.960	237.041
195	87.075	237.041
196	87.190	238.427
197	87.305	237.041
198	87.421	238.443
199	87.535	237.025
200	87.650	237.041
201	87.766	238.443
202	87.880	237.025
203	87.995	237.041
204	88.111	238.443
205	88.225	237.041
206	88.340	237.025
207	88.456	239.846
208	88.570	235.639
209	88.684	235.623
210	88.775	187.944
211	88.862	179.530
212	88.948	176.725
213	89.035	179.530
214	89.122	179.545
215	89.207	176.725
216	89.293	176.725
217	89.380	179.530
218	89.465	176.725
219	89.552	179.530
220	89.638	176.725
221	89.725	179.530
222	89.812	179.530
223	89.897	176.725
224	89.983	176.725
225	90.070	179.530
226	90.157	179.530
227	90.240	171.116
228	90.320	165.506

229	90.400	165.491
230	90.481	168.311
231	90.562	165.506
232	90.643	168.311
233	90.723	165.506
234	90.803	165.506
235	90.884	165.506
236	90.964	165.506
237	91.045	168.295
238	91.125	165.506
239	91.207	168.311
240	91.286	162.702
241	91.368	171.116
242	91.449	165.506
243	91.527	162.702
244	91.607	165.506
245	91.675	140.249
246	91.746	145.874
247	91.815	143.069
248	91.883	140.249
249	91.952	143.069
250	92.022	143.053
251	92.091	143.069
252	92.159	140.264
253	92.230	145.858
254	92.297	140.264
255	92.367	143.053
256	92.436	143.069
257	92.504	140.264
258	92.575	145.858
259	92.642	140.264
260	92.712	143.053
261	92.781	143.069
262	92.845	131.850
263	92.909	131.835
264	92.973	131.850
265	93.035	129.030
266	93.099	131.850
267	93.163	131.835
268	93.225	129.030
269	93.289	131.850
270	93.351	129.030
271	93.415	131.850
272	93.478	129.030
273	93.542	131.850
274	93.604	129.030
275	93.669	134.655
276	93.730	126.225
277	93.796	134.655
278	93.858	129.030
279	93.917	120.632
280	93.965	100.983
281	94.014	100.983
282	94.063	100.983
283	94.112	100.983
284	94.161	100.983
285	94.211	103.804
286	94.259	98.179
287	94.308	100.983
288	94.357	100.983

289	94.406	100.983
290	94.454	100.983
291	94.503	100.983
292	94.552	100.999
293	94.601	100.983
294	94.650	100.983
295	94.699	100.983
296	94.748	100.983
297	94.797	100.983
298	94.847	103.788
299	94.895	98.195
300	94.943	100.983
301	94.991	98.179
302	95.043	106.593
303	95.090	98.179
304	95.139	100.983
305	95.188	100.983
306	95.237	100.999
307	95.286	100.983
308	95.335	100.983
309	95.383	100.983
310	95.432	100.983
311	95.481	100.983
312	95.530	100.983
313	95.578	98.195
314	95.623	92.569
315	95.658	72.921
316	95.697	81.351
317	95.734	75.742
318	95.771	75.742
319	95.809	78.546
320	95.847	78.546
321	95.882	72.937
322	95.921	81.351
323	95.958	75.726
324	95.995	75.742
325	96.033	78.546
326	96.071	78.546
327	96.107	75.742
328	96.145	78.546
329	96.182	75.742
330	96.220	78.546
331	96.255	72.921
332	96.296	84.155
333	96.332	72.937
334	96.370	78.546
335	96.405	72.937
336	96.446	84.155
337	96.481	72.937
338	96.519	78.546
339	96.557	78.530
340	96.592	72.937
341	96.630	78.546
342	96.668	78.546
343	96.706	78.546
344	96.744	78.546
345	96.780	72.937
346	96.818	78.546
347	96.856	78.530
348	96.891	72.937

349	96.921	61.718
350	96.948	56.109
351	96.973	50.484
352	96.997	50.500
353	97.027	61.702
354	97.051	50.500
355	97.076	50.500
356	97.103	56.093
357	97.125	44.890
358	97.152	56.093
359	97.179	56.109
360	97.204	50.500
361	97.231	56.093
362	97.255	50.500
363	97.280	50.484
364	97.310	61.718
365	97.331	44.890
366	97.361	61.702
367	97.383	44.890
368	97.413	61.702
369	97.434	44.890
370	97.464	61.718
371	97.489	50.484
372	97.513	50.500
373	97.540	56.093
374	97.565	50.500
375	97.592	56.109
376	97.619	56.093
377	97.644	50.500
378	97.668	50.484
379	97.698	61.718
380	97.720	44.890
381	97.747	56.093
382	97.774	56.109
383	97.798	50.484
384	97.812	28.062
385	97.828	33.656
386	97.842	28.047
387	97.856	28.062
388	97.872	33.656
389	97.885	28.047
390	97.899	28.062
391	97.913	28.047
392	97.929	33.656
393	97.942	28.062
394	97.959	33.656
395	97.970	22.437
396	97.986	33.672
397	98.002	33.656
398	98.013	22.437
399	98.029	33.672
400	98.043	28.047
401	98.059	33.672
402	98.070	22.437
403	98.086	33.656
404	98.103	33.672
405	98.114	22.437
406	98.130	33.656
407	98.143	28.062
408	98.160	33.656

409	98.173	28.047
410	98.187	28.062
411	98.201	28.047
412	98.217	33.656
413	98.230	28.062
414	98.244	28.047
415	98.258	28.047
416	98.274	33.672
417	98.287	28.047
418	98.304	33.656
419	98.320	33.672
420	98.336	33.656
421	98.355	39.265
422	98.372	33.672
423	98.391	39.265
424	98.404	28.062
425	98.426	44.875
426	98.442	33.672
427	98.459	33.656
428	98.475	33.656
429	98.491	33.672
430	98.508	33.656
431	98.529	44.890
432	98.543	28.047
433	98.562	39.265
434	98.578	33.672
435	98.597	39.265
436	98.613	33.672
437	98.630	33.656
438	98.646	33.656
439	98.665	39.281
440	98.684	39.265
441	98.698	28.047
442	98.719	44.890
443	98.733	28.047
444	98.752	39.281
445	98.768	33.656
446	98.785	33.672
447	98.804	39.265
448	98.823	39.265
449	98.836	28.062
450	98.855	39.265
451	98.872	33.672
452	98.891	39.265
453	98.907	33.656
454	98.923	33.672
455	98.942	39.265
456	98.958	33.672
457	98.975	33.656
458	98.994	39.265
459	99.010	33.672
460	99.026	33.672
461	99.043	33.672
462	99.059	33.672
463	99.075	33.672
464	99.092	33.672
465	99.108	33.672
466	99.124	33.672
467	99.141	33.672
468	99.157	33.672

469	99.173	33.672
470	99.189	33.672
471	99.206	33.672
472	99.222	33.672
473	99.238	33.672
474	99.255	33.672
475	99.271	33.672
476	99.287	33.672
477	99.304	33.672
478	99.320	33.672
479	99.336	33.672
480	99.352	33.672
481	99.369	33.672
482	99.385	33.672
483	99.401	33.672
484	99.418	33.672
485	99.434	33.672
486	99.450	33.672
487	99.467	33.672
488	99.483	33.672
489	99.499	33.672
490	99.515	33.672
491	99.532	33.672
492	99.548	33.672
493	99.564	33.672
494	99.581	33.672
495	99.597	33.672
496	99.613	33.672
497	99.630	33.672
498	99.646	33.672
499	99.662	33.672
500	99.679	33.672
501	99.695	33.672
502	99.711	33.672
503	99.727	33.672
504	99.744	33.672
505	99.760	33.672
506	99.776	33.672
507	99.793	33.672
508	99.809	33.672
509	99.825	33.672
510	99.842	33.672
511	99.858	33.672
512	99.874	33.672
513	99.890	33.672
514	99.907	33.672
515	99.923	33.672
516	99.939	33.672
517	99.956	33.672
518	99.972	33.672
519	99.988	33.672
520	100.000	24.139

UNIT PERIOD (NUMBER)	UNIT RAINFALL (INCHES)	UNIT SOIL-LOSS (INCHES)	EFFECTIVE RAINFALL (INCHES)
1	0.0031	0.0029	0.0002
2	0.0031	0.0029	0.0002
3	0.0032	0.0030	0.0002
4	0.0032	0.0030	0.0002
5	0.0032	0.0030	0.0002
6	0.0032	0.0030	0.0002
7	0.0032	0.0030	0.0002
8	0.0032	0.0030	0.0002
9	0.0032	0.0030	0.0002
10	0.0032	0.0030	0.0002
11	0.0032	0.0031	0.0002
12	0.0033	0.0031	0.0002
13	0.0033	0.0031	0.0002
14	0.0033	0.0031	0.0002
15	0.0033	0.0031	0.0002
16	0.0033	0.0031	0.0002
17	0.0033	0.0031	0.0002
18	0.0033	0.0031	0.0002
19	0.0033	0.0031	0.0002
20	0.0034	0.0032	0.0002
21	0.0034	0.0032	0.0002
22	0.0034	0.0032	0.0002
23	0.0034	0.0032	0.0002
24	0.0034	0.0032	0.0002
25	0.0034	0.0032	0.0002
26	0.0034	0.0032	0.0002
27	0.0035	0.0033	0.0002
28	0.0035	0.0033	0.0002
29	0.0035	0.0033	0.0002
30	0.0035	0.0033	0.0002
31	0.0035	0.0033	0.0002
32	0.0035	0.0033	0.0002
33	0.0035	0.0033	0.0002
34	0.0036	0.0033	0.0002
35	0.0036	0.0034	0.0002
36	0.0036	0.0034	0.0002
37	0.0036	0.0034	0.0002
38	0.0036	0.0034	0.0002
39	0.0036	0.0034	0.0002
40	0.0037	0.0034	0.0002
41	0.0037	0.0035	0.0002
42	0.0037	0.0035	0.0002
43	0.0037	0.0035	0.0002
44	0.0037	0.0035	0.0002
45	0.0037	0.0035	0.0002
46	0.0038	0.0035	0.0002
47	0.0038	0.0035	0.0002
48	0.0038	0.0036	0.0002
49	0.0038	0.0036	0.0002
50	0.0038	0.0036	0.0002
51	0.0038	0.0036	0.0002
52	0.0039	0.0036	0.0002
53	0.0039	0.0037	0.0002
54	0.0039	0.0037	0.0002

55	0.0039	0.0037	0.0002
56	0.0039	0.0037	0.0002
57	0.0040	0.0037	0.0002
58	0.0040	0.0037	0.0002
59	0.0040	0.0038	0.0002
60	0.0040	0.0038	0.0002
61	0.0040	0.0038	0.0002
62	0.0041	0.0038	0.0002
63	0.0041	0.0038	0.0002
64	0.0041	0.0039	0.0002
65	0.0041	0.0039	0.0002
66	0.0041	0.0039	0.0002
67	0.0042	0.0039	0.0003
68	0.0042	0.0039	0.0003
69	0.0042	0.0040	0.0003
70	0.0042	0.0040	0.0003
71	0.0043	0.0040	0.0003
72	0.0043	0.0040	0.0003
73	0.0043	0.0041	0.0003
74	0.0043	0.0041	0.0003
75	0.0044	0.0041	0.0003
76	0.0044	0.0041	0.0003
77	0.0044	0.0042	0.0003
78	0.0044	0.0042	0.0003
79	0.0045	0.0042	0.0003
80	0.0045	0.0042	0.0003
81	0.0045	0.0043	0.0003
82	0.0045	0.0043	0.0003
83	0.0046	0.0043	0.0003
84	0.0046	0.0043	0.0003
85	0.0046	0.0044	0.0003
86	0.0047	0.0044	0.0003
87	0.0047	0.0044	0.0003
88	0.0047	0.0044	0.0003
89	0.0048	0.0045	0.0003
90	0.0048	0.0045	0.0003
91	0.0048	0.0045	0.0003
92	0.0048	0.0046	0.0003
93	0.0049	0.0046	0.0003
94	0.0049	0.0046	0.0003
95	0.0050	0.0047	0.0003
96	0.0050	0.0047	0.0003
97	0.0050	0.0047	0.0003
98	0.0051	0.0048	0.0003
99	0.0051	0.0048	0.0003
100	0.0051	0.0048	0.0003
101	0.0052	0.0049	0.0003
102	0.0052	0.0049	0.0003
103	0.0053	0.0049	0.0003
104	0.0053	0.0050	0.0003
105	0.0053	0.0050	0.0003
106	0.0054	0.0050	0.0003
107	0.0054	0.0051	0.0003
108	0.0055	0.0051	0.0003
109	0.0055	0.0052	0.0003
110	0.0055	0.0052	0.0003
111	0.0056	0.0053	0.0003
112	0.0056	0.0053	0.0003
113	0.0057	0.0054	0.0003
114	0.0057	0.0054	0.0003

115	0.0058	0.0055	0.0003
116	0.0058	0.0055	0.0004
117	0.0059	0.0056	0.0004
118	0.0059	0.0056	0.0004
119	0.0060	0.0057	0.0004
120	0.0061	0.0057	0.0004
121	0.0061	0.0058	0.0004
122	0.0062	0.0058	0.0004
123	0.0062	0.0059	0.0004
124	0.0063	0.0059	0.0004
125	0.0064	0.0060	0.0004
126	0.0064	0.0060	0.0004
127	0.0065	0.0061	0.0004
128	0.0066	0.0062	0.0004
129	0.0066	0.0062	0.0004
130	0.0067	0.0063	0.0004
131	0.0068	0.0064	0.0004
132	0.0068	0.0064	0.0004
133	0.0069	0.0065	0.0004
134	0.0070	0.0066	0.0004
135	0.0071	0.0067	0.0004
136	0.0072	0.0067	0.0004
137	0.0073	0.0068	0.0004
138	0.0073	0.0069	0.0004
139	0.0075	0.0070	0.0004
140	0.0075	0.0071	0.0005
141	0.0077	0.0072	0.0005
142	0.0077	0.0073	0.0005
143	0.0079	0.0074	0.0005
144	0.0079	0.0075	0.0005
145	0.0076	0.0071	0.0005
146	0.0076	0.0072	0.0005
147	0.0078	0.0073	0.0005
148	0.0079	0.0074	0.0005
149	0.0081	0.0076	0.0005
150	0.0081	0.0077	0.0005
151	0.0083	0.0078	0.0005
152	0.0084	0.0079	0.0005
153	0.0086	0.0081	0.0005
154	0.0087	0.0082	0.0005
155	0.0089	0.0084	0.0005
156	0.0091	0.0085	0.0005
157	0.0093	0.0087	0.0006
158	0.0094	0.0088	0.0006
159	0.0097	0.0091	0.0006
160	0.0098	0.0092	0.0006
161	0.0101	0.0095	0.0006
162	0.0103	0.0096	0.0006
163	0.0106	0.0099	0.0006
164	0.0107	0.0101	0.0006
165	0.0111	0.0104	0.0007
166	0.0113	0.0106	0.0007
167	0.0117	0.0110	0.0007
168	0.0119	0.0112	0.0007
169	0.0130	0.0122	0.0008
170	0.0132	0.0124	0.0008
171	0.0138	0.0129	0.0008
172	0.0141	0.0132	0.0008
173	0.0147	0.0138	0.0009
174	0.0151	0.0142	0.0009

175	0.0158	0.0149	0.0010
176	0.0163	0.0153	0.0010
177	0.0172	0.0162	0.0010
178	0.0177	0.0167	0.0011
179	0.0189	0.0178	0.0011
180	0.0196	0.0184	0.0012
181	0.0211	0.0198	0.0013
182	0.0220	0.0207	0.0013
183	0.0240	0.0226	0.0014
184	0.0252	0.0237	0.0015
185	0.0382	0.0359	0.0023
186	0.0403	0.0379	0.0024
187	0.0455	0.0428	0.0027
188	0.0490	0.0461	0.0029
189	0.0666	0.0587	0.0079
190	0.0740	0.0587	0.0153
191	0.1006	0.0587	0.0418
192	0.1325	0.0588	0.0737
193	0.3330	0.0588	0.2743
194	0.0843	0.0587	0.0256
195	0.0532	0.0500	0.0032
196	0.0427	0.0401	0.0026
197	0.0266	0.0250	0.0016
198	0.0230	0.0216	0.0014
199	0.0203	0.0191	0.0012
200	0.0183	0.0172	0.0011
201	0.0167	0.0157	0.0010
202	0.0154	0.0145	0.0009
203	0.0144	0.0135	0.0009
204	0.0135	0.0127	0.0008
205	0.0122	0.0114	0.0007
206	0.0115	0.0108	0.0007
207	0.0109	0.0103	0.0007
208	0.0104	0.0098	0.0006
209	0.0100	0.0094	0.0006
210	0.0095	0.0090	0.0006
211	0.0092	0.0086	0.0006
212	0.0088	0.0083	0.0005
213	0.0085	0.0080	0.0005
214	0.0082	0.0077	0.0005
215	0.0080	0.0075	0.0005
216	0.0077	0.0073	0.0005
217	0.0080	0.0075	0.0005
218	0.0078	0.0073	0.0005
219	0.0076	0.0071	0.0005
220	0.0074	0.0070	0.0004
221	0.0072	0.0068	0.0004
222	0.0071	0.0066	0.0004
223	0.0069	0.0065	0.0004
224	0.0067	0.0063	0.0004
225	0.0066	0.0062	0.0004
226	0.0065	0.0061	0.0004
227	0.0063	0.0060	0.0004
228	0.0062	0.0058	0.0004
229	0.0061	0.0057	0.0004
230	0.0060	0.0056	0.0004
231	0.0059	0.0055	0.0004
232	0.0058	0.0054	0.0003
233	0.0057	0.0053	0.0003
234	0.0056	0.0052	0.0003

235	0.0055	0.0052	0.0003
236	0.0054	0.0051	0.0003
237	0.0053	0.0050	0.0003
238	0.0052	0.0049	0.0003
239	0.0052	0.0048	0.0003
240	0.0051	0.0048	0.0003
241	0.0050	0.0047	0.0003
242	0.0049	0.0046	0.0003
243	0.0049	0.0046	0.0003
244	0.0048	0.0045	0.0003
245	0.0047	0.0045	0.0003
246	0.0047	0.0044	0.0003
247	0.0046	0.0043	0.0003
248	0.0046	0.0043	0.0003
249	0.0045	0.0042	0.0003
250	0.0045	0.0042	0.0003
251	0.0044	0.0041	0.0003
252	0.0044	0.0041	0.0003
253	0.0043	0.0040	0.0003
254	0.0043	0.0040	0.0003
255	0.0042	0.0040	0.0003
256	0.0042	0.0039	0.0002
257	0.0041	0.0039	0.0002
258	0.0041	0.0038	0.0002
259	0.0040	0.0038	0.0002
260	0.0040	0.0038	0.0002
261	0.0039	0.0037	0.0002
262	0.0039	0.0037	0.0002
263	0.0039	0.0036	0.0002
264	0.0038	0.0036	0.0002
265	0.0038	0.0036	0.0002
266	0.0038	0.0035	0.0002
267	0.0037	0.0035	0.0002
268	0.0037	0.0035	0.0002
269	0.0037	0.0034	0.0002
270	0.0036	0.0034	0.0002
271	0.0036	0.0034	0.0002
272	0.0036	0.0034	0.0002
273	0.0035	0.0033	0.0002
274	0.0035	0.0033	0.0002
275	0.0035	0.0033	0.0002
276	0.0034	0.0032	0.0002
277	0.0034	0.0032	0.0002
278	0.0034	0.0032	0.0002
279	0.0034	0.0032	0.0002
280	0.0033	0.0031	0.0002
281	0.0033	0.0031	0.0002
282	0.0033	0.0031	0.0002
283	0.0033	0.0031	0.0002
284	0.0032	0.0030	0.0002
285	0.0032	0.0030	0.0002
286	0.0032	0.0030	0.0002
287	0.0032	0.0030	0.0002
288	0.0031	0.0030	0.0002

TOTAL STORM RAINFALL(INCHES) = 2.84
TOTAL SOIL-LOSS(INCHES) = 2.28
TOTAL EFFECTIVE RAINFALL(INCHES) = 0.56

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    TOTAL SOIL-LOSS VOLUME(ACRE-FEET) =    3242.5608
    TOTAL STORM RUNOFF VOLUME(ACRE-FEET) =     798.5577
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2 4 - H O U R S T O R M
R U N O F F H Y D R O G R A P H

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HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
(Note: Time indicated is at END of Each Unit Intervals)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	375.0	750.0	1125.0	1500.0
0.083	0.0002	0.02	Q	.	.	.	.
0.167	0.0007	0.07	Q	.	.	.	.
0.250	0.0015	0.12	Q	.	.	.	.
0.333	0.0027	0.17	Q	.	.	.	.
0.417	0.0042	0.22	Q	.	.	.	.
0.500	0.0061	0.27	Q	.	.	.	.
0.583	0.0083	0.32	Q	.	.	.	.
0.667	0.0109	0.37	Q	.	.	.	.
0.750	0.0138	0.42	Q	.	.	.	.
0.833	0.0173	0.51	Q	.	.	.	.
0.917	0.0215	0.60	Q	.	.	.	.
1.000	0.0263	0.70	Q	.	.	.	.
1.083	0.0318	0.80	Q	.	.	.	.
1.167	0.0380	0.89	Q	.	.	.	.
1.250	0.0448	0.99	Q	.	.	.	.
1.333	0.0523	1.09	Q	.	.	.	.
1.417	0.0604	1.19	Q	.	.	.	.
1.500	0.0693	1.29	Q	.	.	.	.
1.583	0.0792	1.43	Q	.	.	.	.
1.667	0.0900	1.57	Q	.	.	.	.
1.750	0.1019	1.72	Q	.	.	.	.
1.833	0.1147	1.86	Q	.	.	.	.
1.917	0.1285	2.01	Q	.	.	.	.
2.000	0.1434	2.15	Q	.	.	.	.
2.083	0.1592	2.30	Q	.	.	.	.
2.167	0.1761	2.45	Q	.	.	.	.
2.250	0.1941	2.62	Q	.	.	.	.
2.333	0.2135	2.81	Q	.	.	.	.
2.417	0.2342	3.01	Q	.	.	.	.
2.500	0.2563	3.21	Q	.	.	.	.
2.583	0.2798	3.41	Q	.	.	.	.
2.667	0.3047	3.61	Q	.	.	.	.
2.750	0.3309	3.81	Q	.	.	.	.
2.833	0.3585	4.01	Q	.	.	.	.
2.917	0.3876	4.22	Q	.	.	.	.
3.000	0.4189	4.54	Q	.	.	.	.
3.083	0.4527	4.92	Q	.	.	.	.
3.167	0.4892	5.29	Q	.	.	.	.
3.250	0.5282	5.67	Q	.	.	.	.
3.333	0.5699	6.05	Q	.	.	.	.
3.417	0.6141	6.43	Q	.	.	.	.
3.500	0.6610	6.81	Q	.	.	.	.
3.583	0.7106	7.19	Q	.	.	.	.
3.667	0.7630	7.61	Q	.	.	.	.
3.750	0.8193	8.18	Q	.	.	.	.
3.833	0.8798	8.79	Q	.	.	.	.
3.917	0.9445	9.39	Q	.	.	.	.
4.000	1.0134	10.00	Q	.	.	.	.

4.083	1.0864	10.61	Q	.	.	.	.
4.167	1.1637	11.22	Q	.	.	.	.
4.250	1.2452	11.84	Q	.	.	.	.
4.333	1.3310	12.45	Q	.	.	.	.
4.417	1.4208	13.04	Q	.	.	.	.
4.500	1.5142	13.57	Q	.	.	.	.
4.583	1.6113	14.10	Q	.	.	.	.
4.667	1.7121	14.63	Q	.	.	.	.
4.750	1.8165	15.17	Q	.	.	.	.
4.833	1.9247	15.70	Q	.	.	.	.
4.917	2.0365	16.24	Q	.	.	.	.
5.000	2.1521	16.78	Q	.	.	.	.
5.083	2.2715	17.33	Q	.	.	.	.
5.167	2.3940	17.80	Q	.	.	.	.
5.250	2.5195	18.22	Q	.	.	.	.
5.333	2.6480	18.65	Q	.	.	.	.
5.417	2.7795	19.09	Q	.	.	.	.
5.500	2.9139	19.52	Q	.	.	.	.
5.583	3.0514	19.96	Q	.	.	.	.
5.667	3.1918	20.40	Q	.	.	.	.
5.750	3.3353	20.84	Q	.	.	.	.
5.833	3.4819	21.27	Q	.	.	.	.
5.917	3.6310	21.66	Q	.	.	.	.
6.000	3.7828	22.04	Q	.	.	.	.
6.083	3.9372	22.42	Q	.	.	.	.
6.167	4.0943	22.81	Q	.	.	.	.
6.250	4.2540	23.19	Q	.	.	.	.
6.333	4.4164	23.58	Q	.	.	.	.
6.417	4.5815	23.97	Q	.	.	.	.
6.500	4.7493	24.36	Q	.	.	.	.
6.583	4.9197	24.73	Q	.	.	.	.
6.667	5.0922	25.06	Q	.	.	.	.
6.750	5.2670	25.38	Q	.	.	.	.
6.833	5.4440	25.70	Q	.	.	.	.
6.917	5.6233	26.03	Q	.	.	.	.
7.000	5.8049	26.36	Q	.	.	.	.
7.083	5.9887	26.69	Q	.	.	.	.
7.167	6.1748	27.02	Q	.	.	.	.
7.250	6.3632	27.36	Q	.	.	.	.
7.333	6.5538	27.67	Q	.	.	.	.
7.417	6.7464	27.97	Q	.	.	.	.
7.500	6.9411	28.27	Q	.	.	.	.
7.583	7.1379	28.57	Q	.	.	.	.
7.667	7.3368	28.88	Q	.	.	.	.
7.750	7.5378	29.19	Q	.	.	.	.
7.833	7.7409	29.49	Q	.	.	.	.
7.917	7.9462	29.81	Q	.	.	.	.
8.000	8.1536	30.12	Q	.	.	.	.
8.083	8.3630	30.41	Q	.	.	.	.
8.167	8.5745	30.70	Q	.	.	.	.
8.250	8.7880	31.00	Q	.	.	.	.
8.333	9.0035	31.29	Q	.	.	.	.
8.417	9.2211	31.59	Q	.	.	.	.
8.500	9.4407	31.89	Q	.	.	.	.
8.583	9.6624	32.20	Q	.	.	.	.
8.667	9.8863	32.50	Q	.	.	.	.
8.750	10.1122	32.81	Q	.	.	.	.
8.833	10.3402	33.10	Q	.	.	.	.
8.917	10.5703	33.40	Q	.	.	.	.
9.000	10.8024	33.71	Q	.	.	.	.

9.083	11.0367	34.01	Q	.	.	.	.
9.167	11.2730	34.32	Q	.	.	.	.
9.250	11.5115	34.63	Q	.	.	.	.
9.333	11.7522	34.94	Q	.	.	.	.
9.417	11.9951	35.26	Q	.	.	.	.
9.500	12.2400	35.57	Q	.	.	.	.
9.583	12.4871	35.87	Q	.	.	.	.
9.667	12.7362	36.17	Q	.	.	.	.
9.750	12.9874	36.48	Q	.	.	.	.
9.833	13.2408	36.79	Q	.	.	.	.
9.917	13.4963	37.10	Q	.	.	.	.
10.000	13.7539	37.42	Q	.	.	.	.
10.083	14.0138	37.73	VQ	.	.	.	.
10.167	14.2759	38.06	VQ	.	.	.	.
10.250	14.5402	38.37	VQ	.	.	.	.
10.333	14.8066	38.69	VQ	.	.	.	.
10.417	15.0753	39.01	VQ	.	.	.	.
10.500	15.3461	39.33	VQ	.	.	.	.
10.583	15.6192	39.66	VQ	.	.	.	.
10.667	15.8946	39.99	VQ	.	.	.	.
10.750	16.1723	40.32	VQ	.	.	.	.
10.833	16.4523	40.66	VQ	.	.	.	.
10.917	16.7347	41.00	VQ	.	.	.	.
11.000	17.0194	41.34	VQ	.	.	.	.
11.083	17.3066	41.69	VQ	.	.	.	.
11.167	17.5961	42.04	VQ	.	.	.	.
11.250	17.8881	42.40	VQ	.	.	.	.
11.333	18.1826	42.76	VQ	.	.	.	.
11.417	18.4795	43.12	VQ	.	.	.	.
11.500	18.7791	43.49	VQ	.	.	.	.
11.583	19.0812	43.87	VQ	.	.	.	.
11.667	19.3858	44.24	VQ	.	.	.	.
11.750	19.6930	44.60	VQ	.	.	.	.
11.833	20.0028	44.97	.Q	.	.	.	.
11.917	20.3151	45.35	.Q	.	.	.	.
12.000	20.6301	45.73	.Q	.	.	.	.
12.083	20.9477	46.12	.Q	.	.	.	.
12.167	21.2679	46.50	.Q	.	.	.	.
12.250	21.5909	46.89	.Q	.	.	.	.
12.333	21.9166	47.29	.Q	.	.	.	.
12.417	22.2451	47.70	.Q	.	.	.	.
12.500	22.5764	48.11	.Q	.	.	.	.
12.583	22.9107	48.53	.Q	.	.	.	.
12.667	23.2478	48.96	.Q	.	.	.	.
12.750	23.5880	49.39	.Q	.	.	.	.
12.833	23.9311	49.83	.Q	.	.	.	.
12.917	24.2773	50.27	.Q	.	.	.	.
13.000	24.6266	50.72	.Q	.	.	.	.
13.083	24.9791	51.18	.Q	.	.	.	.
13.167	25.3347	51.63	.Q	.	.	.	.
13.250	25.6935	52.10	.Q	.	.	.	.
13.333	26.0555	52.57	.Q	.	.	.	.
13.417	26.4209	53.06	.Q	.	.	.	.
13.500	26.7897	53.55	.Q	.	.	.	.
13.583	27.1620	54.05	.Q	.	.	.	.
13.667	27.5378	54.56	.Q	.	.	.	.
13.750	27.9171	55.08	.Q	.	.	.	.
13.833	28.3002	55.62	.Q	.	.	.	.
13.917	28.6870	56.17	.Q	.	.	.	.
14.000	29.0777	56.73	.Q	.	.	.	.

14.083	29.4723	57.31	.Q . . . .
14.167	29.8712	57.91	.Q . . . .
14.250	30.2742	58.52	.Q . . . .
14.333	30.6816	59.15	.Q . . . .
14.417	31.0934	59.80	.Q . . . .
14.500	31.5098	60.46	.Q . . . .
14.583	31.9309	61.14	.Q . . . .
14.667	32.3569	61.85	.Q . . . .
14.750	32.7878	62.57	.Q . . . .
14.833	33.2239	63.33	.Q . . . .
14.917	33.6655	64.12	.Q . . . .
15.000	34.1126	64.92	.Q . . . .
15.083	34.5654	65.74	.Q . . . .
15.167	35.0241	66.60	.Q . . . .
15.250	35.4890	67.51	.Q . . . .
15.333	35.9604	68.46	.Q . . . .
15.417	36.4394	69.54	.Q . . . .
15.500	36.9268	70.77	.Q . . . .
15.583	37.4232	72.08	.Q . . . .
15.667	37.9293	73.49	.Q . . . .
15.750	38.4499	75.58	.VQ . . . .
15.833	38.9960	79.30	.VQ . . . .
15.917	39.5986	87.50	.VQ . . . .
16.000	40.3106	103.38	. Q . . . .
16.083	41.3414	149.67	. VQ . . . .
16.167	42.6487	189.82	. V Q . . . .
16.250	43.9893	194.66	. V Q . . . .
16.333	45.3433	196.59	. V Q . . . .
16.417	46.7100	198.46	. V Q . . . .
16.500	48.0953	201.14	. V Q . . . .
16.583	49.5116	205.64	. V Q . . . .
16.667	50.9953	215.43	. V Q . . . .
16.750	52.6096	234.39	. V Q . . . .
16.833	54.5820	286.40	. V Q . . . .
16.917	56.7008	307.64	. V Q . . . .
17.000	58.8426	310.99	. V Q . . . .
17.083	60.9984	313.03	. V Q . . . .
17.167	63.1690	315.17	. V Q . . . .
17.250	65.3623	318.46	. V Q . . . .
17.333	67.5959	324.32	. V Q . . . .
17.417	69.9127	336.40	. V Q . . . .
17.500	72.4164	363.54	. V Q. . . .
17.583	75.2767	415.32	. V .Q . . .
17.667	78.2123	426.26	. V .Q . . .
17.750	81.1666	428.96	. V .Q . . .
17.833	84.1365	431.23	. V .Q . . .
17.917	87.1251	433.94	. V .Q . . .
18.000	90.1431	438.21	. V .Q . . .
18.083	93.2186	446.56	. V .Q . . .
18.167	96.4038	462.50	. V . Q . . .
18.250	99.8855	505.55	. V . Q . . .
18.333	103.6841	551.54	. V . Q . . .
18.417	107.5291	558.30	. V . Q . . .
18.500	111.3973	561.66	. V . Q . . .
18.583	115.2894	565.14	. V . Q . . .
18.667	119.2269	571.72	. V . Q . . .
18.750	123.2542	584.76	. V . Q . . .
18.833	127.5016	616.73	. V . Q . . .
18.917	132.1854	680.08	. V . Q . . .
19.000	138.1682	868.70	. V . . Q . .

19.083	144.7764	959.52	. V . . Q . .
19.167	151.4567	969.98	. V . . Q . .
19.250	158.1665	974.25	. V . . Q . .
19.333	164.9069	978.71	. V . . Q . .
19.417	171.7123	988.15	. V . . Q . .
19.500	178.6586	1008.60	. V . . Q . .
19.583	185.9425	1057.62	. V. . Q . .
19.667	193.9986	1169.75	. V. . .Q .
19.750	203.7512	1416.08	. V . . Q .
19.833	213.8802	1470.73	. V . . Q.
19.917	224.0412	1475.37	. .V . . Q.
20.000	234.2083	1476.27	. .V . . Q.
20.083	244.3680	1475.18	. . V . . Q.
20.167	254.4976	1470.82	. . V . . Q.
20.250	264.5463	1459.07	. . V . . Q .
20.333	274.4154	1432.99	. . V . . Q .
20.417	283.7888	1361.02	. . V . . Q .
20.500	292.5285	1269.01	. . V . . Q .
20.583	301.1917	1257.89	. . V . . Q .
20.667	309.8365	1255.22	. . V . . Q .
20.750	318.4640	1252.71	. . V . . Q .
20.833	327.0614	1248.35	. . V . . Q .
20.917	335.5990	1239.65	. . V . . Q .
21.000	343.9903	1218.42	. . V . . Q .
21.083	352.0938	1176.62	. . V . .Q .
21.167	359.3151	1048.55	. . V . Q . .
21.250	366.0219	973.82	. . V . Q . .
21.333	372.6725	965.66	. . V . Q . .
21.417	379.3040	962.90	. . V . Q . .
21.500	385.9177	960.31	. . V. Q . .
21.583	392.5049	956.46	. . V. Q . .
21.667	399.0435	949.39	. . V. Q . .
21.750	405.4746	933.81	. . V Q . .
21.833	411.6784	900.80	. . V Q . .
21.917	417.3389	821.89	. . VQ . .
22.000	422.8437	799.30	. . .Q . .
22.083	428.3231	795.62	. . .Q . .
22.167	433.7871	793.37	. . .Q . .
22.250	439.2323	790.64	. . .QV . .
22.333	444.6448	785.90	. . Q V . .
22.417	449.9889	775.96	. . Q V . .
22.500	455.1879	754.89	. . Q V . .
22.583	460.0171	701.20	. . Q . V . .
22.667	464.2946	621.09	. . Q . V . .
22.750	468.4939	609.74	. . Q . V . .
22.833	472.6769	607.38	. . Q . V . .
22.917	476.8475	605.57	. . Q . V . .
23.000	481.0020	603.23	. . Q . V . .
23.083	485.1337	599.92	. . Q . V . .
23.167	489.2144	592.51	. . Q . V . .
23.250	493.2007	578.83	. . Q . V . .
23.333	496.9059	538.00	. . Q . V . .
23.417	500.4108	508.91	. . Q . V . .
23.500	503.8906	505.26	. . Q . V . .
23.583	507.3579	503.46	. . Q . V . .
23.667	510.8175	502.33	. . Q . V . .
23.750	514.2636	500.37	. . Q . V . .
23.833	517.6905	497.58	. . Q . V . .
23.917	521.0743	491.33	. . Q . V . .
24.000	524.3729	478.96	. . Q . V . .

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24.083    527.4523    447.12  .         .Q        .     V   .         .
24.167    530.4561    436.15  .         .Q        .     V   .         .
24.250    533.4465    434.21  .         .Q        .     V   .         .
24.333    536.4312    433.39  .         .Q        .     V   .         .
24.417    539.4065    432.01  .         .Q        .      V  .         .
24.500    542.3740    430.88  .         .Q        .      V  .         .
24.583    545.3242    428.37  .         .Q        .      V  .         .
24.667    548.2471    424.40  .         .Q        .      V  .         .
24.750    551.1075    415.32  .         .Q        .      V  .         .
24.833    553.8600    399.66  .         Q         .      V  .         .
24.917    556.5908    396.52  .         Q         .      V  .         .
25.000    559.3141    395.42  .         Q         .       V .         .
25.083    562.0313    394.54  .         Q         .       V .         .
25.167    564.7388    393.13  .         Q         .       V .         .
25.250    567.4329    391.17  .         Q         .       V .         .
25.333    570.1006    387.36  .         Q         .       V .         .
25.417    572.7163    379.79  .         Q         .       V .         .
25.500    575.1872    358.77  .        Q.         .       V .         .
25.583    577.5294    340.09  .        Q.         .       V .         .
25.667    579.8542    337.57  .        Q.         .        V.         .
25.750    582.1741    336.85  .       Q .         .        V.         .
25.833    584.4862    335.71  .       Q .         .        V.         .
25.917    586.7893    334.41  .       Q .         .        V.         .
26.000    589.0822    332.93  .       Q .         .        V.         .
26.083    591.3531    329.73  .       Q .         .        V.         .
26.167    593.5837    323.88  .       Q .         .        V.         .
26.250    595.7049    308.00  .       Q .         .        V.         .
26.333    597.7783    301.06  .       Q .         .        V.         .
26.417    599.8430    299.79  .      Q  .         .         V         .
26.500    601.9019    298.96  .      Q  .         .         V         .
26.583    603.9556    298.20  .      Q  .         .         V         .
26.667    606.0043    297.46  .      Q  .         .         V         .
26.750    608.0442    296.20  .      Q  .         .         V         .
26.833    610.0722    294.46  .      Q  .         .         V         .
26.917    612.0800    291.53  .      Q  .         .         V         .
27.000    614.0432    285.06  .      Q  .         .         V         .
27.083    615.9963    283.58  .      Q  .         .         V         .
27.167    617.9415    282.45  .      Q  .         .         V         .
27.250    619.8801    281.47  .      Q  .         .         .V        .
27.333    621.8124    280.57  .      Q  .         .         .V        .
27.417    623.7282    278.18  .      Q  .         .         .V        .
27.500    625.6253    275.46  .      Q  .         .         .V        .
27.583    627.4734    268.35  .      Q  .         .         .V        .
27.667    629.2029    251.11  .     Q   .         .         .V        .
27.750    630.8021    232.21  .     Q   .         .         .V        .
27.833    632.3816    229.34  .     Q   .         .         .V        .
27.917    633.9553    228.50  .     Q   .         .         .V        .
28.000    635.5197    227.16  .     Q   .         .         .V        .
28.083    637.0795    226.48  .     Q   .         .         .V        .
28.167    638.6308    225.24  .     Q   .         .         .V        .
28.250    640.1776    224.60  .    Q    .         .         . V       .
28.333    641.7161    223.38  .    Q    .         .         . V       .
28.417    643.2504    222.79  .    Q    .         .         . V       .
28.500    644.7769    221.64  .    Q    .         .         . V       .
28.583    646.2993    221.06  .    Q    .         .         . V       .
28.667    647.8137    219.90  .    Q    .         .         . V       .
28.750    649.3238    219.26  .    Q    .         .         . V       .
28.833    650.8231    217.70  .    Q    .         .         . V       .
28.917    652.3109    216.03  .    Q    .         .         . V       .
29.000    653.7709    212.00  .    Q    .         .         . V       .
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29.083    655.1789    204.44  .    Q    .         .         . V       .
29.167    656.4786    188.72  .    Q    .         .         . V       .
29.250    657.7492    184.48  .   Q     .         .         . V       .
29.333    659.0112    183.24  .   Q     .         .         .  V      .
29.417    660.2707    182.88  .   Q     .         .         .  V      .
29.500    661.5242    182.00  .   Q     .         .         .  V      .
29.583    662.7772    181.94  .   Q     .         .         .  V      .
29.667    664.0218    180.72  .   Q     .         .         .  V      .
29.750    665.2624    180.14  .   Q     .         .         .  V      .
29.833    666.5029    180.13  .   Q     .         .         .  V      .
29.917    667.7338    178.72  .   Q     .         .         .  V      .
30.000    668.9655    178.84  .   Q     .         .         .  V      .
30.083    670.1938    178.35  .   Q     .         .         .  V      .
30.167    671.4182    177.77  .   Q     .         .         .  V      .
30.250    672.6376    177.07  .   Q     .         .         .  V      .
30.333    673.8489    175.88  .   Q     .         .         .  V      .
30.417    675.0515    174.61  .   Q     .         .         .  V      .
30.500    676.2343    171.73  .   Q     .         .         .  V      .
30.583    677.3672    164.51  .   Q     .         .         .  V      .
30.667    678.4697    160.07  .   Q     .         .         .  V      .
30.750    679.5629    158.73  .   Q     .         .         .   V     .
30.833    680.6577    158.96  .   Q     .         .         .   V     .
30.917    681.7480    158.32  .   Q     .         .         .   V     .
31.000    682.8394    158.46  .   Q     .         .         .   V     .
31.083    683.9232    157.38  .   Q     .         .         .   V     .
31.167    685.0042    156.96  .   Q     .         .         .   V     .
31.250    686.0829    156.62  .   Q     .         .         .   V     .
31.333    687.1609    156.52  .   Q     .         .         .   V     .
31.417    688.2341    155.83  .   Q     .         .         .   V     .
31.500    689.3045    155.42  .   Q     .         .         .   V     .
31.583    690.3741    155.30  .   Q     .         .         .   V     .
31.667    691.4365    154.26  .   Q     .         .         .   V     .
31.750    692.4980    154.14  .   Q     .         .         .   V     .
31.833    693.5499    152.72  .   Q     .         .         .   V     .
31.917    694.5792    149.46  .  Q      .         .         .   V     .
32.000    695.5663    143.33  .  Q      .         .         .   V     .
32.083    696.4918    134.37  .  Q      .         .         .   V     .
32.167    697.4023    132.22  .  Q      .         .         .   V     .
32.250    698.3100    131.79  .  Q      .         .         .   V     .
32.333    699.2173    131.75  .  Q      .         .         .    V    .
32.417    700.1205    131.13  .  Q      .         .         .    V    .
32.500    701.0232    131.07  .  Q      .         .         .    V    .
32.583    701.9216    130.45  .  Q      .         .         .    V    .
32.667    702.8180    130.16  .  Q      .         .         .    V    .
32.750    703.7142    130.14  .  Q      .         .         .    V    .
32.833    704.6060    129.49  .  Q      .         .         .    V    .
32.917    705.4957    129.17  .  Q      .         .         .    V    .
33.000    706.3849    129.11  .  Q      .         .         .    V    .
33.083    707.2695    128.45  .  Q      .         .         .    V    .
33.167    708.1500    127.85  .  Q      .         .         .    V    .
33.250    709.0269    127.32  .  Q      .         .         .    V    .
33.333    709.8802    123.91  .  Q      .         .         .    V    .
33.417    710.7048    119.73  .  Q      .         .         .    V    .
33.500    711.4332    105.77  . Q       .         .         .    V    .
33.583    712.1354    101.96  . Q       .         .         .    V    .
33.667    712.8299    100.83  . Q       .         .         .    V    .
33.750    713.5263    101.12  . Q       .         .         .    V    .
33.833    714.2201    100.74  . Q       .         .         .    V    .
33.917    714.9075     99.82  . Q       .         .         .    V    .
34.000    715.5937     99.63  . Q       .         .         .    V    .
```

34.083	716.2828	100.05	. Q	.	.	.	V .
34.167	716.9664	99.25	. Q	.	.	.	V .
34.250	717.6526	99.64	. Q	.	.	.	V .
34.333	718.3337	98.89	. Q	.	.	.	V .
34.417	719.0175	99.28	. Q	.	.	.	V .
34.500	719.6991	98.97	. Q	.	.	.	V .
34.583	720.3745	98.07	. Q	.	.	.	V .
34.667	721.0486	97.87	. Q	.	.	.	V .
34.750	721.7238	98.03	. Q	.	.	.	V .
34.833	722.3925	97.09	. Q	.	.	.	V .
34.917	723.0414	94.23	. Q	.	.	.	V .
35.000	723.6779	92.41	. Q	.	.	.	V .
35.083	724.3129	92.20	. Q	.	.	.	V .
35.167	724.9509	92.64	. Q	.	.	.	V .
35.250	725.5836	91.85	. Q	.	.	.	V .
35.333	726.2184	92.18	. Q	.	.	.	V .
35.417	726.8474	91.32	. Q	.	.	.	V .
35.500	727.4748	91.10	. Q	.	.	.	V .
35.583	728.1016	91.01	. Q	.	.	.	V .
35.667	728.7278	90.94	. Q	.	.	.	V .
35.750	729.3573	91.40	. Q	.	.	.	V .
35.833	729.9812	90.59	. Q	.	.	.	V .
35.917	730.6076	90.96	. Q	.	.	.	V .
36.000	731.2252	89.67	. Q	.	.	.	V .

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	2165.0
10%	955.0
20%	595.0
30%	365.0
40%	265.0
50%	215.0
60%	170.0
70%	100.0
80%	80.0
90%	45.0

END OF FLOODSCx ROUTING ANALYSIS

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**************************************************************************

            F L O O D    R O U T I N G    A N A L Y S I S
         USING COUNTY HYDROLOGY MANUAL OF SAN BERNARDINO(1986)
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            Ver. 18.0  Release Date: 05/01/2011  License ID 1499

                        Analysis prepared by:

                    Kimley-Horn and Associates, Inc.
                           765 The City Drive
                              Suite 200
                           Orange, CA 92868

 ************************* DESCRIPTION OF STUDY *************************
* JUNIPER LOCKHART                                                      *
* 100-YR ONSITE                                                         *
* PROPOSED CONDITIONS                                                   *
 ************************************************************************

  FILE NAME: JL_ONPR.DAT
  TIME/DATE OF STUDY: 20:12 08/26/2024


**************************************************************************
  FLOW PROCESS FROM NODE    100.00 TO NODE    101.00 IS CODE = 1.1
--------------------------------------------------------------------------
  >>>>>SUBAREA RUNOFF (UNIT-HYDROGRAPH ANALYSIS)<<<<<
==========================================================================

      (UNIT-HYDROGRAPH ADDED TO STREAM #1)

         WATERSHED AREA =      80.340 ACRES
         BASEFLOW =   0.000 CFS/SQUARE-MILE
         *USER ENTERED "LAG" TIME =    0.580 HOURS
         DESERT(UNDEVELOPED) S-GRAPH SELECTED
         MAXIMUM WATERSHED LOSS RATE(INCH/HOUR) =  0.915
         LOW LOSS FRACTION = 0.920
         *HYDROGRAPH MODEL #1 SPECIFIED*

         SPECIFIED PEAK  5-MINUTES RAINFALL(INCH)=  0.33
         SPECIFIED PEAK 30-MINUTES RAINFALL(INCH)=  0.79
         SPECIFIED PEAK  1-HOUR RAINFALL(INCH) =  1.07
         SPECIFIED PEAK  3-HOUR RAINFALL(INCH) =  1.51
         SPECIFIED PEAK  6-HOUR RAINFALL(INCH) =  1.86
         SPECIFIED PEAK 24-HOUR RAINFALL(INCH) =  2.91

         *USER SPECIFIED PRECIPITATION DEPTH-AREA REDUCTION FACTORS:
           5-MINUTE FACTOR = 1.000
          30-MINUTE FACTOR = 1.000
           1-HOUR FACTOR = 1.000
           3-HOUR FACTOR = 1.000
           6-HOUR FACTOR = 1.000
          24-HOUR FACTOR = 1.000

         UNIT HYDROGRAPH TIME UNIT =   5.000 MINUTES
         UNIT INTERVAL PERCENTAGE OF LAG-TIME =  14.368
```

UNIT HYDROGRAPH DETERMINATION

INTERVAL NUMBER	"S" GRAPH MEAN VALUES	UNIT HYDROGRAPH ORDINATES(CFS)
1	0.642	6.237
2	2.660	19.604
3	6.004	32.497
4	11.187	50.357
5	21.045	95.779
6	34.685	132.532
7	45.756	107.566
8	54.006	80.159
9	60.150	59.693
10	64.822	45.398
11	68.673	37.417
12	72.018	32.499
13	74.804	27.062
14	77.284	24.104
15	79.400	20.556
16	81.277	18.233
17	82.903	15.807
18	84.424	14.776
19	85.817	13.536
20	87.112	12.575
21	88.261	11.170
22	89.235	9.457
23	90.092	8.335
24	90.908	7.926
25	91.689	7.588
26	92.386	6.773
27	93.053	6.476
28	93.683	6.126
29	94.222	5.240
30	94.711	4.747
31	95.199	4.746
32	95.661	4.488
33	96.041	3.688
34	96.414	3.630
35	96.786	3.606
36	97.081	2.871
37	97.340	2.512
38	97.598	2.512
39	97.827	2.222
40	97.975	1.440
41	98.119	1.397
42	98.264	1.405
43	98.427	1.593
44	98.600	1.675
45	98.772	1.675
46	98.945	1.677
47	99.117	1.675
48	99.290	1.675
49	99.462	1.675
50	99.634	1.675
51	99.807	1.675
52	99.979	1.675

53	100.000	0.204

TOTAL SOIL-LOSS VOLUME(ACRE-FEET) = 15.9655
TOTAL STORM RUNOFF VOLUME(ACRE-FEET) = 3.5151

==========

2 4 - H O U R S T O R M
R U N O F F H Y D R O G R A P H

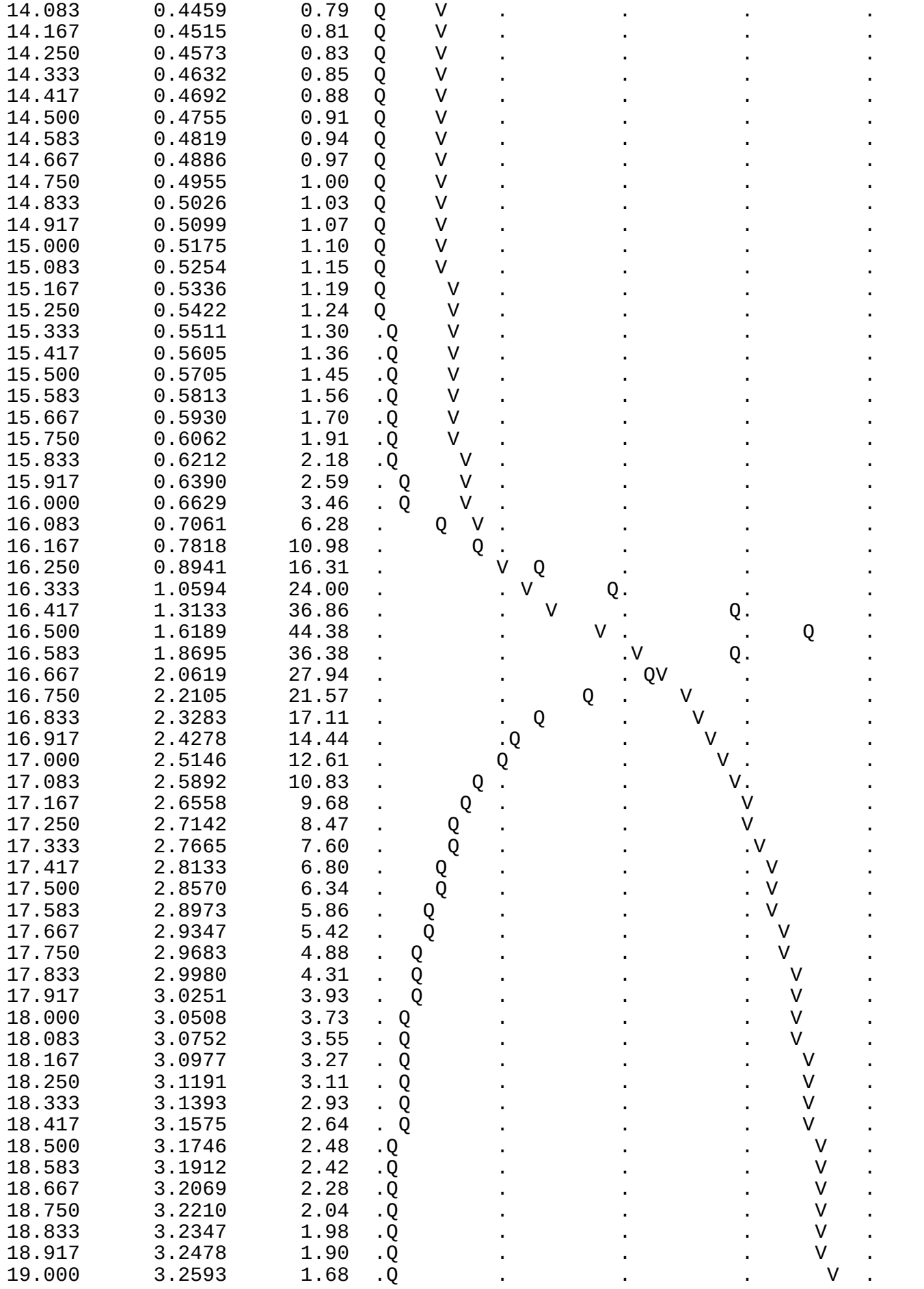
==========

HYDROGRAPH IN FIVE-MINUTE UNIT INTERVALS(CFS)
(Note: Time indicated is at END of Each Unit Intervals)

TIME(HRS)	VOLUME(AF)	Q(CFS)	0.	12.5	25.0	37.5	50.0
0.083	0.0000	0.00	Q	.	.	.	.
0.167	0.0001	0.01	Q	.	.	.	.
0.250	0.0002	0.02	Q	.	.	.	.
0.333	0.0004	0.03	Q	.	.	.	.
0.417	0.0007	0.05	Q	.	.	.	.
0.500	0.0013	0.09	Q	.	.	.	.
0.583	0.0021	0.12	Q	.	.	.	.
0.667	0.0031	0.14	Q	.	.	.	.
0.750	0.0042	0.15	Q	.	.	.	.
0.833	0.0053	0.17	Q	.	.	.	.
0.917	0.0065	0.18	Q	.	.	.	.
1.000	0.0078	0.19	Q	.	.	.	.
1.083	0.0091	0.19	Q	.	.	.	.
1.167	0.0105	0.20	Q	.	.	.	.
1.250	0.0119	0.21	Q	.	.	.	.
1.333	0.0134	0.21	Q	.	.	.	.
1.417	0.0149	0.22	Q	.	.	.	.
1.500	0.0164	0.22	Q	.	.	.	.
1.583	0.0180	0.23	Q	.	.	.	.
1.667	0.0196	0.23	Q	.	.	.	.
1.750	0.0212	0.23	Q	.	.	.	.
1.833	0.0228	0.24	Q	.	.	.	.
1.917	0.0245	0.24	Q	.	.	.	.
2.000	0.0262	0.24	Q	.	.	.	.
2.083	0.0279	0.25	Q	.	.	.	.
2.167	0.0296	0.25	Q	.	.	.	.
2.250	0.0313	0.25	Q	.	.	.	.
2.333	0.0331	0.25	Q	.	.	.	.
2.417	0.0349	0.26	Q	.	.	.	.
2.500	0.0366	0.26	Q	.	.	.	.
2.583	0.0384	0.26	Q	.	.	.	.
2.667	0.0403	0.26	Q	.	.	.	.
2.750	0.0421	0.27	Q	.	.	.	.
2.833	0.0439	0.27	Q	.	.	.	.
2.917	0.0458	0.27	Q	.	.	.	.
3.000	0.0477	0.27	Q	.	.	.	.
3.083	0.0495	0.27	Q	.	.	.	.
3.167	0.0514	0.28	Q	.	.	.	.
3.250	0.0534	0.28	Q	.	.	.	.
3.333	0.0553	0.28	Q	.	.	.	.
3.417	0.0572	0.28	Q	.	.	.	.
3.500	0.0591	0.28	Q	.	.	.	.
3.583	0.0611	0.28	Q	.	.	.	.
3.667	0.0631	0.28	Q	.	.	.	.
3.750	0.0650	0.29	Q	.	.	.	.
3.833	0.0670	0.29	Q	.	.	.	.
3.917	0.0690	0.29	Q	.	.	.	.
4.000	0.0710	0.29	Q	.	.	.	.

4.083	0.0730	0.29	Q	.	.	.	.
4.167	0.0751	0.30	Q	.	.	.	.
4.250	0.0771	0.30	Q	.	.	.	.
4.333	0.0792	0.30	Q	.	.	.	.
4.417	0.0812	0.30	Q	.	.	.	.
4.500	0.0833	0.30	Q	.	.	.	.
4.583	0.0854	0.30	Q	.	.	.	.
4.667	0.0875	0.30	Q	.	.	.	.
4.750	0.0896	0.31	QV	.	.	.	.
4.833	0.0917	0.31	QV	.	.	.	.
4.917	0.0938	0.31	QV	.	.	.	.
5.000	0.0960	0.31	QV	.	.	.	.
5.083	0.0981	0.31	QV	.	.	.	.
5.167	0.1003	0.31	QV	.	.	.	.
5.250	0.1024	0.31	QV	.	.	.	.
5.333	0.1046	0.32	QV	.	.	.	.
5.417	0.1068	0.32	QV	.	.	.	.
5.500	0.1090	0.32	QV	.	.	.	.
5.583	0.1112	0.32	QV	.	.	.	.
5.667	0.1134	0.32	QV	.	.	.	.
5.750	0.1157	0.32	QV	.	.	.	.
5.833	0.1179	0.33	QV	.	.	.	.
5.917	0.1202	0.33	QV	.	.	.	.
6.000	0.1224	0.33	QV	.	.	.	.
6.083	0.1247	0.33	QV	.	.	.	.
6.167	0.1270	0.33	QV	.	.	.	.
6.250	0.1293	0.33	QV	.	.	.	.
6.333	0.1316	0.34	QV	.	.	.	.
6.417	0.1339	0.34	QV	.	.	.	.
6.500	0.1363	0.34	QV	.	.	.	.
6.583	0.1386	0.34	QV	.	.	.	.
6.667	0.1410	0.34	QV	.	.	.	.
6.750	0.1434	0.35	QV	.	.	.	.
6.833	0.1458	0.35	QV	.	.	.	.
6.917	0.1482	0.35	QV	.	.	.	.
7.000	0.1506	0.35	QV	.	.	.	.
7.083	0.1530	0.35	QV	.	.	.	.
7.167	0.1555	0.36	QV	.	.	.	.
7.250	0.1579	0.36	QV	.	.	.	.
7.333	0.1604	0.36	QV	.	.	.	.
7.417	0.1629	0.36	QV	.	.	.	.
7.500	0.1654	0.36	QV	.	.	.	.
7.583	0.1679	0.37	QV	.	.	.	.
7.667	0.1705	0.37	QV	.	.	.	.
7.750	0.1730	0.37	QV	.	.	.	.
7.833	0.1756	0.37	QV	.	.	.	.
7.917	0.1782	0.38	Q V	.	.	.	.
8.000	0.1808	0.38	Q V	.	.	.	.
8.083	0.1834	0.38	Q V	.	.	.	.
8.167	0.1860	0.38	Q V	.	.	.	.
8.250	0.1887	0.39	Q V	.	.	.	.
8.333	0.1914	0.39	Q V	.	.	.	.
8.417	0.1940	0.39	Q V	.	.	.	.
8.500	0.1967	0.39	Q V	.	.	.	.
8.583	0.1995	0.40	Q V	.	.	.	.
8.667	0.2022	0.40	Q V	.	.	.	.
8.750	0.2050	0.40	Q V	.	.	.	.
8.833	0.2078	0.40	Q V	.	.	.	.
8.917	0.2106	0.41	Q V	.	.	.	.
9.000	0.2134	0.41	Q V	.	.	.	.

9.083	0.2162	0.41	Q	V	.	.	.	.
9.167	0.2191	0.42	Q	V	.	.	.	.
9.250	0.2220	0.42	Q	V	.	.	.	.
9.333	0.2249	0.42	Q	V	.	.	.	.
9.417	0.2278	0.43	Q	V	.	.	.	.
9.500	0.2308	0.43	Q	V	.	.	.	.
9.583	0.2337	0.43	Q	V	.	.	.	.
9.667	0.2367	0.44	Q	V	.	.	.	.
9.750	0.2397	0.44	Q	V	.	.	.	.
9.833	0.2428	0.44	Q	V	.	.	.	.
9.917	0.2459	0.45	Q	V	.	.	.	.
10.000	0.2490	0.45	Q	V	.	.	.	.
10.083	0.2521	0.45	Q	V	.	.	.	.
10.167	0.2552	0.46	Q	V	.	.	.	.
10.250	0.2584	0.46	Q	V	.	.	.	.
10.333	0.2616	0.46	Q	V	.	.	.	.
10.417	0.2648	0.47	Q	V	.	.	.	.
10.500	0.2681	0.47	Q	V	.	.	.	.
10.583	0.2714	0.48	Q	V	.	.	.	.
10.667	0.2747	0.48	Q	V	.	.	.	.
10.750	0.2781	0.49	Q	V	.	.	.	.
10.833	0.2814	0.49	Q	V	.	.	.	.
10.917	0.2848	0.50	Q	V	.	.	.	.
11.000	0.2883	0.50	Q	V	.	.	.	.
11.083	0.2918	0.51	Q	V	.	.	.	.
11.167	0.2953	0.51	Q	V	.	.	.	.
11.250	0.2988	0.52	Q	V	.	.	.	.
11.333	0.3024	0.52	Q	V	.	.	.	.
11.417	0.3061	0.53	Q	V	.	.	.	.
11.500	0.3097	0.53	Q	V	.	.	.	.
11.583	0.3134	0.54	Q	V	.	.	.	.
11.667	0.3172	0.54	Q	V	.	.	.	.
11.750	0.3209	0.55	Q	V	.	.	.	.
11.833	0.3248	0.56	Q	V	.	.	.	.
11.917	0.3286	0.56	Q	V	.	.	.	.
12.000	0.3326	0.57	Q	V	.	.	.	.
12.083	0.3365	0.58	Q	V	.	.	.	.
12.167	0.3405	0.58	Q	V	.	.	.	.
12.250	0.3446	0.59	Q	V	.	.	.	.
12.333	0.3487	0.59	Q	V	.	.	.	.
12.417	0.3528	0.60	Q	V	.	.	.	.
12.500	0.3569	0.60	Q	V	.	.	.	.
12.583	0.3610	0.60	Q	V	.	.	.	.
12.667	0.3652	0.61	Q	V	.	.	.	.
12.750	0.3694	0.61	Q	V	.	.	.	.
12.833	0.3736	0.62	Q	V	.	.	.	.
12.917	0.3780	0.63	Q	V	.	.	.	.
13.000	0.3823	0.63	Q	V	.	.	.	.
13.083	0.3867	0.64	Q	V	.	.	.	.
13.167	0.3912	0.65	Q	V	.	.	.	.
13.250	0.3958	0.66	Q	V	.	.	.	.
13.333	0.4004	0.67	Q	V	.	.	.	.
13.417	0.4051	0.68	Q	V	.	.	.	.
13.500	0.4099	0.69	Q	V	.	.	.	.
13.583	0.4147	0.71	Q	V	.	.	.	.
13.667	0.4197	0.72	Q	V	.	.	.	.
13.750	0.4247	0.73	Q	V	.	.	.	.
13.833	0.4299	0.75	Q	V	.	.	.	.
13.917	0.4351	0.76	Q	V	.	.	.	.
14.000	0.4405	0.78	Q	V	.	.	.	.



14.083	0.4459	0.79	Q V . . . .
14.167	0.4515	0.81	Q V . . . .
14.250	0.4573	0.83	Q V . . . .
14.333	0.4632	0.85	Q V . . . .
14.417	0.4692	0.88	Q V . . . .
14.500	0.4755	0.91	Q V . . . .
14.583	0.4819	0.94	Q V . . . .
14.667	0.4886	0.97	Q V . . . .
14.750	0.4955	1.00	Q V . . . .
14.833	0.5026	1.03	Q V . . . .
14.917	0.5099	1.07	Q V . . . .
15.000	0.5175	1.10	Q V . . . .
15.083	0.5254	1.15	Q V . . . .
15.167	0.5336	1.19	Q V . . . .
15.250	0.5422	1.24	Q V . . . .
15.333	0.5511	1.30	.Q V . . . .
15.417	0.5605	1.36	.Q V . . . .
15.500	0.5705	1.45	.Q V . . . .
15.583	0.5813	1.56	.Q V . . . .
15.667	0.5930	1.70	.Q V . . . .
15.750	0.6062	1.91	.Q V . . . .
15.833	0.6212	2.18	.Q V . . . .
15.917	0.6390	2.59	. Q V . . . .
16.000	0.6629	3.46	. Q V . . . .
16.083	0.7061	6.28	. Q V . . . .
16.167	0.7818	10.98	. Q . . . .
16.250	0.8941	16.31	. V Q . . .
16.333	1.0594	24.00	. V Q. . .
16.417	1.3133	36.86	. V . Q. .
16.500	1.6189	44.38	. V . . Q .
16.583	1.8695	36.38	. .V Q. .
16.667	2.0619	27.94	. QV . .
16.750	2.2105	21.57	. Q . V . .
16.833	2.3283	17.11	. Q . V . .
16.917	2.4278	14.44	.Q . V . .
17.000	2.5146	12.61	Q . V . .
17.083	2.5892	10.83	Q . . V. .
17.167	2.6558	9.68	Q . . V .
17.250	2.7142	8.47	Q . . V .
17.333	2.7665	7.60	Q . . .V .
17.417	2.8133	6.80	Q . . . V .
17.500	2.8570	6.34	Q . . . V .
17.583	2.8973	5.86	Q . . . V .
17.667	2.9347	5.42	Q . . . V .
17.750	2.9683	4.88	Q . . . V .
17.833	2.9980	4.31	Q . . . V .
17.917	3.0251	3.93	Q . . . V .
18.000	3.0508	3.73	Q . . . V .
18.083	3.0752	3.55	Q . . . V .
18.167	3.0977	3.27	Q . . . V .
18.250	3.1191	3.11	Q . . . V .
18.333	3.1393	2.93	Q . . . V .
18.417	3.1575	2.64	Q . . . V .
18.500	3.1746	2.48	Q . . . V .
18.583	3.1912	2.42	Q . . . V .
18.667	3.2069	2.28	Q . . . V .
18.750	3.2210	2.04	Q . . . V .
18.833	3.2347	1.98	Q . . . V .
18.917	3.2478	1.90	Q . . . V .
19.000	3.2593	1.68	Q . . . V .

19.083	3.2700	1.55	.Q	.	.	.	V .
19.167	3.2803	1.50	.Q	.	.	.	V .
19.250	3.2897	1.36	.Q	.	.	.	V .
19.333	3.2976	1.15	Q	.	.	.	V .
19.417	3.3053	1.12	Q	.	.	.	V .
19.500	3.3130	1.12	Q	.	.	.	V .
19.583	3.3209	1.15	Q	.	.	.	V .
19.667	3.3289	1.16	Q	.	.	.	V .
19.750	3.3368	1.15	Q	.	.	.	V .
19.833	3.3447	1.13	Q	.	.	.	V .
19.917	3.3524	1.12	Q	.	.	.	V .
20.000	3.3600	1.10	Q	.	.	.	V .
20.083	3.3675	1.09	Q	.	.	.	V .
20.167	3.3749	1.07	Q	.	.	.	V .
20.250	3.3819	1.03	Q	.	.	.	V .
20.333	3.3884	0.93	Q	.	.	.	V .
20.417	3.3921	0.54	Q	.	.	.	V .
20.500	3.3953	0.47	Q	.	.	.	V .
20.583	3.3985	0.46	Q	.	.	.	V .
20.667	3.4016	0.45	Q	.	.	.	V .
20.750	3.4046	0.44	Q	.	.	.	V .
20.833	3.4075	0.43	Q	.	.	.	V .
20.917	3.4104	0.42	Q	.	.	.	V .
21.000	3.4133	0.41	Q	.	.	.	V .
21.083	3.4161	0.41	Q	.	.	.	V .
21.167	3.4189	0.40	Q	.	.	.	V .
21.250	3.4216	0.40	Q	.	.	.	V .
21.333	3.4243	0.39	Q	.	.	.	V .
21.417	3.4269	0.38	Q	.	.	.	V .
21.500	3.4295	0.38	Q	.	.	.	V.
21.583	3.4321	0.37	Q	.	.	.	V.
21.667	3.4346	0.37	Q	.	.	.	V.
21.750	3.4372	0.36	Q	.	.	.	V.
21.833	3.4396	0.36	Q	.	.	.	V.
21.917	3.4421	0.36	Q	.	.	.	V.
22.000	3.4445	0.35	Q	.	.	.	V.
22.083	3.4469	0.35	Q	.	.	.	V.
22.167	3.4493	0.34	Q	.	.	.	V.
22.250	3.4516	0.34	Q	.	.	.	V.
22.333	3.4539	0.34	Q	.	.	.	V.
22.417	3.4562	0.33	Q	.	.	.	V.
22.500	3.4585	0.33	Q	.	.	.	V.
22.583	3.4607	0.33	Q	.	.	.	V.
22.667	3.4629	0.32	Q	.	.	.	V.
22.750	3.4651	0.32	Q	.	.	.	V.
22.833	3.4673	0.32	Q	.	.	.	V.
22.917	3.4694	0.31	Q	.	.	.	V.
23.000	3.4716	0.31	Q	.	.	.	V.
23.083	3.4737	0.31	Q	.	.	.	V.
23.167	3.4758	0.30	Q	.	.	.	V.
23.250	3.4778	0.30	Q	.	.	.	V.
23.333	3.4799	0.30	Q	.	.	.	V.
23.417	3.4819	0.30	Q	.	.	.	V.
23.500	3.4839	0.29	Q	.	.	.	V.
23.583	3.4859	0.29	Q	.	.	.	V.
23.667	3.4879	0.29	Q	.	.	.	V.
23.750	3.4899	0.29	Q	.	.	.	V.
23.833	3.4918	0.28	Q	.	.	.	V.
23.917	3.4938	0.28	Q	.	.	.	V.
24.000	3.4957	0.28	Q	.	.	.	V.

24.083	3.4976	0.27	Q	.	.	.	V.
24.167	3.4994	0.27	Q	.	.	.	V.
24.250	3.5012	0.26	Q	.	.	.	V.
24.333	3.5028	0.24	Q	.	.	.	V.
24.417	3.5043	0.21	Q	.	.	.	V.
24.500	3.5055	0.18	Q	.	.	.	V.
24.583	3.5065	0.15	Q	.	.	.	V.
24.667	3.5074	0.13	Q	.	.	.	V.
24.750	3.5082	0.11	Q	.	.	.	V.
24.833	3.5088	0.10	Q	.	.	.	V.
24.917	3.5094	0.09	Q	.	.	.	V.
25.000	3.5100	0.08	Q	.	.	.	V.
25.083	3.5105	0.07	Q	.	.	.	V.
25.167	3.5109	0.06	Q	.	.	.	V.
25.250	3.5113	0.06	Q	.	.	.	V.
25.333	3.5116	0.05	Q	.	.	.	V.
25.417	3.5120	0.05	Q	.	.	.	V.
25.500	3.5123	0.04	Q	.	.	.	V.
25.583	3.5125	0.04	Q	.	.	.	V.
25.667	3.5128	0.04	Q	.	.	.	V.
25.750	3.5130	0.03	Q	.	.	.	V.
25.833	3.5132	0.03	Q	.	.	.	V.
25.917	3.5134	0.03	Q	.	.	.	V.
26.000	3.5136	0.02	Q	.	.	.	V.
26.083	3.5137	0.02	Q	.	.	.	V.
26.167	3.5139	0.02	Q	.	.	.	V.
26.250	3.5140	0.02	Q	.	.	.	V.
26.333	3.5141	0.02	Q	.	.	.	V.
26.417	3.5142	0.02	Q	.	.	.	V.
26.500	3.5143	0.01	Q	.	.	.	V.
26.583	3.5144	0.01	Q	.	.	.	V.
26.667	3.5145	0.01	Q	.	.	.	V.
26.750	3.5146	0.01	Q	.	.	.	V.
26.833	3.5146	0.01	Q	.	.	.	V.

TIME DURATION(minutes) OF PERCENTILES OF ESTIMATED PEAK FLOW RATE:
(Note: 100% of Peak Flow Rate estimate assumed to have
an instantaneous time duration)

Percentile of Estimated Peak Flow Rate	Duration (minutes)
0%	1610.0
10%	105.0
20%	65.0
30%	45.0
40%	30.0
50%	25.0
60%	20.0
70%	15.0
80%	15.0
90%	5.0

==========

END OF FLOODSCx ROUTING ANALYSIS

Attachment C – Hydraulics

- **Existing 100-Year Inundation Map**
- **Existing 100-Year Velocity Map**
- **Detention Pond Summary**
- **Pondpack output**

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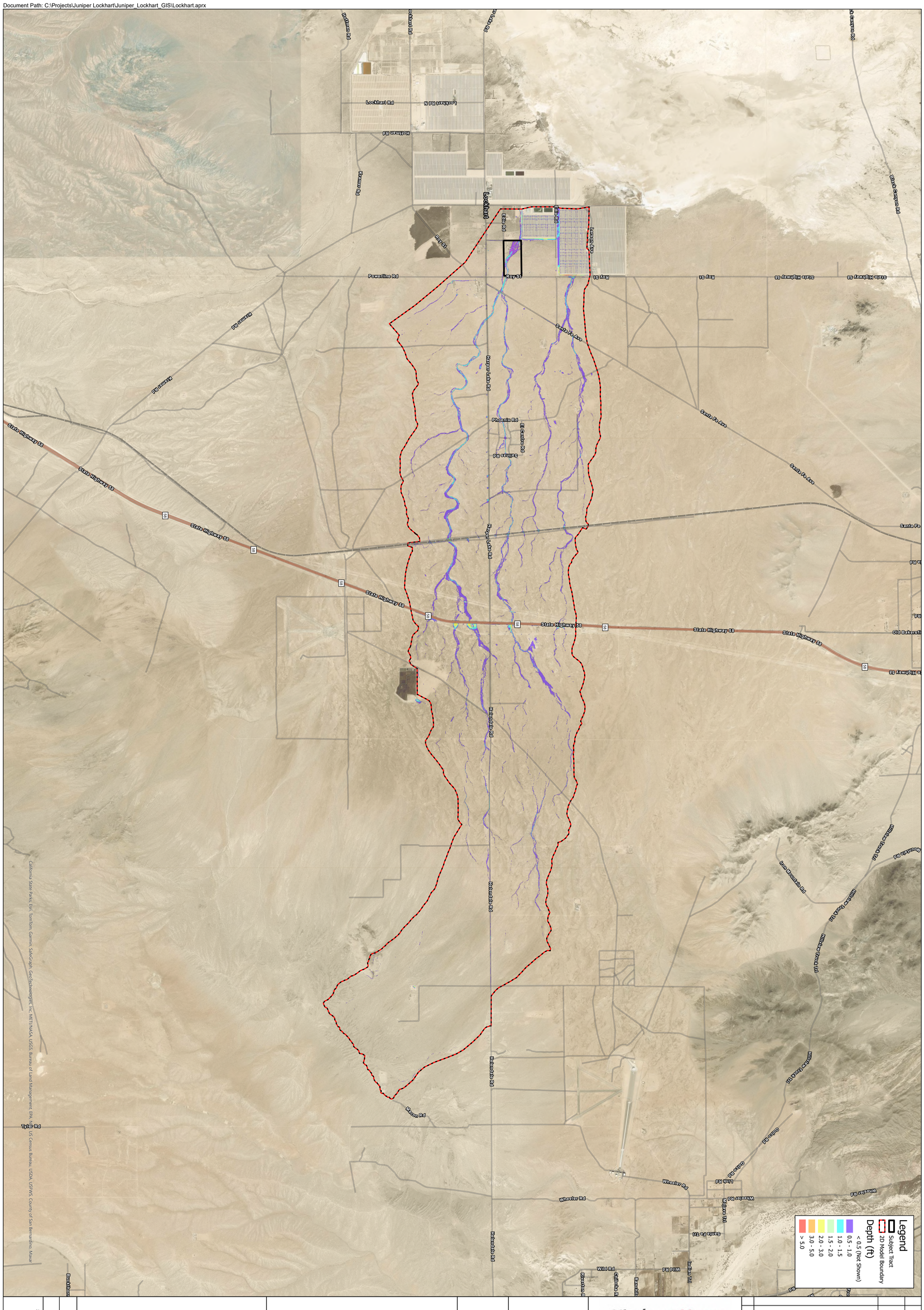

EXISTING 100-YR INUNDATION DEPTH MAP

J LOCKHART SOLAR
SAN BERNARDINO COUNTY, CA

1 Inch = 3,000 feet

N

Kimley»Horn
10101 REUNION PLACE, SUITE 400,
SAN ANTONIO, TX 78216
PHONE: 210-541-9166

DESIGN:	AAT
DRAWN:	AAT
REVIEW:	AAT

DATE
AUGUST 2024

PROJECT NO.
065010800

SHEET NUMBER
7

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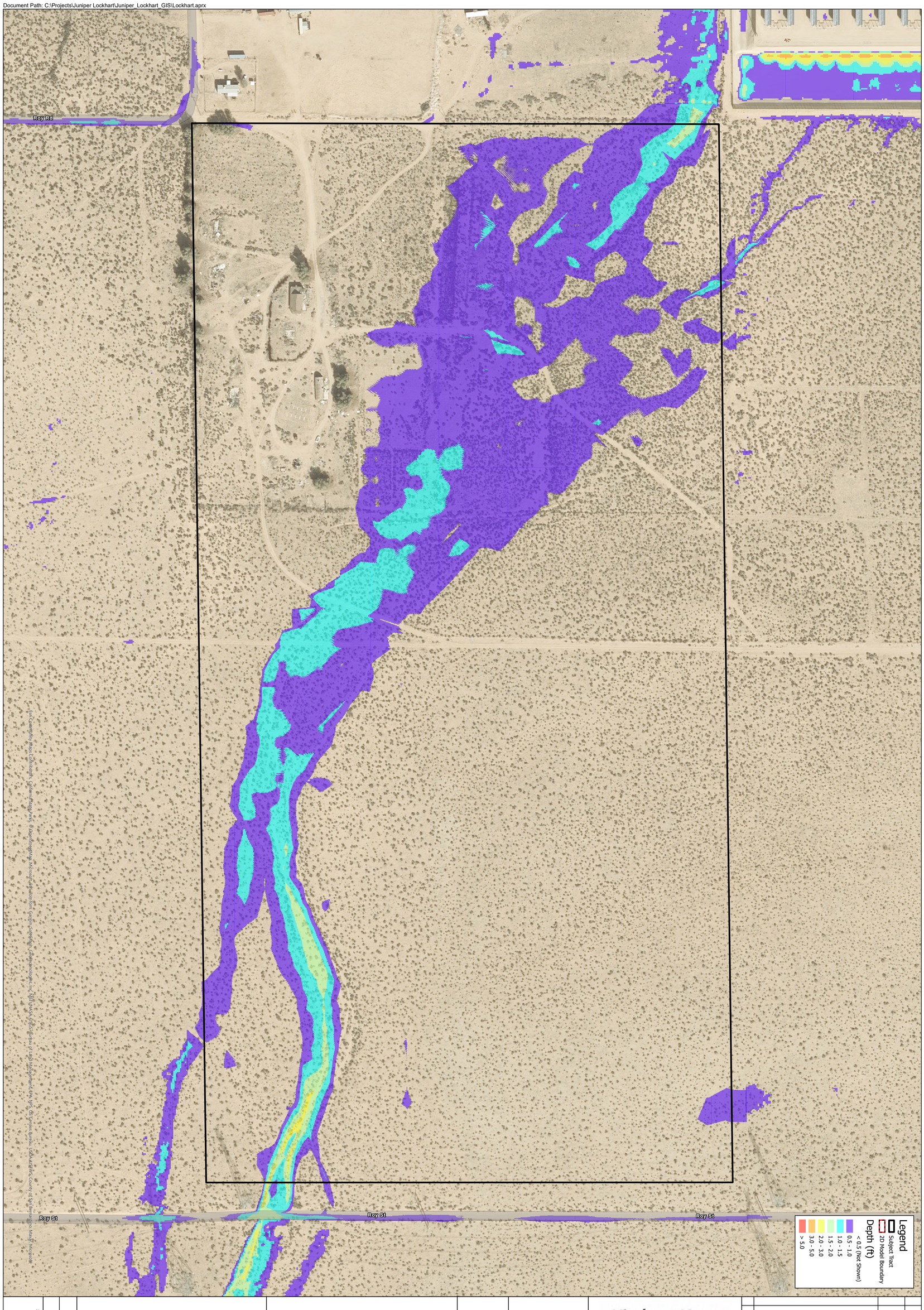
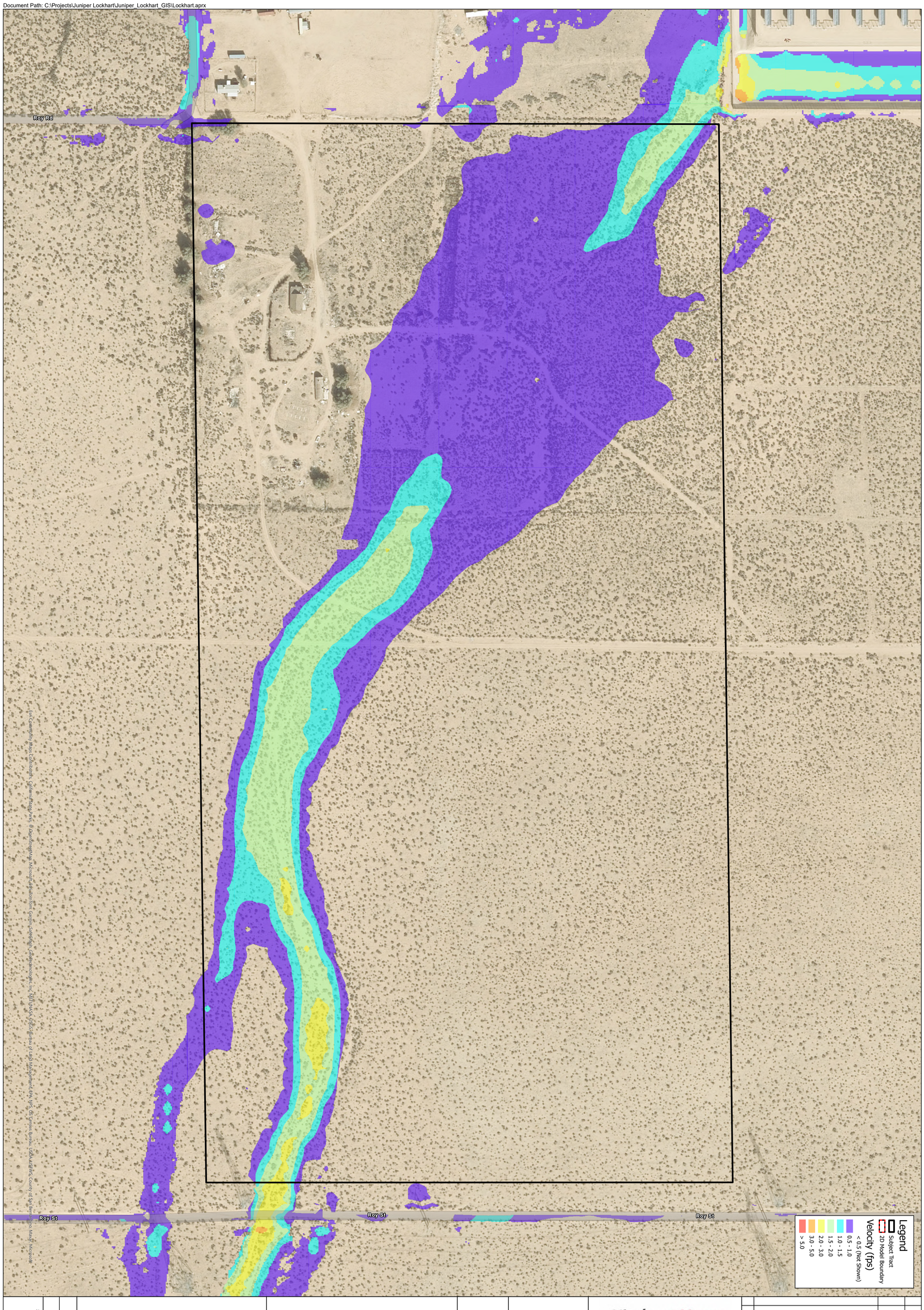


SHEET NUMBER 8	PROJECT NO. 065010800	DATE AUGUST 2024	EXISTING 100-YR SITE INUNDATION DEPTH MAP	J LOCKHART SOLAR SAN BERNARDINO COUNTY, CA	1 inch = 100 feet	N

Kimley»Horn
10101 REUNION PLACE, SUITE 400,
SAN ANTONIO, TX 78216
PHONE: 210-541-9166

DESIGN:	AAT
DRAWN:	AAT
REVIEW:	AAT

Document Path: C:\Projects\Juniper Lockhart\Juniper_Lockhart_GIS\Lockhart.aprx



SHEET NUMBER 9	PROJECT NO. 065010800	DATE AUGUST 2024	EXISTING 100-YR SITE VELOCITY MAP	J LOCKHART SOLAR SAN BERNARDINO COUNTY, CA	1 inch = 100 feet	N

Kimley»Horn
10101 REUNION PLACE, SUITE 400,
SAN ANTONIO, TX 78216
PHONE: 210-541-9166

DESIGN:	AAT
DRAWN:	AAT
REVIEW:	AAT

Detention Results

Storm	Existing Condition Qp (CFS)	Proposed Condition Qp (CFS)	Prop-Ex (%)
100-yr, 24-hr	41.34	41.33	-0.02%

POND - Results

Storm	Inflow Qp (CFS)	Outflow Qp (CFS)	Peak Storage (AC-FT)	Peak WSEL (FT)
100-yr, 24-hr	44.55	41.33	0.663	1.25

POND

Pond EL	Area SF	Area AC	Volume (AC-FT)	Cumulative Volume (AC-FT)	Cumulative Volume (CF)
0	17,637.0	0.4049	0	0	0
1.25	29,078.4	0.6675	0.670	0.670	29,197

Scenario Calculation Summary

Scenario Summary	
ID	1
Label	Base
Notes	
Active Topology	Base Active Topology
Hydrology	Base Hydrology
Rainfall Runoff	Base Rainfall Runoff
Physical	Base Physical
Initial Condition	Base Initial Condition
Boundary Condition	Base Boundary Condition
Infiltration and Inflow	Base Infiltration and Inflow
Output	Base Output
User Data Extensions	Base User Data Extensions
PondPack Engine Calculation Options	Base Calculation Options

Output Summary			
Output Increment	3.000 min	Duration	1,440.000 min

Rainfall Summary			
Return Event Tag		Rainfall Type	(N/A)
Total Depth	(N/A) in	Storm Event	(N/A)

Executive Summary (Nodes)

Label	Scenario	Return Event (years)	Truncation	Hydrograph Volume (ac-ft)	Time to Peak (min)	Peak Flow (ft^3/s)	Maximum Water Surface Elevation (ft)	Maximum Pond Storage (ac-ft)
J-1	Base	0	None	2.990	993.000	41.33	(N/A)	(N/A)
PO-1 (IN)	Base	0	None	3.497	990.000	44.38	(N/A)	(N/A)
PO-1 (OUT)	Base	0	None	2.990	993.000	41.33	1.25	0.663
Project Site	Base	0	None	3.515	990.000	44.38	(N/A)	(N/A)

Executive Summary (Links)

Label	Type	Location	Hydrograph Volume (ac-ft)	Peak Time (min)	Peak Flow (ft^3/s)	End Point	Node Flow Direction
Outlet-1	Pond Outlet	Upstream	3.497	990.000	44.38	PO-1	Pond Inflow
Outlet-1	Pond Outlet	Outflow	2.990	993.000	41.33	PO-1	Pond Outflow
Outlet-1	Pond Outlet	Link	2.990	993.000	41.33		
Outlet-1	Pond Outlet	Downstream	2.990	993.000	41.33	J-1	

Hydrographs Detailed Report: 100-yr ( )

Element Details			
ID	46	Start Time	0.000 min
Label	100-yr	Increment	5.000 min
Tag		End Time	1,610.000 min

Notes
Notes

HYDROGRAPH ORDINATES (ft^3/s)
Output Time Increment = 5.000 min
Time on left represents time for first value in each row.

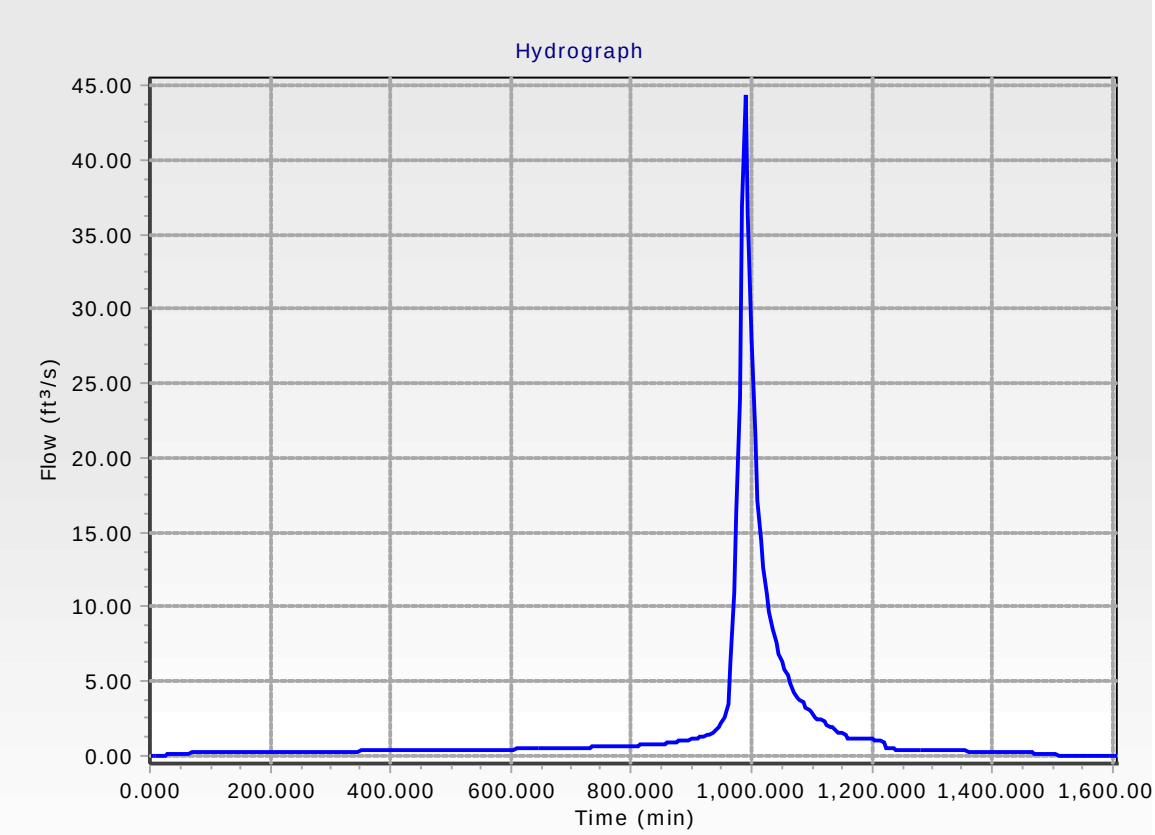
Time (min)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)
0.000	0.00	0.00	0.01	0.02	0.03
25.000	0.05	0.09	0.12	0.14	0.15
50.000	0.17	0.18	0.19	0.19	0.20
75.000	0.21	0.21	0.22	0.22	0.23
100.000	0.23	0.23	0.24	0.24	0.24
125.000	0.25	0.25	0.25	0.25	0.26
150.000	0.26	0.26	0.26	0.27	0.27
175.000	0.27	0.27	0.27	0.28	0.28
200.000	0.28	0.28	0.28	0.28	0.28
225.000	0.29	0.29	0.29	0.29	0.29
250.000	0.30	0.30	0.30	0.30	0.30
275.000	0.30	0.30	0.31	0.31	0.31
300.000	0.31	0.31	0.31	0.31	0.32
325.000	0.32	0.32	0.32	0.32	0.32
350.000	0.33	0.33	0.33	0.33	0.33
375.000	0.33	0.34	0.34	0.34	0.34
400.000	0.34	0.35	0.35	0.35	0.35
425.000	0.35	0.36	0.36	0.36	0.36
450.000	0.36	0.37	0.37	0.37	0.37
475.000	0.38	0.38	0.38	0.38	0.39
500.000	0.39	0.39	0.39	0.40	0.40
525.000	0.40	0.40	0.41	0.41	0.41
550.000	0.42	0.42	0.42	0.43	0.43
575.000	0.43	0.44	0.44	0.44	0.45
600.000	0.45	0.45	0.46	0.46	0.46
625.000	0.47	0.47	0.48	0.48	0.49
650.000	0.49	0.50	0.50	0.51	0.51
675.000	0.52	0.52	0.53	0.53	0.54
700.000	0.54	0.55	0.56	0.56	0.57
725.000	0.58	0.58	0.59	0.59	0.60
750.000	0.60	0.60	0.61	0.61	0.62
775.000	0.63	0.63	0.64	0.65	0.66
800.000	0.67	0.68	0.69	0.71	0.72
825.000	0.73	0.75	0.76	0.78	0.79
850.000	0.81	0.83	0.85	0.88	0.91
875.000	0.94	0.97	1.00	1.03	1.07
900.000	1.10	1.15	1.19	1.24	1.30

Hydrographs Detailed Report: 100-yr ( )

HYDROGRAPH ORDINATES (ft^3/s)
Output Time Increment = 5.000 min
Time on left represents time for first value in each row.

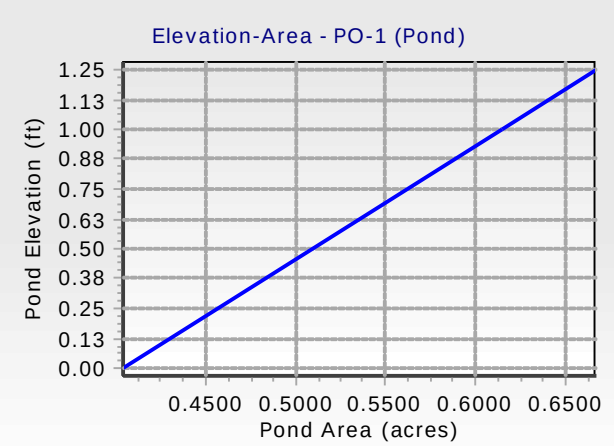
Time (min)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)	Flow (ft^3/s)
925.000	1.36	1.45	1.56	1.70	1.91
950.000	2.18	2.59	3.46	6.28	10.98
975.000	16.31	24.00	36.86	44.38	36.38
1,000.000	27.94	21.57	17.11	14.44	12.61
1,025.000	10.83	9.68	8.47	7.60	6.80
1,050.000	6.34	5.86	5.42	4.88	4.31
1,075.000	3.93	3.73	3.55	3.27	3.11
1,100.000	2.93	2.64	2.48	2.42	2.28
1,125.000	2.04	1.98	1.90	1.68	1.55
1,150.000	1.50	1.36	1.15	1.12	1.12
1,175.000	1.15	1.16	1.15	1.13	1.12
1,200.000	1.10	1.09	1.07	1.03	0.93
1,225.000	0.54	0.47	0.46	0.45	0.44
1,250.000	0.43	0.42	0.41	0.41	0.40
1,275.000	0.40	0.39	0.38	0.38	0.37
1,300.000	0.37	0.36	0.36	0.36	0.35
1,325.000	0.35	0.34	0.34	0.34	0.33
1,350.000	0.33	0.33	0.32	0.32	0.32
1,375.000	0.31	0.31	0.31	0.30	0.30
1,400.000	0.30	0.30	0.29	0.29	0.29
1,425.000	0.29	0.28	0.28	0.28	0.27
1,450.000	0.27	0.26	0.24	0.21	0.18
1,475.000	0.15	0.13	0.11	0.10	0.09
1,500.000	0.08	0.07	0.06	0.06	0.05
1,525.000	0.05	0.04	0.04	0.04	0.03
1,550.000	0.03	0.03	0.02	0.02	0.02
1,575.000	0.02	0.02	0.02	0.01	0.01
1,600.000	0.01	0.01	0.01	(N/A)	(N/A)

Hydrographs Detailed Report: 100-yr ( )



Elevation-Area - PO-1 (Pond)

Pond Elevation (ft)	Pond Area (acres)
0.00	0.4040
1.00	0.6149
1.25	0.6675



Attachment D – Water Quality

- **Proposed Impervious Calculations**
- **Pre-Development 85th Percentile Volume**
- **Post-Development 85th Percentile Volume**
- **Infiltration Basin Sizing Worksheet**

Loss Parameter Calculations - Proposed Condition Onsite

Subbasin Name	Description	Cover Type (Table C.2)	HSG	Area (ac)	Imp Fraction	imp*A
SITE	Developed_Open Space	Residential (1 DU/AC), Ap=1	A	1.39	0.00	0.000
SITE	Shrub_Scrub	Figure C-6 based on CN	A	51.45	0.00	0.000
SITE	Shrub_Scrub	Figure C-6 based on CN	C	17.42	0.00	0.000
SITE	Proposed Compactive Native Roads	Commercial	-	7.18	0.30	2.153
SITE	Propose Paved Road	N/A	-	0.41	1.00	0.410
SITE	Proposed Pads	N/A	-	2.46	1.00	2.462
SITE	Proposed Piles	N/A	-	0.03	1.00	0.028

Total		**80.34**	**ac**	**5.053**	**ac**

Avg Imp	**6.3%**

Water Quality Calculations

Project Name: Juniper Lockhart Solar
Completed by: Ashley Teani
Reviewed by: N/A
Date: 26-Aug-24
County: San Bernardino

Existing Conditions (Refer to Existing Tract Drainage Area/Land Use Map)

Drainage Area	Area (sf)	Area (ac)	Land Cover	Impervious Area (%)	impervious area (sf)	imp	2-yr 1-hr Isohyet* (in)	climatic region	a1 (desert)	draw down time (hr)	a2 (48 hours)	C	85th% Depth (in)	Water Quality Volume (cf)
DMA 1	3,499,610	80.34	Desert - Herbaceous 40% Density	0.2	5,967.7	0.002	0.352	desert	1.2371	48	1.963	0.041	0.435	10,300

Proposed Conditions (Refer to Proposed Tract Drainage Area Map)

Drainage Area	Area (sf)	Area (ac)	Land Cover	Impervious Area (%)	impervious area (sf)	imp	2-yr 1-hr Isohyet* (in)	climatic region	a1 (desert)	draw down time (hr)	a2 (48 hours)	C	85th% Depth (in)	Water Quality Volume (cf)
DMA 1	3,499,610	80.34	Desert - Herbaceous 40% Density	6.3	220,102.1	0.063	0.352	desert	1.2371	48	1.963	0.086	0.435	21,391

*Obtained from NOAA 14

85th Percentile Volume Mitigation

Drainage Area	Area (sf)	Area (ac)	Water Quality Volume Existing (cf)	Water Quality Volume Proposed (cf)	Delta (cf)
DMA 1	3,499,610	80.34	10,300	21,391	11,091

San Bernardino County Infiltration Basin Formula Table 5-4

Drainage Area	Volume (cf)	Infiltration Rate (in/hr)	Infiltration Safety Factor	Design percolation rate (in/hr)*	Drawdown Time (hr)	Duration of Storm (hr)	Inch to Feet Conversion	Minimum Surface Area (sf)
DMA 1	11,091	N/A	N/A	0.3	48	3	12	8698.8

Basin	Tributary DA	85th Percentile, 24-hr Mitigation Volume (cf)	Required Retention Volume (cf)	Design Length (ft)	Design Width (ft)	Design Area (sf)	Design Depth (ft)	Design Volume (cf)	Vdesign > Vrequired?
1	DMA 1	11,091	11,091	1,102	16.0	17,632	1.0	17,632	*YES*
Total Required Retention Volume			11,091	Total Designed Volume					17,632

Basin	Ponding Depth (ft)	Infiltration Rate (in/hr)*	Factor of Safety	Design Infiltration Rate (in/hr)*	Drawdown Time (hr)	Required Drawdown Time (hr)	Compliance?
1	1.0	N/A	N/A	0.3	40.00	48.00	*YES*

*Note- Infiltration testing was not completed at this stage. Minimum allowable rate 0.3 in/hr used

Appendix E – Digital Files

HEC-RAS

National Flood Hazard Layer FIRMette

Basemap: USGS National Map: Orthoimagery: Data refreshed October, 2020

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN — Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 — Cross Sections with 1% Annual Chance
- 17.5 — Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

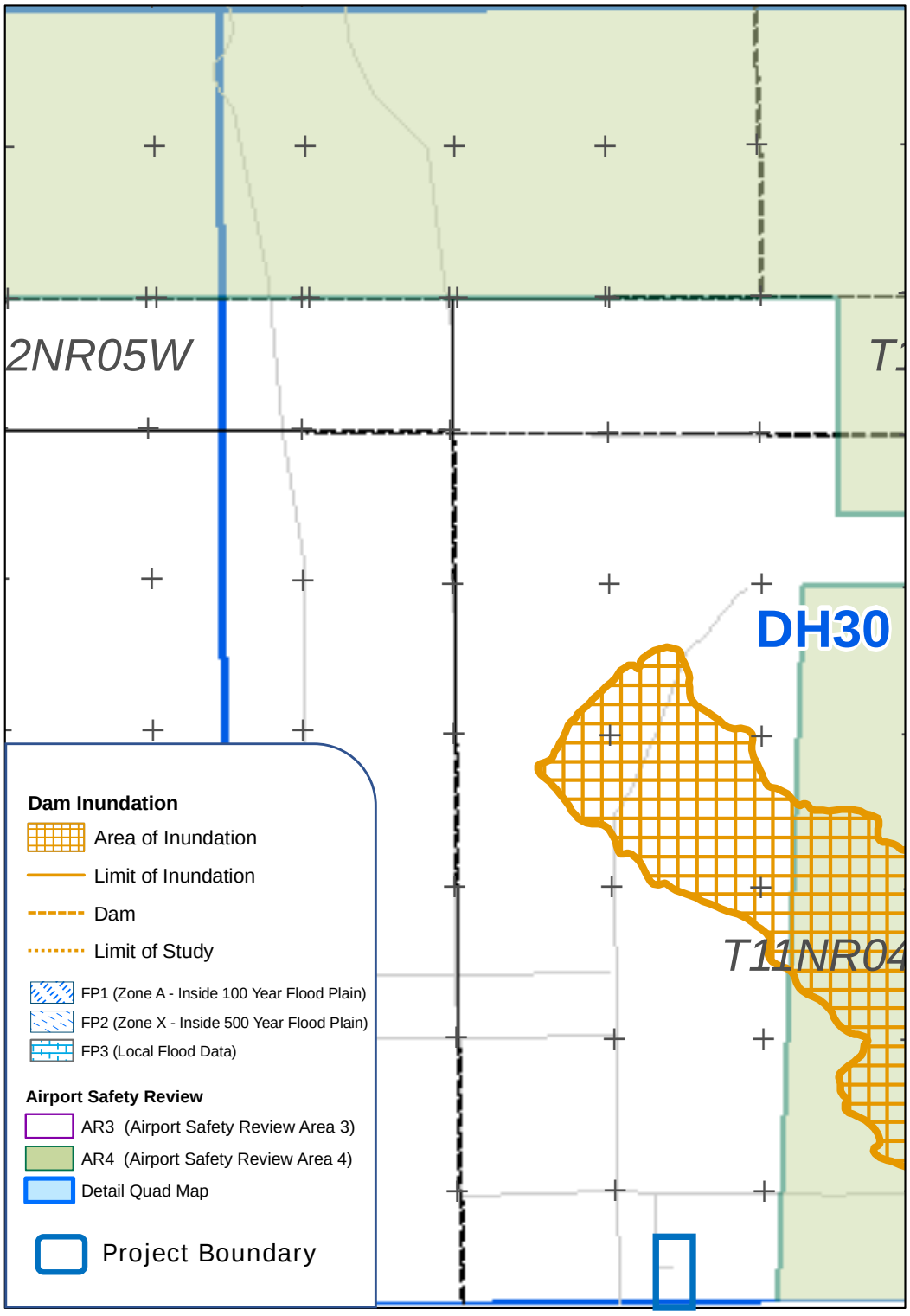
N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 5/8/2023 at 9:48 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.



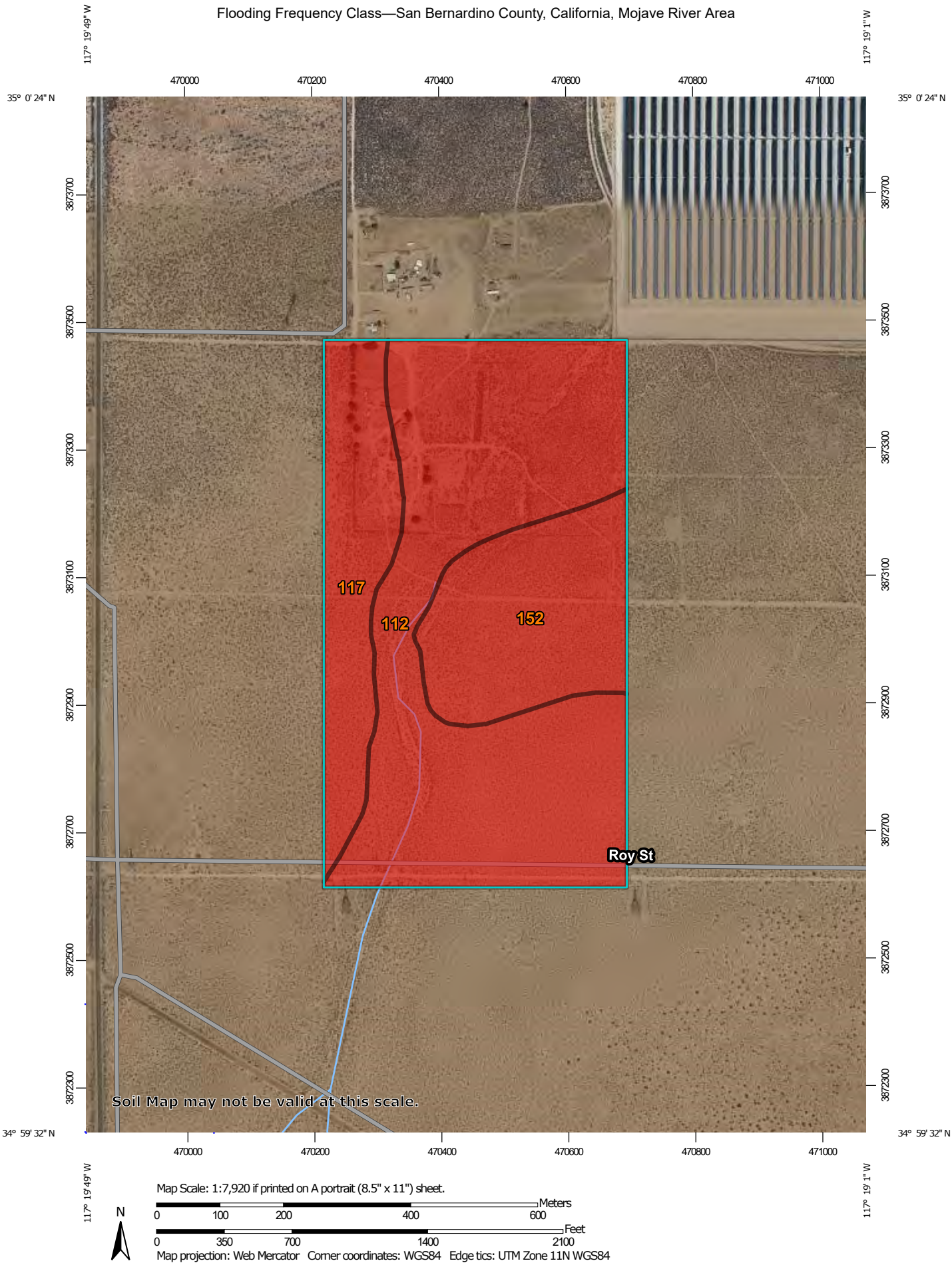
Source: San Bernardino County Land Use Plan
General Plan 2020

Appendix C-3
Hazard Overlays Map

Juniper Energy

Lockhart Solar Project

2.5 1.25 0 2.5 5 Miles


117° 19' 49" W
117° 19' 1" W
35° 0' 24" N
34° 59' 32" N
470000
470200
470400
470600
470800
471000
3873700
3873500
3873300
3873100
3872900
3872700
3872500
3872300
117
112
152
Roy St
Soil Map may not be valid at this scale.
Map Scale: 1:7,920 if printed on A portrait (8.5" x 11") sheet.
N
Meters
0 100 200 400 600
Feet
0 350 700 1400 2100
Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- None
- Very Rare
- Rare
- Occasional
- Common
- Frequent
- Very Frequent
- Not rated or not available

Soil Rating Lines
- None
- Very Rare
- Rare
- Occasional
- Common
- Frequent
- Very Frequent
- Not rated or not available

Soil Rating Points
- None
- Very Rare
- Rare
- Occasional
- Common
- Frequent
- Very Frequent
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Bernardino County, California, Mojave River Area
Survey Area Data: Version 15, Aug 30, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 17, 2022—Jun 12, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Flooding Frequency Class

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
112	CAJON SAND, 0 TO 2 PERCENT SLOPES	None	61.3	60.3%
117	CAJON LOAMY SAND, LOAMY SUBSTRATUM, 0 TO 2 PERCENT SLOPES	None	18.1	17.8%
152	NOROB-HALLORAN COMPLEX, 0 TO 5 PERCENT SLOPES*	None	22.3	21.9%
Totals for Area of Interest			**101.6**	**100.0%**

Description

Flooding is the temporary inundation of an area caused by overflowing streams, by runoff from adjacent slopes, or by tides. Water standing for short periods after rainfall or snowmelt is not considered flooding, and water standing in swamps and marshes is considered ponding rather than flooding.

Frequency is expressed as none, very rare, rare, occasional, frequent, and very frequent.

"None" means that flooding is not probable. The chance of flooding is nearly 0 percent in any year. Flooding occurs less than once in 500 years.

"Very rare" means that flooding is very unlikely but possible under extremely unusual weather conditions. The chance of flooding is less than 1 percent in any year.

"Rare" means that flooding is unlikely but possible under unusual weather conditions. The chance of flooding is 1 to 5 percent in any year.

"Occasional" means that flooding occurs infrequently under normal weather conditions. The chance of flooding is 5 to 50 percent in any year.

"Frequent" means that flooding is likely to occur often under normal weather conditions. The chance of flooding is more than 50 percent in any year but is less than 50 percent in all months in any year.

"Very frequent" means that flooding is likely to occur very often under normal weather conditions. The chance of flooding is more than 50 percent in all months of any year.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: More Frequent

Beginning Month: January

Ending Month: December

APPENDIX D

Approved Jurisdictional Determination, March 17, 2023,
U.S. Army Corps of Engineers

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS
LOS ANGELES DISTRICT
915 WILSHIRE BOULEVARD, SUITE 1109
LOS ANGELES, CA 90017-3409

March 17, 2023

SUBJECT: Approved Jurisdictional Determination

Keith McDaniels
Juniper Energy LLC
8181 Crystal Springs Road
Hillsborough, California 94010

Dear Mr. McDaniels:

I am responding to your request dated June 28, 2022, for an approved Department of the Army jurisdictional determination (JD) for the Juniper Energy Project--Hinkley, San Bernardino County, CA project site (File No. SPL-2022-00380-DLC). The proposed project is located near Hinkley, San Bernardino County, California, Latitude 34.999641, Longitude -117.323666.

The Corps' evaluation process for determining whether or not a Department of the Army permit is needed involves two tests. If both tests are met, a permit would likely be required. The first test determines whether or not the proposed project is located within the Corps' geographic jurisdiction (i.e., it is within a water of the United States). The second test determines whether or not the proposed project is a regulated activity under Section 10 of the Rivers and Harbors Act or Section 404 of the Clean Water Act. This evaluation pertains only to geographic jurisdiction.

Based on available information, I have determined waters of the United States do not occur on the project site. The basis for our determination can be found in the enclosed Approved Jurisdictional Determination (JD) form(s).

The aquatic resources identified in the documentation you provided are excluded from Clean Water Act Section 404 jurisdiction. As such, each aquatic resource is not currently regulated by the Corps of Engineers. This disclaimer of jurisdiction is only for Section 404 of the Clean Water Act. Other federal, state, and local laws may apply to your activities. In particular, you may need authorization from the California State Water Resources Control Board, the California Department of Fish and Wildlife/Arizona Department of Game and Fish, and/or the U.S. Fish and Wildlife Service.

This letter includes an approved jurisdictional determination for the Juniper Energy Project--Hinkley, San Bernardino County, CA project site. If you wish to submit new information regarding this jurisdictional determination, please do so within 60 days. We will consider any new information so submitted and respond within 60 days by either revising the prior determination, if appropriate, or reissuing the prior determination. If you object to this or any revised or reissued jurisdictional determination, you may request an administrative appeal under Corps regulations at 33 CFR Part 331. Enclosed you will find a Notification of Appeal Process (NAP) and Request for Appeal (RFA) form. If you wish to appeal this decision, you must submit

a completed RFA form within 60 days of the date on the NAP to the Corps South Pacific Division Office at the following address:

Travis Morse
Administrative Appeal Review Officer
U.S. Army Corps of Engineers
South Pacific Division, CESPD-PDO
450 Golden Gate Ave.
San Francisco, CA 94102

In order for an RFA to be accepted by the Corps, the Corps must determine that it is complete, that it meets the criteria for appeal under 33 CFR Part 331.5 (see below), and that it has been received by the Division Office by **May 17, 2023**.

This determination has been conducted to identify the extent of the Corps' Clean Water Act jurisdiction on the particular project site identified in your request and is valid for five years from the date of this letter, unless new information warrants revision of the determination before the expiration date. This determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985. If you or your tenant are USDA program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resources Conservation Service prior to starting work.

Thank you for participating in the regulatory program. If you have any questions, please contact me at (213) 452-3002 or via email at Deanna.L.Cummings@usace.army.mil. 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,

Aaron O. Allen, Ph.D.
Chief, North Coast Branch
Regulatory Division

Enclosure(s)

NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL		
Applicant: Keith McDaniels, Juniper Energy LLC	File Number: SPL-2022-00380-DLC	Date: MARCH 17, 2023
Attached is:		See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission)	A
	PROFFERED PERMIT (Standard Permit or Letter of permission)	B
	PERMIT DENIAL	C
X	APPROVED JURISDICTIONAL DETERMINATION	D
	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://www.usace.army.mil/cecw/pages/reg_materials.aspx or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.

- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.

- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:

Deanna Cummings
U.S. Army Corps of Engineers
Los Angeles District
915 WILSHIRE BOULEVARD, SUITE 1109
LOS ANGELES, CA 90017-3409
Phone: (213) 452-3002
Email: Deanna.L.Cummings@usace.army.mil

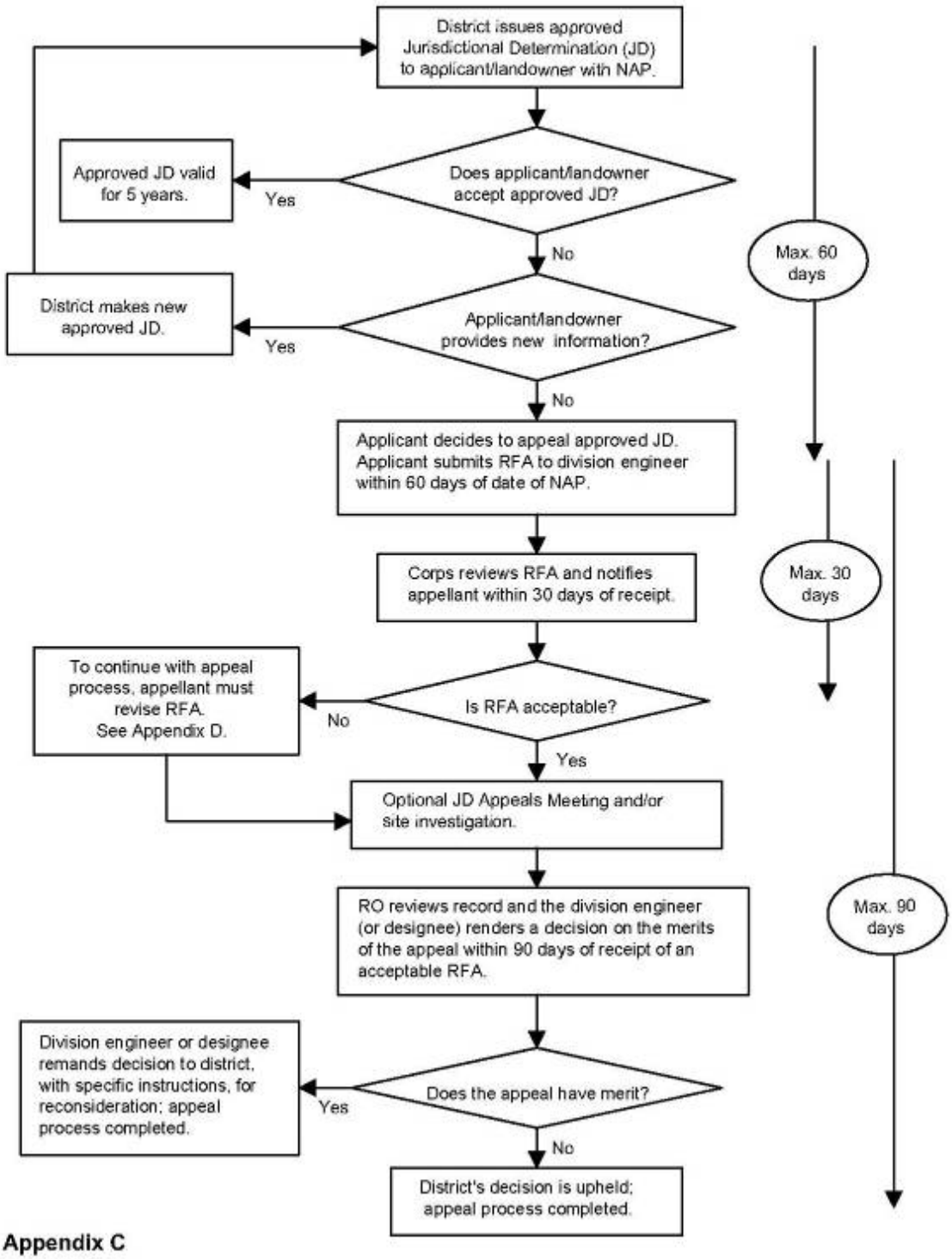
If you only have questions regarding the appeal process you may also contact: Travis Morse

Administrative Appeal Review Officer
U.S. Army Corps of Engineers
South Pacific Division
450 Golden Gate Ave.
San Francisco, CA 94102
Phone: (213) 452-3146
Email: w.travis.morse@usace.army.mil

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

_____ Signature of appellant or agent.	Date:	Telephone number:

Administrative Appeal Process for Approved Jurisdictional Determinations



Appendix C

§ 331.5 Criteria.

(a) *Criteria for appeal* —(1) *Submission of RFA.* The appellant must submit a completed RFA (as defined at §331.2) to the appropriate division office in order to appeal an approved JD, a permit denial, or a declined permit. An individual permit that has been signed by the applicant, and subsequently unilaterally modified by the district engineer pursuant to 33 CFR 325.7, may be appealed under this process, provided that the applicant has not started work in waters of the United States authorized by the permit. The RFA must be received by the division engineer within 60 days of the date of the NAP.

(2) *Reasons for appeal.* The reason(s) for requesting an appeal of an approved JD, a permit denial, or a declined permit must be specifically stated in the RFA and must be more than a simple request for appeal because the affected party did not like the approved JD, permit decision, or the permit conditions. Examples of reasons for appeals include, but are not limited to, the following: A procedural error; an incorrect application of law, regulation or officially promulgated policy; omission of material fact; incorrect application of the current regulatory criteria and associated guidance for identifying and delineating wetlands; incorrect application of the Section 404(b)(1) Guidelines (see 40 CFR Part 230); or use of incorrect data. The reasons for appealing a permit denial or a declined permit may include jurisdiction issues, whether or not a previous approved JD was appealed.

(b) *Actions not appealable.* An action or decision is not subject to an administrative appeal under this part if it falls into one or more of the following categories:

(1) An individual permit decision (including a letter of permission or a standard permit with special conditions), where the permit has been accepted and signed by the permittee. By signing the permit, the applicant waives all rights to appeal the terms and conditions of the permit, unless the authorized work has not started in waters of the United States and that issued permit is subsequently modified by the district engineer pursuant to 33 CFR 325.7;

(2) Any site-specific matter that has been the subject of a final decision of the Federal courts;

(3) A final Corps decision that has resulted from additional analysis and evaluation, as directed by a final appeal decision;

(4) A permit denial without prejudice or a declined permit, where the controlling factor cannot be changed by the Corps decision maker (e.g., the requirements of a binding statute, regulation, state Section 401 water quality certification, state coastal zone management disapproval, etc. (See 33 CFR 320.4(j));

(5) A permit denial case where the applicant has subsequently modified the proposed project, because this would constitute an amended application that would require a new public interest review, rather than an appeal of the existing record and decision;

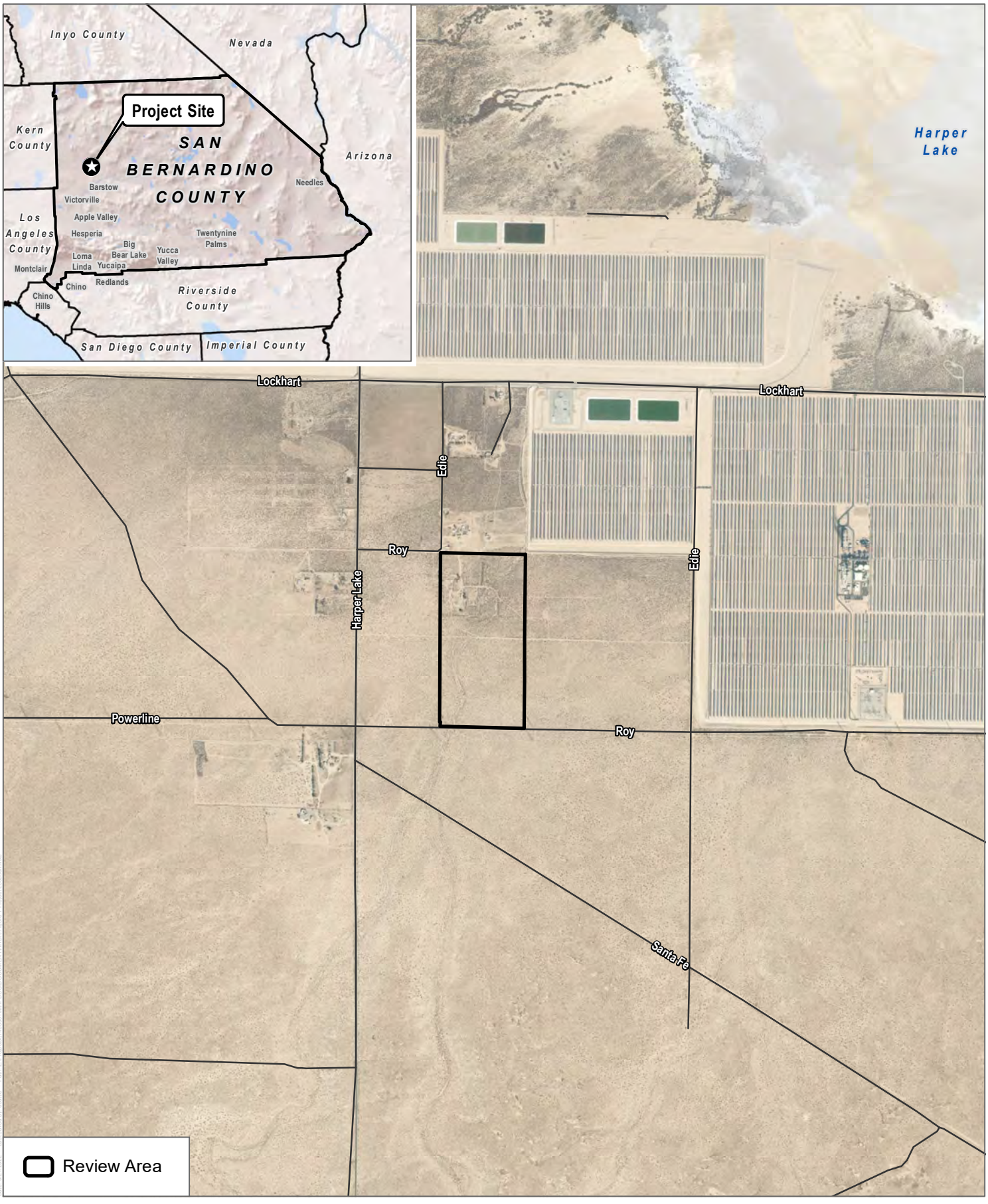
(6) Any request for the appeal of an approved JD, a denied permit, or a declined permit where the RFA has not been received by the division engineer within 60 days of the date of the NAP;

(7) A previously approved JD that has been superceded by another approved JD based on new information or data submitted by the applicant. The new approved JD is an appealable action;

(8) An approved JD associated with an individual permit where the permit has been accepted and signed by the permittee;

(9) A preliminary JD; or

(10) A JD associated with unauthorized activities except as provided in §331.11.



SOURCE: ESRI Imagery 2022, County of San Bernardino 2021

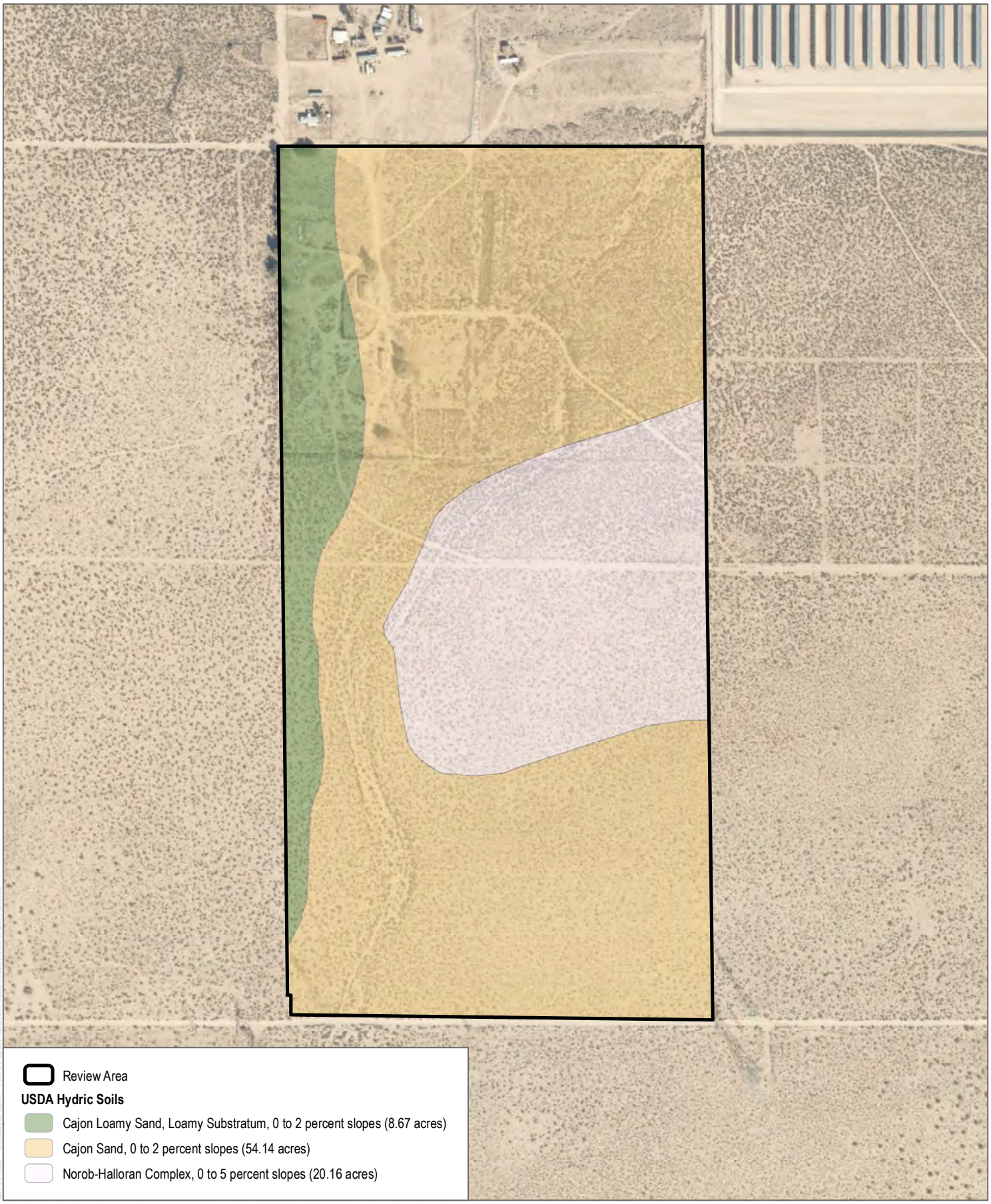
DUDEK

0 1,000 2,000 Feet

FIGURE 1

Project Location

Aquatic Resource Delineation Report for the Juniper Energy Project



SOURCE: ESRI Imagery 2022, County of San Bernardino 2021, USGS 2021, USFWS 2021, USDA 2008

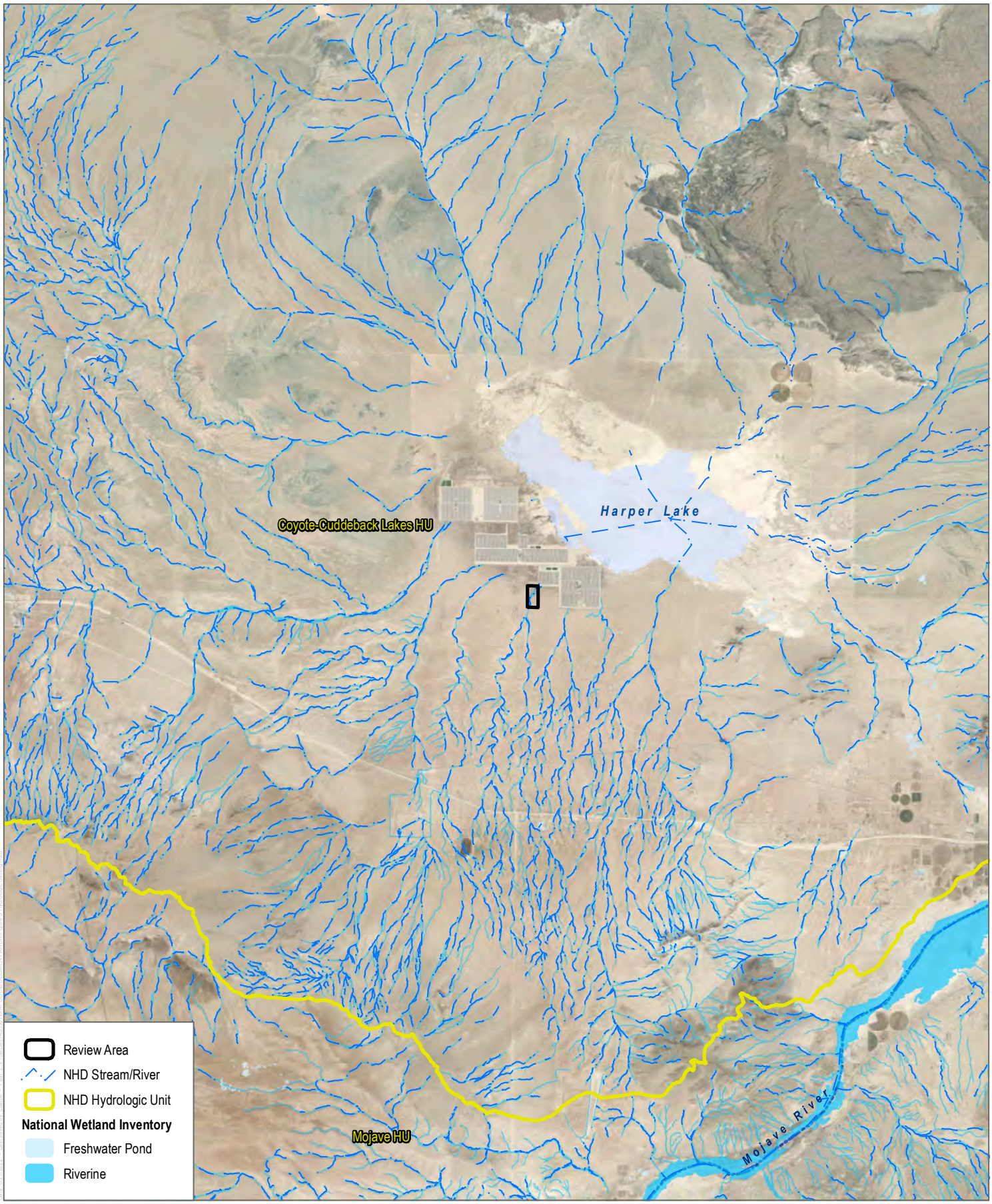
DUDEK

0 250 500 Feet

FIGURE 2

Soils

Aquatic Resource Delineation Report for the Juniper Energy Project



SOURCE: ESRI Imagery 2022, County of San Bernardino 2021, USGS 2021, USFWS 2021, USDA 2008

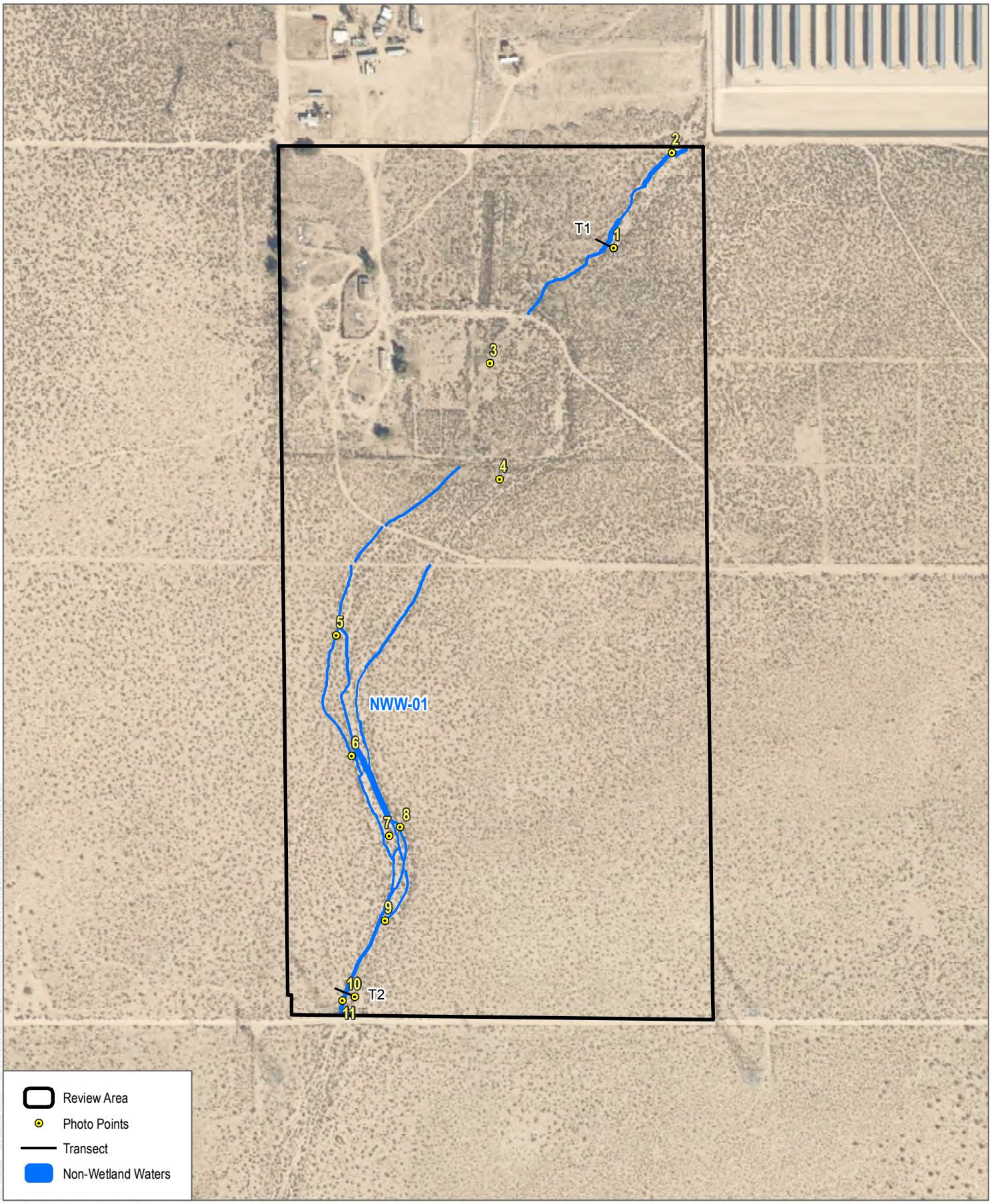
DUDEK

0 2.5 5 Miles

FIGURE 3

Hyrdrologic Setting

Aquatic Resource Delineation Report for the Juniper Energy Project



SOURCE: ESRI Imagery 2022, County of San Bernardino 2021, USGS 2021, USFWS 2021, USDA 2008

DUDEK

0 250 500 Feet

FIGURE 4

Potential Jurisdictional Aquatic Feature

Aquatic Resource Delineation Report for the Juniper Energy Project

APPENDIX E

Letter of Intent for Application to Rezone Site from RL to RC and for Conditional Use Permit

Letter of Intent

Applicant: Juniper Energy LLC
Mailing Address: 818 Crystal Springs Rd
Hillsborough CA 94010
Phone Number: 650-288-6810

Date: 10/14/2022
Primary Contact: Keith McDaniels
510-502-9117

Business Name: JE - CA Solar 3

APN(s): 0490-171-01

If needed, you may attach additional documents to provide more detailed information.

Brief description of proposed use:

Lockhart Solar

Brief Description of proposed location and surrounding properties as they currently exist:

Rural Utilities Service

Logistics (Truck trips, hours of business, parking, number of employees, etc.):

Construct solar farm + storage

Goals and Objectives:

San Bernardino County, California

Interoffice Memo

DATE: May 9, 2023 PHONE: (909) 387-8311

FROM: **MICHELE MARTIN,** P.E., ENGINEERING MANAGER
Land Use Services

TO: **NATALIE PATTY,** Contract Planner
Land Use Services

SUBJECT: **ROAD AND DRAINAGE CONDITIONS – CONDITIONAL USE PERMIT (CUP)**
APPLICANT: JUNIPER ENERGY LLC APN:0490-171-01 PROJ-2022-00066

Land Use Services Department – Land Development Division (LDD) recommends:

Based on the site plan received on 12/02/2022 the Department of Land Use Services, Land Development Division recommends:

☐ **APPROVE THIS PROJECT, subject to Conditions of Approval.**

☒ **DO NOT RELEASE APPROVAL OF THIS PROJECT, until the following redesign and/or studies are, submitted, reviewed and approved by Land Development Division.**

☒ **A REVISED CUP SITE PLAN IS REQUIRED (list revisions):**

1. Once approved, show all proposed drainage infrastructure on the site plan in accordance with the approved preliminary drainage study.
2. Show, label with dimension required road dedications as conditioned below.

☒ Legal Access. Proof of legal access to the nearest maintained public road is required for all applications. As proof of legal access, the "developer" shall submit one of the following: (a) existing dedication; (b) copy of the court decree establishing prescriptive rights that is acceptable to the Land Development Division; (c) dedications/easements by separate instrument from all property owners intervening between the proposed land division and a Publicly Maintained Road System.

☒ Preliminary Drainage Study. A Preliminary Drainage Study (DRNSTY) for the project has been reviewed and returned with revisions required on March 08, 2023. Please resubmit a revised DRNSTY addressing the corrections via EZOP under Record ID: DRNSTY-2023-00012.

LAND DEVELOPMENT DIVISION RECOMMENDS

The following Conditions Of Approval:

GENERAL REQUIREMENTS

Conditions of Operation and Procedures
(Not subject to Condition Compliance Sign Off)

Land Use Services Department – Land Development Division – Drainage Section (909) 387-8311

☒ Tributary Drainage. Adequate provisions should be made to intercept and conduct the tributary off-site and on-site 100-year drainage flows around and through the site in a manner that will not adversely affect adjacent or downstream properties at the time the site is developed.

☒ Natural Drainage. The natural drainage courses traversing the site shall not be occupied or obstructed.

☒ Additional Drainage Requirements. In addition to drainage requirements stated herein, other "on-site" and/or "off-site" improvements may be required which cannot be determined from tentative plans at this time and would have to be reviewed after more complete improvement plans and profiles have been submitted to this office.

☒ Erosion Control Installation. Erosion control devices must be installed and maintained at all perimeter openings and slopes throughout the construction of the project. No sediment is to leave the job site.

PRIOR TO ISSUANCE OF GRADING PERMITS OR LAND DISTURBING ACTIVITY

The following shall be completed:

Land Use Services Department – Land Development Division – Drainage Section (909) 387-8311

☒ Drainage Improvements. A Registered Civil Engineer (RCE) shall investigate and design adequate drainage improvements to intercept and conduct the off-site and on-site 100-year drainage flows around and through the site in a safe manner that will not adversely affect adjacent or downstream properties. Submit drainage study for review and obtain approval. A $750 deposit for drainage study review will be collected upon submittal to the Land Development Division. Deposit amounts are subject to change in accordance with the latest approved fee schedule.

☒ FEMA Flood Zone. The project is located within Flood Zone D according to FEMA Panel Number 06071C3875H dated 08/28/2008. Flood hazards are undetermined in this area, but they are still possible. The requirements may change based on the recommendations of a drainage study accepted by the Land Development Division and the most current Flood Map prior to issuance of grading permit.

☒ Grading Plans. Grading and erosion control plans shall be prepared in accordance with the County's guidance documents (which can be found here: https://lus.sbcounty.gov/land-development-home/grading-and-erosion-control/) and submitted for review with approval obtained prior to construction. All drainage shall be shown on the grading plans according to the approved final drainage study. Fees for grading plans will be collected upon submittal to the Land Development Division and are determined based on the amounts of cubic yards of cut and fill. Fee amounts are subject to change in accordance with the latest approved fee schedule.

☒ NPDES Permit: An NPDES permit - Notice of Intent (NOI) - is required on all grading of one (1) acre or more prior to issuance of a grading/construction permit. Contact your Regional Water Quality Control Board for specifics. www.swrcb.ca.gov

☒ Regional Board Permit: Construction projects involving one or more acres must be accompanied by Regional Board permit WDID #. Construction activity includes clearing, grading, or excavation that results in the disturbance of at least one (1) acre of land total.

☒ Streambed Alteration Agreement. California Department of Fish and Wildlife (CDFW) must be notified per Fish and Game Code (FGC) §1602. A streambed alteration agreement shall be provided prior to Grading permit issuance. Link to CDFW website at: https://www.wildlife.ca.gov/Conservation/LSA.

PRIOR TO ISSUANCE OF BUILDING PERMITS

The following shall be completed:

Land Use Services Department – Land Development Division – Drainage Section (909) 387-8311

☒ No comments.

Land Use Services Department – Land Development Division – Road Section (909) 387-8311

☒ Road Dedication/Improvements. The developer shall submit for review and obtain approval from the Land Use Services Department the following dedications and plans for the listed required improvements, designed by a Registered Civil Engineer (RCE) licensed in the State of California:

Northerly Property Line/Roy Road (Unclassified quarter sectional – 88 feet)

- Road Dedication. An additional 4-foot grant of easement is required to provide a half-width right-of-way of 44 feet and a 35-foot radius return grant of easements are required at the intersections of the northerly/easterly and northerly/westerly property lines.

- Driveway Approach. Design driveway approach per 2010 Caltrans Driveway Standard Detail A87A (width = 12 feet min – 26 feet max) and located per County Standard 130.

- Paved Access Road. This project is required to have a minimum 26-foot wide paved access road within 40-foot of right-of-way and designed to County Standard 114b that ties into a maintained paved public road.

Easterly Property Line (Unclassified quarter sectional – 88 feet)

- Road Dedication. An additional 4-foot grant of easement is required to provide a half-width right-of-way of 44 feet and a 35-foot radius return grant of easement is required at the intersection of the southerly and easterly property lines.

Southerly Property Line (Unclassified quarter sectional – 88 feet)

- Road Dedication. An additional 4-foot grant of easement is required to provide a half-width right-of-way of 44 feet and a 35-foot radius return grant of easement is required at the intersection of the southerly and westerly property lines.

☒ Road Standards and Design. All required street improvements shall comply with latest San Bernardino County Road Planning and Design Standards and the San Bernardino County Standard Plans. Road sections shall be designed to Desert Road Standards of San Bernardino County and to the policies and requirements of the County Department of Public Works and in accordance with the General Plan, Circulation Element.

☒ CMRS Exclusion. Road improvements required for this development shall not be entered into the County Maintained Road System (CMRS).

☒ Construction Permits. Prior to installation of road and drainage improvements, a construction permit is required from the County Department of Public Works, Permits/Operations Support Division, Transportation Permits Section (909) 387-1863 as well as other agencies prior to work within their jurisdiction. Submittal shall include a materials report and pavement section design in support of the section shown on the plans. Applicant shall conduct classification counts and compute a Traffic Index (TI) Value in support of the pavement section design.

☒ Encroachment Permits. Prior to installation of driveways, sidewalks, etc., an encroachment permit is required from the County Department of Public Works, Permits/Operations Support Division, Transportation Permits Section (909) 387-1863 as well as other agencies prior to work within their jurisdiction.

☒ Soils Testing. Any grading within the road right-of-way prior to the signing of the improvement plans shall be accomplished under the direction of a soils testing engineer. Compaction tests of embankment construction, trench back fill, and all sub-grades shall be performed at no cost to the County and a written report shall be submitted to the Permits/Operations Support Division, Transportation Permits Section of the County Department of Public Works prior to any placement of base materials and/or paving.

☒ Slope Easements. Slope rights shall be dedicated where necessary.

☒ Street Type Entrance. Street type entrance(s) with curb returns shall be constructed at the entrance(s) to the development.

☒ Transitional Improvements. Right-of-way and improvements (including off-site) to transition traffic and drainage flows from proposed to existing sections shall be required as necessary.

☒ Street Gradients. Road profile grades shall not be less than 0.5% unless the engineer at the time of submittal of the improvement plans provides justification to the satisfaction of the County Department of Public Works confirming the adequacy of the grade.

☒ Slope Tests. Slope stability tests are required for road cuts or road fills per recommendations of the Geotechnical Engineer to the satisfaction of the County Department of Public Works.

☒ Utilities. Final plans and profiles shall indicate the location of any existing utility facility or utility pole which would affect construction, and any such utility shall be relocated as necessary without cost to the County.

PRIOR TO FINAL INSPECTION OR OCCUPANCY OF ANY STRUCTURE

*The following shall be completed**:***

Land Use Services Department – Land Development Division – Drainage Section (909) 387-8311

☒ Drainage Improvements. All required drainage improvements shall be completed by the applicant. The private Registered Civil Engineer (RCE) shall inspect improvements outside the County right-of-way and certify that these improvements have been completed according to the approved plans. Certification letter shall be submitted to Land Development.

Land Use Services Department – Land Development Division – Road Section (909) 387-8311

☒ LDD Requirements. All LDD requirements shall be completed by the applicant prior to occupancy.

☒ Road Improvements. All required on-site and off-site improvements shall be completed by the applicant and inspected/approved by the County Department of Public Works.

☒ Private Roads/Improvements. Prior to occupancy, all required on-site and off-site improvements shall be completed by the applicant. Construction of private roads and private road related drainage improvements shall be inspected and certified by the engineer. Certification shall be submitted to Land Development by the engineer identifying all supporting engineering criteria.

☒ Structural Section Testing. A thorough evaluation of the structural road section, to also include parkway improvements, from a qualified materials engineer shall be submitted to the County Department of Public Works.

SAN BERNARDINO COUNTY

Interoffice Memo

DATE: January 5, 2023 **PHONE:** (909) 387-8186

FROM: OSVALDO ROQUE, P.E.
Supervising Engineer
Department of Public Works – Traffic Division

TO: **NATALIE PATTY**, PLANNER
Land Use Services Department – Planning Division

SUBJECT	**TRAFFIC CONDITIONS – CONDITIONAL USE PERMIT; APN: 0490-171-01 APPLICANT: JUNIPER ENERGY LLC; PROJECT NUMBER: PROJ-2022-00066**

Based on the Site Plan dated November 30, 2022 the Department of Public Works, Traffic Division recommends:

☐ **APPROVE THIS PROJECT, subject to the following Conditions of Approval.**

☒ **DO NOT RELEASE APPROVAL OF THIS PROJECT, until the following redesign and/or studies are, submitted, reviewed and approved by County Public Works**

1. **Construction Management Plan is Required:** The applicant's engineer shall provide a construction management plan to the Department of Public Works, Transportation Operations Division to determine if a maintenance agreement (during construction) with the County will be required. The construction management plan shall show the number of trucks, type of trucks (size), the total number of Equivalent Single Axle Loads (ESALs), and the truck routes to the site for construction. If it is determined that a maintenance agreement is required, the developer shall enter into a maintenance agreement with the County Department of Public Works to insure all County maintained roads utilized by the construction traffic shall remain in acceptable condition during construction. Prior to issuance of grading permits, the developer/contractor shall contact the Transportation Operations Division at (909) 387-7995 in order to process the maintenance agreement with the County. Please allow a minimum of 12 weeks for the processing of an agreement and obtain approval from the Board of Supervisors. For additional information regarding the maintenance

agreement, please contact the Transportation Operations Division at (909) 387-7995. For additional information about the construction management plan, please contact the Department of Public Works - Traffic Division at (909) 387-8186.

2. Show the truck turning template(s) in accordance with the latest AASHTO design manual on the site plan for ingress and egress adjacent to the project site. The truck turning templates shall be identified according to the appropriate AASHTO figure, demonstrate all truck movements including wheel tracking and overhang will stay within the prescribed travel lanes, and will not encroach on driveway aprons. Project driveways driveway(s) shall be designed to accommodate safe and proper turning movements.

CONDITIONS

☒ Note to Planner: Additional conditions may be provided following the approval of the construction management plan.

OR/SJ
Cc: File

SAN BERNARDINO COUNTY FIRE PROTECTION DISTRICT

620 South E Street ● San Bernardino, CA 92415-0153 ● (909) 386-8401 ● Fax (909) 386-8460

INTEROFFICE MEMO

DATE: December 19, 2022 **PHONE:** 909.386.8401

FROM: **Andrew Bezdek** **MAIL CODE:** 0153
Hazardous Materials Specialist

TO: **Natalie Patty,** Planning Division
Land Use Services Department

SUBJECT: **PROJ-2022-00066, APN: 0490-171-01, Juniper Energy LLC**

San Bernardino County Fire Protection District, Office of the Fire Marshal, Hazardous Materials Division has the following conditions for this project:

Permit requirements:

1. Prior to Occupancy a business or facility that handles hazardous materials in quantities at or exceeding 55 gallons, 500 pounds, 200 cubic feet (compressed gas) or at any one time generates any amount of hazardous waste shall obtain hazardous material permits from this department. The business operator shall apply for permits (Hazardous Material Permit, Hazardous Waste Permit, Aboveground Storage Tank Permit, Underground Storage Tank Permit) or apply for exemption from permitting requirements. Application for one or more of these permits shall occur by submitting a hazardous materials business plan using the California Environmental Reporting System (CERS) ***http://cers.calepa.ca.gov****/*

SPCC Plan Requirements:

2. Prior to Occupancy a businesses or facilities handling greater than 1320 gallons of petroleum products in aboveground storage tanks (shell capacity) shall prepare and implement a Spill Prevention, Control, and Countermeasures Plan (SPCC) in accordance with 40 CFR 1 112.3 and CHSC 25270.4.5(a). The SPCC plan shall be maintained on site.

"Hazardous Material" *means any material that because of its quantity, concentration, physical characteristics or chemical characteristics poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace. Hazardous Materials include but are not limited to, hazardous substances, hazardous waste, or any material which the administering agency has a reasonable basis for believing would be injurious to human health or the environment.*

Additional information can be found at http://www.sbcfire.org/ofm/Hazmat/PoliciesProcedures.aspx or you may contact The Office of the Fire Marshal, Hazardous Materials Division at (909) 386-8401.

APPENDIX F

Biological Technical Report, October 2022, Dudek

IPaC Official Species List dated November 20, 2024

Biological Technical Report

Juniper Energy Project, Hinkley, San Bernardino County

OCTOBER 2022

Prepared for:

JUNIPER ENERGY LLC
818 Crystal Springs Road
Hillsborough, California 94010
Contact: Keith McDaniels
650.288.6810

Prepared by:

DUDEK
1630 San Pablo Avenue, Suite 300
Oakland, California 94612
Contact: David Wickens
510.601.2514

Printed on 30% post-consumer recycled material.

Table of Contents

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TABLES

FIGURES

APPENDICES

Acronyms and Abbreviations

Acronym	Definition
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CRPR	California Rare Plant Rank
CWA	Clean Water Act
FESA	federal Endangered Species Act
ITP	Incidental Take Permit
MBTA	Migratory Bird Treaty Act
MM	Mitigation Measure
OHWM	ordinary high-water mark
project	Juniper Energy Project
RWQCB	Regional Water Quality Control Board
SBC RCIS	San Bernardino County Regional Conservation Investment Strategy
USACE	U.S. Army Corps of Engineers
USC	United States Code
USFWS	U.S. Fish and Wildlife Service

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Executive Summary

The proposed Juniper Energy Project (project) would consist of a new solar facility solar composed of two 4-megawatt photovoltaic power generating systems within the project site.

Biological field surveys for the project were conducted in 2022 by Dudek biologists. Surveys conducted within the project site included a wildlife habitat assessment, rare plant survey, vegetation mapping, jurisdictional aquatic resource delineation, and protocol-level desert tortoise (*Gopherus agassizii*) surveys. The project site contains four vegetation communities or land cover types: allscale scrub, unvegetated wash, disturbed habitat, and urban/developed. No special-status plant species were observed within the project site. The following special-status wildlife species was observed within the project site: LeConte's thrasher (*Toxostoma lecontei*).

Impacts are expected to jurisdictional aquatic resources and special-status wildlife species. Mitigation is provided to reduce impacts to these sensitive biological resources to a level that is less than significant.

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1 Introduction

This biological technical report describes the existing biological conditions present on site and an analysis of potential biological resource impacts associated with the proposed Juniper Energy Project (project) located in Hinkley, San Bernardino County, California (Figure 1, Project Location). Specifically, this report provides the project site location and description, a summary of the pertinent biological resource regulations, survey methods, existing biological resources, special-status biological resources, project impacts (direct and indirect), and project mitigation. The project impacts, avoidance, and mitigation measures are discussed in accordance with the California Environmental Quality Act (CEQA), Clean Water Act, Migratory Bird Treaty Act, and California Fish and Game Code, as well as in the context of the desert region of San Bernardino County.

1.1 Project Location and Site Description

The proposed 83-acre project site is located at 315 Roy Road in the unincorporated community of Hinkley, San Bernardino County (Figure 1). The project site lies within the U.S. Geological Survey Twelve Gauge and Lockhart quadrangles with a latitude of 34°59'58.71"N and longitude of 117°19'25.20"W. The project site occurs on Assessor's Parcel Number 0490-171-01-0000. The project is situated in a region characterized by solar thermal plants and high-voltage transmission lines. The project site is zoned Rural Living (RL) pursuant to the San Bernardino County General Plan (County of San Bernardino 2007a) and Development Code (County of San Bernardino 2007b).

The project site is currently vacant land containing native vegetation, located in the southwestern region of the Mojave Desert. There are two on-site land cover types, disturbed habitat and developed land, associated with an abandoned residence that occurs in the northern portion of the project site. Soils on site are characterized as Cajon Sand, 0% to 2% slopes; Cajon loamy sand, loamy substratum, 0% to 2% slopes; and Norob-Halloran complex, 0% to 5% slopes (USDA 2022a) (Figure 2, Soils and Hydrology). Soils mapped within the project site are considered partially hydric (USDA 2022a).

Topography within the project site is mostly flat with elevation ranges from approximately 2,116 feet above mean sea level in the southwestern portion of the site to 2,084 feet above mean sea level in the northeastern portion of the site. Adjacent land uses include the existing Lockhart solar facility to the north and east; two rural residential developments and a large thermal solar farm along the northern boundary; and undeveloped land along the eastern, southern, and western boundaries. Multiple high-voltage transmission lines run along the project site to the south.

The project site occurs within the Coyote–Cuddeback Lakes Hydrological Unit (HUC 18090207) in the Harper Valley Groundwater Basin (Figure 2). Surface flows within the immediate watershed of the project site drain into Harper Lake playa. However, the existing Lockhart solar facility may prevent surface flow within the project site from reaching Harper Lake. The Harper Lake playa is at the lowest part of an undrained desert basin, generally devoid of vegetation (USGS 2021). Additionally, there is a riverine U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory classification (USFWS 2022a) and an unnamed ephemeral U.S. Geological Survey National Hydrography Dataset flowline occurring within the project site (Figure 2).

1.2 Project Description

The project applicant proposes to construct and operate two 4-megawatt community solar photovoltaic power generating systems with battery storage capabilities on approximately 83 acres of land northwest of the unincorporated community of Hinkley. The project would generate electricity using solar photovoltaic modules mounted on single-axis trackers, which rotate to follow the sun's movement throughout the day. The modules would be arranged in north/south arrays spanning the project site. The systems would store electrical production in long-duration batteries, which would be located next to the solar arrays on less than 1 acre of the site. The battery storage systems would employ technology requiring no cooling system, have no risk of fires, and use no hazardous materials. Switchgear, a weather station, inverters, and transformers, located next to the batteries, would manage the system and convert power for distribution to the nearby transmission grid. Electrical conduit and transmission and collection lines would primarily be installed underground. An overhead electrical line connecting the site to the nearby electrical grid would be installed along a property controlled by Southern California Edison. Interior perimeter all-weather unpaved roads would provide access to the system. Security fencing would be installed along the perimeter of the project site.

1.3 Regulatory Setting

1.3.1 Federal

Federal Endangered Species Act

The federal Endangered Species Act (FESA) of 1973 (16 USC 1531 et seq.), as amended, is administered by USFWS, the National Oceanic and Atmospheric Administration, and the National Marine Fisheries Service. This legislation is intended to provide a means to conserve the ecosystems upon which endangered and threatened species depend, and provide programs for the conservation of those species, thus preventing extinction of plants and wildlife. Under the provisions of Section 9 (16 USC 1538[a][1][B]) of FESA, it is unlawful to "take" any listed species. "Take" is defined in Section 3 (16 USC 1532[19]) of FESA as, "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct."

FESA allows for the issuance of "incidental take" permits for listed species under Section 7, which is generally available for projects that also require other federal agency permits or other approvals, and under Section 10, which provides for the approval of Habitat Conservation Plans on private property without any other federal agency involvement. Incidental take is defined as "take that results from, but is not the purpose of, carrying out an otherwise lawful activity" (USFWS 2004). Upon development of a Habitat Conservation Plan, USFWS can issue Incidental Take Permits (ITPs) for listed species.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) regulates or prohibits taking, killing, possession of, or harm to migratory bird species listed in Title 50, Section 10.13 of the Code of Federal Regulations (CFR). The MBTA is an international treaty for the conservation and management of bird species that migrate through more than one country and is enforced in the United States by USFWS. Hunting of specific migratory game birds is permitted under the regulations listed in CFR Title 50, Section 20. The MBTA was amended in 1972 to include protection for migratory birds of prey (raptors). On December 22, 2017, the Department of Interior issued a legal opinion (M-Opinion 37050) that

interpreted the above prohibitions as only applying to direct and purposeful actions of which the intent is to kill, take, or harm migratory birds; their eggs; or their active nests. Incidental take of birds, eggs, or nests that are not the purpose of such an action, even if there are direct and foreseeable results, was not prohibited. On January 7, 2021, USFWS published a final rule (the January 7th rule) that codified the previous administration's interpretation, which, after further review, was determined to be inconsistent with the majority of relevant court decisions and readings of the MBTA's text, purpose, and history. On May 5, 2021, USFWS published a proposed rule to revoke the January 7th rule, which would result in a return to implementing the statute as prohibiting incidental take. On July 19, 2021, USFWS announced the availability of two revised economic analysis documents for public review that evaluate the potential for the proposed rule to impact small entities, including businesses, governmental jurisdictions, and other organizations. The public review period on these documents ended on August 19, 2021. A final rule revoking the January 7th rule was published on October 4, 2021 and went into effect on December 3, 2021. In its summary of the October 4, 2021, final rule, USFWS explained that "the immediate effect of this final rule is to return to implementing the MBTA as prohibiting incidental take and applying enforcement discretion, consistent with judicial precedent and longstanding agency practice prior to 2017" (86 FR 54642).

Clean Water Act

The Clean Water Act (CWA) provides guidance for the restoration and maintenance of the chemical, physical, and biological integrity of the nation's waters. Section 401 requires a project operator to apply for a federal license or permit that allows activities resulting in a discharge to waters of the United States to obtain state certification, thereby ensuring that the discharge will comply with provisions of the CWA. The Regional Water Quality Control Boards (RWQCBs) administer the certification program in California. Section 402 establishes a permitting system for the discharge of any pollutant (except dredged or fill material) into waters of the United States. Section 404 establishes a permit program administered by the U.S. Army Corps of Engineers (USACE) that regulates the discharge of dredged or fill material into waters of the United States, including wetlands. USACE implementing regulations are found at 33 CFR 320 and 330. Guidelines for implementation are referred to as the Section 404(b)(1) Guidelines, which were developed by the U.S. Environmental Protection Agency in conjunction with USACE (40 CFR 230). The guidelines allow the discharge of dredged or fill material into the aquatic system only if there is no practicable alternative that would have less adverse impacts.

Wetlands and Other Waters of the United States

Based on a recent court case ordering vacation of the Navigable Waters Protection Rule, USACE and the U.S. Environmental Protection Agency halted implementation of the rule and are interpreting "waters of the United States" consistent with the pre-2015 regulatory regime until further notice. Per 40 CFR 230.3(s), "waters of the United States" are defined as follows:

1. All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
2. All interstate waters including interstate wetlands;
3. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:

a) Which are or could be used by interstate or foreign travelers for recreational or other purposes; or

b) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or

c) Which are used or could be used for industrial purposes by industries in interstate commerce;

4. All impoundments of waters otherwise defined as waters of the United States under this definition;
5. Tributaries of waters identified in paragraphs (s)(1) through (4) of this section;
6. The territorial sea;
7. Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (s)(1) through (6) of this section; waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 CFR 423.11(m) which also meet the criteria of this definition) are not waters of the United States.

The USACE/U.S. Environmental Protection Agency Rapanos Guidance states that USACE will regulate traditional navigable waters, adjacent wetlands, and relatively permanent waters tributary to traditional navigable waters, and adjacent wetlands. Non-relatively permanent waters (those exhibiting less than 3 months of continuous surface flows) and their adjacent wetlands would be regulated if there is a significant nexus from the site.

The State Water Resources Control Board has authority over wetlands through Section 401 of the CWA, as well as the Porter–Cologne Water Quality Control Act (Porter–Cologne Act), California Code of Regulations Section 3831(k), and California Wetlands Conservation Policy. The CWA requires that an applicant for a Section 404 permit (to discharge dredge or fill material into waters of the United States) first obtain certification from the appropriate state agency stating that the fill is consistent with the state's water quality standards and criteria. In California, the authority to either grant certification or waive the requirement for permits is delegated by the State Water Resources Control Board to the nine RWQCBs. A request for certification is submitted to the regional board at the same time that an application is filed with USACE.

1.3.2 State

California Endangered Species Act

The California Endangered Species Act (CESA) (California Fish and Game Code, Section 2050–2068) provides protection and prohibits the take of plant, fish, and wildlife species listed by the State of California. Unlike FESA, under CESA, state-listed plants have the same degree of protection as wildlife, but insects and other invertebrates may not be listed. Take is defined similarly to FESA and is prohibited for both listed and candidate species. Take authorization may be obtained by a project applicant from the California Department of Fish and Wildlife (CDFW) under CESA Section 2081, which allows take of a listed species for educational, scientific, or management purposes. In this case, private developers consult with CDFW to develop a set of measures and standards for managing the listed species, including full mitigation for impacts, funding of mitigation implementation, and monitoring of mitigation measures. For this project, take of Mohave ground squirrel would require a 2081 ITP from CDFW.

California Fish and Game Code

Under the California Fish and Game Code, CDFW provides protection from take for a variety of species, including fully protected species. According to Sections 3511 and 4700 of the California Fish and Game Code, which regulate birds and mammals, respectively, a fully protected species may not be taken or possessed without a permit from the California Fish and Game Commission, and incidental take of these species is not authorized. "Fully protected" is a legal protective designation administered by CDFW intended to conserve wildlife species that risk extinction within California. Lists have been created for birds, mammals, fish, amphibians, and reptiles.

According to California Fish and Game Code Section 3503, it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto. Section 3503.5 states that it is unlawful to take, possess, or destroy any birds in the orders Falconiformes or Strigiformes (birds of prey), or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this code or any regulation adopted pursuant thereto. Finally, Section 3513 states that is unlawful to take or possess any migratory nongame bird as designated in the MBTA or any part of such migratory nongame bird except as provided by rules and regulations adopted by the Secretary of the Interior under provisions of the MBTA. For the purposes of these state regulations, CDFW currently defines an active nest as one that is under construction or in use, and includes existing nests that are being modified. For example, if a hawk is adding to or maintaining an existing stick nest in a transmission tower, it would be considered to be active and covered under these California Fish and Game Code sections.

Under California Fish and Game Code Sections 1600–1616, CDFW has the authority to regulate work that will substantially divert or obstruct the natural flow of, or substantially change or use any material from, the bed, channel, or bank of any river, stream, or lake. CDFW also has the authority to regulate work that will deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake. This regulation takes the form of a requirement for a Lake or Streambed Alteration Agreement and is applicable to all projects. Applications to CDFW must include a complete certified CEQA document.

The Native Plant Protection Act of 1977 (see Section 1900 et seq. of the California Fish and Game Code) directed CDFW to carry out the Legislature's intent to "preserve, protect and enhance rare and endangered plants in this State." The Native Plant Protection Act gave the California Fish and Game Commission the power to designate native plants as "endangered" or "rare" and protect endangered and rare plants from take. CESA expanded on the original Native Plant Protection Act and enhanced legal protection for plants, but the Native Plant Protection Act remains part of the California Fish and Game Code. To align with federal regulations, CESA created the categories of "threatened" and "endangered" species. It converted all "rare" animals into the act as threatened species, but did not do so for rare plants. Thus, there are three listing categories for plants in California: rare, threatened, and endangered. Because rare plants are not included in CESA, mitigation measures for impacts to rare plants are specified in a formal agreement between CDFW and the project proponent.

Porter-Cologne Water Quality Control Act

Pursuant to provisions of the Porter–Cologne Act, the RWQCBs regulate discharging waste, or proposing to discharge waste, within any region that could affect a water of the state (California Water Code Section 13260[a]). The State Water Resources Control Board defines a waters of the state as "any surface water or groundwater, including saline

waters, within the boundaries of the state" (California Water Code Section 13050[e]). As of April 2019, the State Water Resources Control Board has narrowed its definition of a waters of the state to include the following:

1. Natural wetlands.
2. Wetlands created by modification of a surface water of the state.
3. Artificial wetlands that meet any of the following criteria:
    a) Approved by an agency as compensatory mitigation for impacts to other waters of the state, except where the approving agency explicitly identifies the mitigation as being of limited duration.
    b) Specifically identified in a water quality control plan as a wetland or other water of the state.
    c) Resulted from historic human activity, is not subject to ongoing operation and maintenance, and has become a relatively permanent part of the natural landscape.
    d) Greater than or equal to 1 acre in size unless the artificial wetland was constructed and is currently used and maintained, primarily for one or more of the following purposes: industrial or municipal wastewater treatment or disposal; settling of sediment; detention, retention, infiltration, or treatment of stormwater runoff and other pollutants or runoff subject to regulation under a municipal, construction, or industrial permitting program; treatment of surface waters; agricultural crop irrigation or stock watering; fire suppression; industrial processing or cooling water; active surface mining – even if the site is managed for interim wetlands functions and values; log storage; treatment, storage, or distribution of recycled water; maximizing groundwater recharge (this does not include wetlands that have incidental groundwater recharge benefits); or fields flooded for rice growing.

All waters of the United States are waters of the state. Wetlands, such as isolated seasonal wetlands, that are not generally considered waters of the United States are considered waters of the state if, "under normal circumstances, (1) the area has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both; (2) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and (3) the area's vegetation is dominated by hydrophytes or the area lacks vegetation" (SWRCB 2021). If a CWA Section 404 permit is not required for a project, the RWQCB may still require a permit (waste discharge requirements) for impacts to waters of the state under the Porter–Cologne Act.

1.3.3 Regional

San Bernardino County General Plan and Development Code

The County of San Bernardino General Plan contains the goals and policies that guide future development within San Bernardino County (County of San Bernardino 2007a). San Bernardino County is broken into three distinct geographic planning regions: the Valley, the Mountains, and the Desert. The project site occurs within the Desert Planning Region of San Bernardino County. The Desert Planning Region has two goals and policies: (1) to preserve open lands by working with the U.S. Bureau of Land Management, and (2) to ensure that off-highway vehicle use is managed to protect environmentally sensitive resources.

The project would also need to comply with the Development Code. The San Bernardino County Development Code (County of San Bernardino 2007b) implements the goals and policies of the General Plan. Section 88.01.060, Desert Native Plant Protection, of the San Bernardino County Development Code is a subset of the Plant Protection and Management Code (Chapter 88.01 of the Development Code) and focuses on the conservation of specified desert plant species.

San Bernardino County Plant Protection and Management Code

Chapter 88.01 of the San Bernardino County Development Code provides regulatory and management guidance for plant resources within unincorporated areas of San Bernardino County, as well as within mixed public and private lands within San Bernardino County. The goal is to promote healthy plant community growth and the preservation of native species. In turn, the standardization of these practices helps with the conservation of natural waterways within San Bernardino County, and provides sustainable habitat for many local plant and wildlife species. This code primarily relates to tree and vegetation removal on public and private land within unincorporated areas of San Bernardino County.

Desert Native Plant Protection

Section 88.01.060 of the San Bernardino County Development Code is a subset of the Plant Protection and Management Code and is focused on the conservation of specified desert plant species. Section 88.01.060 specifically states, "Removal of all plants protected or regulated by the Desert Native Plants Act (Food and Agricultural Code Section 80001 et seq.) shall comply with the provisions of the Act before the issuance of development permit or approval of a land use application. All members of the family Cactaceae (Cactus Family) require a permit for harvesting under the Desert Native Plants Act." This ordinance contains provisions for the protection of certain desert native plants, as follows:

- The following desert native plants with stems 2 inches or greater in diameter or 6 feet or greater in height:
  - *Psorothamnus spinosus* (smoketree).
  - All species of the genus Prosopis (mesquites).
- All species of the family Agavaceae (century plants, nolinas, yuccas).
- Creosote rings, 10 feet or greater in diameter.
- All Joshua trees.
- Any part of any of the following species, whether living or dead:
  - *Olneya tesota* (desert ironwood).
  - All species of the genus *Prosopis* (mesquites).
  - All species of the genus *Cercidium* (palo verdes).

Riparian Plant Conservation

Section 88.01.080 of the San Bernardino County Development Code is a subset of the Plant Protection and Management Code and is focused on promoting the health of riparian corridors in relation to their impact on waterways within the region, their use as habitat by various plant and wildlife species, and their stabilization of stream banks.

San Bernardino County Soil and Water Conservation Code

Chapter 88.02 of the San Bernardino County Development Code provides a regulatory framework to promote the health of soil communities within San Bernardino County, limit soil erosion potential, and preserve air quality. This code primarily regulates ground-disturbing activities within San Bernardino County.

SANBAG Countywide Habitat Preservation/Conservation Framework

As part of the Environment Element of the Countywide Vision, a Countywide Habitat Preservation/Conservation Framework Study (Phase 1) was prepared as a guidance document that outlines conservation issues and concerns, inventories existing conservation, identifies conservation opportunities, and itemizes data gaps associated with habitat conservation in San Bernardino County. The study identified conservation planning subareas, overarching principles, and recommendations to further develop a comprehensive approach to habitat preservation/ conservation across the incorporated cities, unincorporated San Bernardino County lands, and public lands (SANBAG 2015).

San Bernardino County Regional Conservation Investment Strategy

The San Bernardino County Regional Conservation Investment Strategy (SBC RCIS) is a voluntary, nonregulatory framework for conservation and mitigation actions in key regions of San Bernardino County. The County of San Bernardino, San Bernardino Council of Governments, and the Environment Element stakeholder group, in collaboration with the Southern California Association of Governments, developed the SBC RCIS based on biological and planning principles that arose from the Countywide Vision planning process. In an effort to streamline mitigation decisions and generate the best conservation outcomes, the SBC RCIS was developed to provide a regional, science-based conservation guidebook for use by public agencies, the development community, environmental groups, other interested entities, and the public when planning and carrying out conservation and mitigation actions in western San Bernardino County (County of San Bernardino et al. 2018).

The SBC RCIS covers the Valley Region, the Cajon Pass through the Mountain Region, and the western Desert Region. The conservation strategy was built around conservation elements and includes 7 habitat groups and 16 general vegetation communities supporting 52 focal species (County of San Bernardino et al. 2018).

Building off the landscape context and baseline biological information, the SBC RCIS is founded on conservation goals and objectives that structure and focus the conservation strategy on priority actions and areas. The conservation actions toolbox provides a suite of actions available for SBC RCIS users to select from based on their individual conservation or mitigation needs, and the prioritization guidelines provide decision support at a regional scale for optimizing the effectiveness of conservation and mitigation actions. Following approval by CDFW, the SBC RCIS can be used to support more informed conservation and mitigation decisions (County of San Bernardino et al. 2018).

2 Survey Methods and Limitations

Data regarding biological resources present within the project site were obtained through a review of pertinent literature and field surveys conducted in 2022, which are described in detail below.

2.1 Literature Review

Prior to conducting field surveys, Dudek biologists reviewed the latest CDFW California Natural Diversity Database (CDFW 2022a), the California Native Plant Society's Inventory of Rare and Endangered Plants of California (CNPS 2022a), and the USFWS Critical Habitat and Occurrence Data (USFWS 2022b) databases to identify special-status species and critical habitat that are known to occur or may potentially occur within the project site based on the physical characteristics of the project site (including biogeography, elevation, soils, and vegetation communities). The California Natural Diversity Database and California Native Plant Society queries were run for all species recorded within the Twelve Gauge and Lockhart U.S. Geological Survey 7.5-minute quadrangles and the surrounding 10 quadrangles. Plant identification was made with reference to the Jepson Flora Project (2022).

The following databases were reviewed prior to the jurisdictional delineation: historical aerial photographs (Google Earth Pro 2021; Historic Aerials 2021); U.S. Geological Survey's National Hydrography Dataset (USGS 2021); U.S. Department of Agriculture Natural Resources Conservation Service Web Soil Survey (USDA 2022a); and the USFWS National Wetland Inventory (USFWS 2022a). Google Earth was also used to assess current and historical presence or absence of flows and/or ponding on the project site (Google Earth Pro 2021).

2.2 Field Surveys

Biological field surveys for the project were conducted in 2022 by Dudek biologists. Surveys conducted within the project site included a wildlife habitat assessment, vegetation mapping, a formal jurisdictional delineation, rare plant survey, and a protocol-level survey for desert tortoise (*Gopherus agassizii*). Table 1 lists the survey dates, times, surveying biologists, and weather conditions for these surveys.

Table 1. Survey Conditions and Schedule

Date	Hours	Personnel	Survey Focus	Survey Conditions
04/07/2022	07:16 AM–12:52 PM	Sedona Maniak	Wildlife Habitat Assessment, Rare Plant Survey	48–83°F, 0% cc, 1 mph
04/07/2022	07:16 AM–12:52 PM	Anna Cassady	Vegetation Mapping, Jurisdictional Aquatic Resource Assessment	48–83°F, 0% cc, 1 mph
09/27/2022	08:00 AM–12:36 PM	Russell Sweet, Britney Schultz, Sarah Greely	Desert Tortoise Protocol Survey	67–95°F, 0% cc, 0-3 mph

Notes: °F = degrees Fahrenheit; cc = cloud cover; mph = miles per hour (wind).

2.2.1 Vegetation Community and Land Cover Mapping

Vegetation mapping within the project site was conducted on April 7, 2022, by Dudek biologist Anna Cassady. Natural vegetation communities were mapped in the field following A Manual of California Vegetation (CNPS 2022b), where feasible. Vegetation communities and land covers were mapped in the field using a mobile data collection application. Vegetation surveys were conducted throughout the site on foot. Following the completion of fieldwork, vegetation polygons were digitized using ArcGIS, and GIS coverage was created. Acreage calculations of vegetation communities and land covers were determined using ArcGIS.

2.2.2 Flora and Fauna

The plant species encountered during the field survey were identified and recorded directly into a field notebook. Those species that could not be identified immediately were brought into the laboratory for further investigation. A compiled list of plant species observed on the project site is presented in Appendix A, Plant Species Observed. Latin and common names for plant species with a California Rare Plant Rank (CRPR) follow the California Native Plant Society's Online Inventory of Rare, Threatened, and Endangered Plants of California (CNPS 2022a). For plant species without a CRPR, Latin names follow the Jepson Interchange List of Currently Accepted Names of Native and Naturalized Plants of California (Jepson Flora Project 2022), and common names follow the California Natural Community List (CDFW 2021) or the U.S. Department of Agriculture Natural Resources Conservation Service Plants Database (USDA 2022b).

Wildlife species detected during the field survey by sight, calls, tracks, scat, or other signs were recorded directly onto a field notebook. Binoculars (10 × 42) were used to aid in the identification of wildlife. Latin and common names of animals detected follow Crother (2017) for reptiles and amphibians, the American Ornithological Society (AOS 2020) for birds, Wilson and Reeder (2005) for mammals, and the North American Butterfly Association (NABA 2018) for butterflies. In addition to species actually detected during the surveys, expected wildlife use of the site was determined by known habitat preferences of local species and knowledge of their relative distributions in the area. A list of wildlife species observed on the project site is presented in Appendix B, Wildlife Species Observed.

2.2.3 Jurisdictional Aquatic Resource Delineation

The jurisdictional delineation was conducted by Dudek biologist Anna Cassady on April 7, 2022, and is included as Appendix C. Because the project site did not support any wetland vegetation, the delineation focused on mapping non-wetland waters. Site-specific topographical data were reviewed in conjunction with aerials, both current and historical, to determine the potential presence of non-wetland waters. The limits of aquatic resources were collected in the field using the ESRI Collector mobile application with sub-meter accuracy. The geographic extents were digitized in GIS using ArcGIS software. Remote sensing was not used for the delineation.

U.S. Army Corps of Engineers

The USACE wetlands delineation was conducted in accordance with the 1987 USACE Wetlands Delineation Manual (USACE 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (USACE 2008a). A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States: A Delineation Manual (USACE 2008b) was used to determine the limits of non-wetland waters. Non-wetland waters were delineated on topographical maps in conjunction with ESRI Collector on a mobile device. The widths of each non-wetland water were determined in the field according to the OHWM manual.

Due to the lack of hydric vegetation on the project site, no Wetland Determination Forms were taken. No USACE three-parameter wetlands were suspected to be present based on site review. USACE OHWM Forms were completed at representative cross-sections of non-wetland waters to capture their characteristics and widths. The Aquatic Resources Delineation Report is included as Appendix C.

Regional Water Quality Control Board

Waters of the state regulated by the RWQCB were mapped in accordance with the State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State (SWRCB 2021). As described in these procedures, wetland waters of the state are mapped based on the procedures in USACE's 1987 Corps of Engineers Wetlands Delineation Manual (USACE 1987) and its 2008 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0) (USACE 2008a). Non-wetland waters were delineated based on watercourse characteristics present in the field, which include surface flow, sediment transportation and sorting, physical indicators of channel forms, channel morphology, and riparian habitat associated with a streambed. Waters of the state (regardless of whether they appeared to be ephemeral or not) are mapped at the OHWM based on the procedures defined in USACE's 2008 A Field Guide to Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States (USACE 2008b).

California Department of Fish and Wildlife

The delineation defined areas under the jurisdiction of CDFW pursuant to Sections 1600–1603 of the California Fish and Game Code. CDFW streambeds are typically delineated at the width of the channel or lake measured at the top of bank or the extent of associated riparian vegetation beyond the top of bank. For shallow drainages and washes that do not support riparian vegetation, the top-of-bank measurement may be the same as the OHWM measurement. Streambeds under the jurisdiction of CDFW were delineated using the Cowardin method of waters classification, which defines waters boundaries by a single parameter (i.e., hydric soils, hydrophytic vegetation, or hydrology) (Cowardin et al. 1979).

2.2.4 Focused Surveys for Sensitive Biological Resources

Special-status biological resources are defined as follows: (1) species that have been given special recognition by federal, state, or local agencies and organizations due to limited, declining, or threatened population sizes; (2) habitat types recognized by local and regional agencies as sensitive; (3) habitat areas or vegetation communities that are unique, are of relatively limited distribution, or are of particular value to wildlife; (4) wildlife corridors and habitat linkages; or (5) biological resources that may or may not be considered special status, but are regulated under federal, state, and/or local laws.

Dudek qualified biologists conducted surveys and/or habitat assessments for the following sensitive biological resources: sensitive vegetation communities, jurisdictional aquatic resource delineation, focused surveys for special-status plants, and focused protocol-level surveys for desert tortoise. Incidental detections of other sensitive wildlife species, either through sight, calls, tracks, scat, or other signs, were also recorded. A summary of the dates and site conditions for the field efforts performed as part of this biological report are presented in Table 1 in Section 2.2, Field Surveys. The following sections provide specific details regarding each survey.

2.2.4.1 Focused Surveys for Special-Status Plants

A rare plant survey for special-status plant species was conducted on April 7, 2022, by Dudek biologist Sedona Maniak. Given the typical blooming periods of the special-status plant species potentially occurring within the project site based on soils, elevation, and vegetation communities, it was determined that all target special-status species could be surveyed in one pass in April. The survey methods conformed to the California Native Plant Society's Botanical Survey Guidelines (CNPS 2001), Protocols for Surveying and Evaluating Impacts to Special-Status Native Plant Populations and Sensitive Natural Communities (CDFW 2018), and the USFWS General Rare Plant Survey Guidelines (Cypher 2002). All plant species encountered during the field surveys were identified to subspecies or variety, if applicable, to determine sensitivity status. If special-status plant species were encountered, field personnel recorded data points demarcating the edge of the polygon and assessed population numbers using the Esri ArcGIS mobile application.

2.2.4.2 Protocol-Level Surveys for Desert Tortoise

Desert tortoise is a federally and state-listed threatened species. Based on a preliminary review, the entire project site is potentially suitable habitat for desert tortoise; therefore, a focused presence/absence protocol-level survey was conducted during the appropriate season according to USFWS survey protocols. Dudek biologists conducted protocol-level surveys for desert tortoise to determine the status of the species on site. To evaluate the impacts to desert tortoise, protocol surveys were conducted in accordance with USFWS's Preparing for any Action that may Occur within the Range or the Mojave Desert Tortoise (*Gopherus agassizii*) (USFWS 2018). As directed by the protocol, Dudek conducted surveys in September 2022 (Table 1). Biologists surveyed the site by walking approximately 10-meter-wide transects for 100% coverage of the project site. Weather conditions, time of day, and season were appropriate for the detection of desert tortoise.

2.3 Survey Limitations

Site visits were conducted during daylight hours. Complete inventories of biological resources present on a site often require numerous focused surveys at different times of day during different seasons. Some annual plant species require a certain amount and timing of rain to germinate and/or persist. The average rainfall in 2022 was below average, which has potential to limit the growth of flora. However, initial botanical reference surveys were conducted prior to focused special-status plant surveys, and therefore conditions were monitored prior to collecting data. Surveys for special-status plant species adequately covered flora that are known to bloom within the vicinity. Some species, such as nocturnal animals, are difficult to detect during the day. Other species may be present in such low numbers that they could be missed. Due to such timing and seasonal variations, survey results are not an absolute list of all species that the project site may support.

3 Results

3.1 Vegetation Communities and Land Covers

Based on species composition and general physiognomy, four vegetation communities or land cover types occur within the project site. Acreages for each vegetation community or land cover type are provided in Table 2, and their spatial distribution is shown in Figure 3, Biological Resources. Descriptions for each vegetation community or land cover type are provide below.

Table 2. Vegetation Communities and Land Covers within the Project Site

Vegetation Community/Land Cover Type	Ranking[1]	Total Acreage
Allscale scrub (*Atriplex polycarpha*, 36.340.04)	G4, S4	77.69
Unvegetated Wash	GNR, SNR	0.86
Disturbed Habitat	GNR, SNR	3.86
Urban/Developed	GNR, SNR	0.56
	Total	**82.97**

Notes: Totals may not sum due to rounding.

[1] In September 2020, CDFW published the Natural Communities List (CDFW 2021), which uses the scientific name of the dominant species in that alliance as the alliance name and includes a global and state rarity rank based on the NatureServe Core Methodology (NatureServe 2022). The conservation status of a vegetation community is designated by a number from 1 to 5, preceded by a letter reflecting the appropriate geographic scale of the assessment (G = global and S = subnational). The numbers have the following meaning (NatureServe 2022):
1 = critically imperiled
2 = imperiled
3 = vulnerable to extirpation or extinction
4 = apparently secure
5 = demonstrably widespread, abundant, and secure
GNR = unranked, global rank not yet assessed
SNR = unranked, subnational rank not yet assessed

Because NatureServe ranks vegetation communities at the global level, it has few rankings at the state or province level available. However, the Natural Communities List (CDFW 2021) includes state-level rarity rankings (i.e., the subnational [S] rank) for vegetation communities. This list is considered the authority for ranking the conservation status of vegetation communities in California. Natural Communities with ranks of S1–S3 are considered Sensitive Natural Communities to be addressed in the environmental review processes of CEQA (CDFW 2021).

3.1.1 Allscale Scrub

The allscale scrub (*Atriplex polycarpa*) alliance is recognized by the Natural Communities List (CDFW 2021). The allscale scrub alliance often occurs on dissected alluvial fans and rolling hills, as well as washes, playa lake beds and shores, terraces, and edges of large, low-gradient washes. Soils may be carbonate-rich and sandy, alkaline, or sandy clay loams (CNPS 2022b). Allscale scrub alliance communities include allscale as the sole or dominant shrub in the canopy. Allscale scrub has a continuous or open shrub canopy less than 3 meters (10 feet) in height with a variable ground layer (CNPS 2022b). Shrub species associated with the allscale scrub alliance occurring within the project site include cheesebush (*Ambrosia salsola*), Anderson's boxthorn (*Lycium andersonii*), peach thorn (*Lycium cooperi*), and creosote bush (*Larrea tridentata*). Understory plants occurring within the project site include redstem stork's bill (*Erodium cicutarium*) and Arabian schimus (*Schismus arabicus*). The allscale scrub alliance is ranked by CDFW (2021) as a G4S4 alliance, and is therefore not considered a sensitive biological resource by CDFW under CEQA (CDFW 2021).

3.1.2 Unvegetated Wash

Although not recognized by the Natural Communities List (CDFW 2021), unvegetated wash typically occurs on alluvium associated with riverine floodways. The nature of this community is one of periodic natural disturbance by flood action and deposition of alluvial sediments. The areas within the project site mapped as unvegetated wash are composed of a system of braided ephemeral channels carrying surface flows across the site from south to north. Unvegetated wash is not considered a sensitive vegetation community by CDFW under CEQA (CDFW 2021). However, these areas are typically regulated as non-wetland waters under RWQCB jurisdiction and as streambeds under CDFW jurisdiction.

3.1.3 Disturbed Habitat

Although not recognized by the Natural Communities List (CDFW 2021), disturbed habitat is an area that has been physically disturbed and is no longer recognizable as a native or naturalized vegetation association. These areas may continue to retain soil substrate. If vegetation is present, it is almost entirely composed of non-native vegetation, such as ornamentals or ruderal exotic species. Disturbed habitat within the project site consists of dirt roads and the portion of the site previously occupied by a residence. Disturbed habitat is not considered a sensitive biological resource by CDFW under CEQA (CDFW 2021).

3.1.4 Urban/Developed

Although not recognized by the Natural Communities List (CDFW 2021), urban/developed land refers to areas that have been constructed upon or disturbed so severely that native vegetation is no longer supported. Urban/ developed land includes areas with permanent or semi-permanent structures, pavement or hardscape, landscaped areas, and areas with large amounts of debris or other materials. Urban/developed land within the project site consists of the portion of the site previously occupied by a residence. Urban/developed land is not considered a sensitive biological resource by CDFW under CEQA (CDFW 2021).

3.2 Inventory of Plant and Wildlife Species

A total of 14 vascular plant species consisting of 10 native species (71%) and 4 non-native species (29%) were recorded during the surveys (see Appendix A). A total of 11 wildlife species were observed within the project site consisting of 8 bird species and 3 reptile species (see Appendix B).

3.3 Special-Status Plants

Plant species are considered special status if they have been listed or proposed for listing by the federal or state government as rare, endangered, or threatened ("listed species"), and/or identified as rare by the California Native Plant Society (particularly CRPR 1A, presumed extinct in California; CRPR 1B, rare, threatened, or endangered throughout its range; and CRPR 2, rare or endangered in California, more common elsewhere). An evaluation of known records in the Twelve Gauge and Lockhart quadrangles and the ten surrounding quadrangles (CDFW 2022a; CNPS 2022a; USFWS 2022b) was conducted to determine which species have been recorded in the project vicinity. In addition, Dudek biologists' knowledge of biological resources, the regional distribution of each species, and the results from focused surveys, as well as elevation, habitat, and soils present within the project site, were used to determine the potential for various special-status species to occur.

No special-status plant species were observed occurring within the project site during the 2022 survey effort. There are no other special-status plant species with a moderate to high potential to occur on the project site. A list of special-status plant species known to occur within the surrounding vicinity and the probability of their occurrence on the project site is provided in Appendix D.

3.4 Special-Status Wildlife

Special-status wildlife species are those listed as federally/state endangered or threatened, proposed for listing, fully protected by CDFW, or a California Species of Special Concern. An evaluation of known records in the Twelve Gauge and Lockhart quadrangles and the ten surrounding quadrangles (CDFW 2022a; USFWS 2022b) was conducted. Appendix E provides a summary of the special-status wildlife species documented within the project vicinity and their potential to occur on site based on the location of the site, species' range and distribution, and the vegetation communities found on site. Those special-status wildlife species that are not expected to occur or have low potential to occur on the project site are included in Appendix E but are discussed further in this document because no significant direct or indirect impacts are anticipated. In addition, there is no USFWS-designated critical habitat for any wildlife species within or directly adjacent to the project site (USFWS 2022b).

One special-status wildlife species, LeConte's thrasher (*Toxostoma lecontei*), was observed during the biological surveys conducted within the project site (Figure 3). Additionally, three special-status wildlife species, Mohave ground squirrel (*Spermophilus mohavensis*), burrowing owl (*Athene cunicularia*), and American badger (*Taxidea taxus*), have moderate or low potential to occur within the project site. These four species, as well as desert tortoise and desert kit fox (*Vulpes macrotis arsipus*), are discussed in detail below.

LeConte's Thrasher

One special-status wildlife species, LeConte's thrasher, was observed during the biological surveys conducted within the project site (Figure 3). LeConte's thrasher is a California Species of Special Concern. This species is an uncommon, non-migratory, medium-sized resident songbird (Sheppard 1996). LeConte's thrasher lives in the hottest and driest environments, relying on arthropods in soil, and is not known to drink water; it is associated with saltbush or creosote bush growths with smooth topography and little slope (Sheppard 1996; Terres 1980). LeConte's thrasher has potential to nest within scrub habitat on the project site.

Mojave Desert Tortoise

Desert tortoise is a federally and state-listed threatened species. Throughout most of the Mojave Desert, desert tortoises occur most commonly on gently sloping terrain with sandy gravel soils and where there is sparse cover of low-growing shrubs, which allows for the establishment of herbaceous plants. Soils must be friable enough for digging burrows, but firm enough so that burrows do not collapse (USFWS 2008). Protocol-level surveys were conducted within the project site for desert tortoise. No desert tortoise sign (e.g., feathers, whitewash, scat, carapace), individuals, or suitable tortoise burrows were observed. Five burrows were mapped during the initial survey, as shown in Figure 3. However, these burrows were all partially collapsed, inactive (i.e., cobwebs present), and deemed not suitable for desert tortoise.

Mohave Ground Squirrel

Mohave ground squirrel is a state-listed threatened species. Mohave ground squirrels generally inhabit areas where the soil is friable and sandy or gravelly (CDFW 2022b). Mohave ground squirrels occur in desert scrub habitats dominated by creosote bush and desert saltbush scrub at elevations of 1,800 to 5,000 feet above mean sea level (CDFW 2022b). The project site occurs within the south-central part of the historical range of Mohave ground squirrel (CDFW 2019). There is a core population area for Mohave ground squirrel in the Harper Lake area (Leitner 2015), and the limited trapping conducted within the project vicinity indicates that Mohave ground squirrel does occur within the Harper Lake area but is not abundant (CDFW 2022a). The Mohave ground squirrel U.S. Geological Survey habitat suitability model depicted in Figure 3 of the conservation strategy (CDFW 2019) ranks the majority of the project site as being unsuitable Mohave ground squirrel habitat, with a small portion of moderately suitable habitat overlapping the southwest corner of the project site. Therefore, based on occurrence data within the project vicinity and the vegetation communities present within the site, there is moderate potential for Mohave ground squirrel to occur within the project site.

Burrowing Owl

Burrowing owl is a California Species of Special Concern. The presence of burrows is the most essential component of burrowing owl habitat because they are required for nesting, roosting, cover, and caching prey (Coulombe 1971; Green and Anthony 1989; Haug et al. 1993; Martin 1973). In California, western burrowing owls most commonly live in burrows created by California ground squirrels (*Spermophilus beecheyi*). Burrowing owls may occur in human-altered landscapes such as agricultural areas, ruderal grassy fields, vacant lots, and pastures if the vegetation structure is suitable (i.e., open and sparse); useable burrows are available; and foraging habitat occurs in close proximity (Gervais et al. 2008). Debris piles, riprap, culverts, and pipes can be used for nesting and roosting. Although there is occurrence data within the project vicinity, due to the lack of suitable burrows or burrowing owl sign (e.g., feathers, whitewash, or individuals) observed during surveys, and the presence of dense shrub cover, there is low potential for burrowing owl to occur within the project site.

American Badger and Desert Kit Fox

American badger is a California Species of Special Concern. American badger occurs in open stages of most scrub communities with friable soils, and feeds mainly on rodents (CDFW 2022b). Five burrows were mapped during the initial survey, as shown in Figure 3. However, these burrows were all partially collapsed and deemed inactive (i.e., cobwebs present). Three of the burrows had approximately 12-inch diameters and could potentially be used by coyote (*Canis latrans*) or American badger. One burrow showed signs of claw marks. The other burrow was smaller (i.e., small-mammal sized) but had no sign of recent use. Therefore, based on the presence of burrows and vegetation communities and soils present within the site, there is moderate potential for American badger to occur within the project site.

Additionally, there is moderate potential for desert kit fox to occur within the project site. Although desert kit fox is not considered listed by USFWS or CDFW under any special-status designation, this species is considered a “fur-bearing mammal,” protected from take under the California Fish and Game Commission’s Mammal Hunting Regulations (Subdivision 2, Chapter 5), which effectively protects it from hunting and trapping. No hunting or trapping is proposed or would be allowed under future projects, and no future projects would be allowed take of this species.

3.5 Jurisdictional Aquatic Resource Delineation

Based on the aquatic resource delineation, approximately 0.86 acres (4,810 linear feet) of non-wetland waters of the state and streambeds were mapped within the project site, composed of braided ephemeral channels. Table 3 includes the acres and linear feet of non-wetland waters of the state mapped within the project site; the extent of potentially jurisdictional waters are depicted in Figure 3. Descriptions of the jurisdictional waters on the project site are described in further detail below. The Aquatic Resources Delineation Report is provided as Appendix C.

Table 3. Jurisdictional Aquatic Resources within the Project Site

Aquatic Resource Type	RWQCB/CDFW (acreage/linear feet)
Non-Wetland Water/Stream Channel	0.86/4,810
Total	**0.86/4,810**

RWQCB = Regional Water Quality Control Board; CDFW = California Department of Fish and Wildlife

Significant surface flow is both unpredictable and scarce in the arid desert environment. Substantial surface water is typically ephemeral and usually the result of flash-flood events. These events may result in stream channels taking the form of alluvial fans, discontinuous ephemeral channels, single-thread channels with floodplains, and compound (braided) channels (USACE 2008b). Within the project site there is a system of braided ephemeral channels carrying surface flows across the site from south to north toward Harper Lake, which is a dry lakebed or playa (Figure 3). However, the existing Lockhart solar facility may prevent surface flow from reaching Harper Lake.

The results of the delineation concluded that there are non-wetland RWQCB jurisdictional waters of the state and CDFW jurisdictional streambeds within the project site. The project site does not contain any streams, wetland waters, or other waters that are subject to federal jurisdiction under Section 404 of the Clean Water Act. Ephemeral channels within the project site either dissipate, evaporating or infiltrating into the groundwater basin, or may continue to flow to Harper Lake during larger storm events. Harper Valley is considered a closed basin and functions as an isolated intrastate watershed system lacking the presence of a traditional navigable water. Therefore, all features within the project site were considered non-jurisdictional under USACE. This non-jurisdictional determination is pending USACE review.

3.6 Wildlife Corridors and Habitat Linkages

Wildlife corridors are linear features that connect large patches of natural open space and provide avenues for the immigration and emigration of animals. Wildlife corridors contribute to population viability by ensuring the continual exchange of genes between populations, which helps maintain genetic diversity; providing access to adjacent habitat areas, representing additional territory for foraging and mating; allowing for greater carrying capacity; and providing routes for colonization of habitat lands following local population extinctions or habitat recovery from ecological catastrophes (e.g., fires).

Habitat linkages are patches of native habitat that function to join two larger patches of habitat. They serve as connections between habitat patches and help to reduce the adverse effects of habitat fragmentation, representing a potential route for gene flow and long-term dispersal. Habitat linkages may serve both as habitat and as avenues of gene flow for small animals such as reptiles and amphibians. Habitat linkages may be represented by continuous patches of habitat or by nearby habitat “islands” that function as steppingstones for dispersal.

The project site is located adjacent to the existing Lockhart solar facility to the north and east; two rural residential developments and a large thermal solar farm along the northern boundary; and undeveloped land along the eastern, southern, and western boundaries. There is a Desert Tortoise Conservation Area/Least Cost Corridor, which can provide a habitat mosaic containing viable populations of smaller terrestrial species (e.g., desert tortoise) and allow for gene flow through diffusion of populations over a period of generations, approximately 1,330 feet west of the project site. However, there are no established wildlife corridors or habitat linkages within the project site. As a result, the project site provides open space for wildlife movement while migrating or foraging, but does not appear to serve as a significant regional wildlife corridor. Because the project site does not provide for regional wildlife movement or serve as a regional wildlife corridor, the project is not expected to contribute to the impediment of local or seasonal movement of wildlife through the surrounding habitat.

4 Impact Analysis

The purpose of this chapter is to describe the direct and indirect impacts of the proposed project on special-status biological resources, and to provide the significance determinations for implementation of the proposed project.

4.1 Definition of Impacts

Based on the project description (Section 1.2), direct and indirect (including both short-term and long-term) impacts are defined as follows:

Direct impacts include the permanent loss of on-site habitat and the plant and wildlife species that it contains. There would be no temporary impacts associated with the proposed project. Direct impacts were quantified by overlaying the limits of the work areas on the biological resources map of the project site (Figure 4, Impacts to Biological Resources). Direct impacts would include permanent impacts associated with the solar arrays and access roads.

Indirect impacts refer to off-site and on-site effects that are short-term impacts (i.e., temporary) due to project construction, or long-term (i.e., permanent) due to the design of the project and the effects it may have on adjacent resources. For this project, indirect impacts would include short-term impacts during construction, such as additional dust and noise that could temporarily disrupt wildlife activities, construction-related soil erosion and runoff, and increased human presence (i.e., trash and noise). The project would be subject to the typical restrictions and requirements that address turbidity and water quality, including the federal Clean Water Act, National Pollution Discharge Elimination System, and Porter-Cologne Act, and would require preparation of a Stormwater Pollution Prevention Plan.

4.2 Direct Impacts

4.2.1 Vegetation Communities and Land Cover Types

Implementation of the proposed project would result in direct impacts to allscale scrub, unvegetated wash, disturbed habitat, and urban/developed, as depicted in Figure 4 and as listed in Table 4.

Table 4. Impacts to Vegetation Communities and Land Covers within the Project Site

Vegetation Community/Land Cover Type	Ranking[1]	Total Impact Acreage
Allscale scrub (*Atriplex polycarpha*, 36.340.04)	G4, S4	77.69
Unvegetated Wash	GNR, SNR	0.86
Disturbed Habitat	GNR, SNR	3.86
Urban/Developed	GNR, SNR	0.56
	Total	**82.97**

Notes: Totals may not sum due to rounding.

[1] In September 2020, CDFW published the Natural Communities List (CDFW 2021), which uses the scientific name of the dominant species in that alliance as the alliance name and includes a global and state rarity rank based on the NatureServe Core Methodology (NatureServe 2022). The conservation status of a vegetation community is designated by a number from 1 to 5,

preceded by a letter reflecting the appropriate geographic scale of the assessment (G = global and S = subnational). The numbers have the following meaning (NatureServe 2022):
1 = critically imperiled
2 = imperiled
3 = vulnerable to extirpation or extinction
4 = apparently secure
5 = demonstrably widespread, abundant, and secure
GNR = unranked, global rank not yet assessed
SNR = unranked, subnational rank not yet assessed

As stated in Section 3.1, Vegetation Communities and Land Covers, CDFW state rankings of 1, 2, or 3 are considered high priority for inventory or special-status, and impacts to these communities typically require mitigation. There are no vegetation communities considered sensitive biological resources by CDFW under CEQA within the project site. Therefore, impacts to the vegetation communities and land cover types within the project site would be less than significant and would not require mitigation. Impacts to unvegetated wash are discussed in Section 4.2.2, Jurisdictional Aquatic Resources, because this land cover type is regulated as non-wetland waters under RWQCB jurisdiction and as a streambed under CDFW jurisdiction, and impacts would require permits through those agencies.

4.2.2 Jurisdictional Aquatic Resources

Based on Dudek's Aquatics Resources Delineation, the proposed project would permanently impact 0.86 acres of non-wetland waters of the state under the jurisdiction of RWQCB and 0.86 acres of streambeds under the jurisdiction of CDFW. Note that the final boundaries of each agency's jurisdiction is determined by the aquatic resource agency and, therefore, impacts may be slighter higher or lower than what is stated herein. Figure 4 shows the location of impacts to jurisdictional resources. Table 5 provides the impact acreages by jurisdiction resource, jurisdiction, and type of impact.

Table 5. Impacts to Jurisdictional Aquatic Resources within the Project Site

Aquatic Resource Type	Impacts to RWQCB/CDFW Aquatic Resources (acreage/linear feet)
Non-Wetland Water/Stream Channel	0.86/4,810
Total Impacts	**0.86/4,810**

RWQCB = Regional Water Quality Control Board; CDFW = California Department of Fish and Wildlife

The project would require minimal grading, with minimal impact to existing drainage patterns and overall topography of the site. A remnant isolated segment of unnamed ephemeral stream is located on the project site. It contains a bed, banks, and evidence of flow trending in a north to northeast direction toward Harper Lake playa. The flow pattern becomes discontinuous, and it loses bed and banks and evidence of concentrated flow as it approaches the northern half of the property where an agricultural operation was located. The agricultural operation anthropogenically disturbed the ephemeral stream with permanent direct impacts via implementation of irrigated pastureland and construction of fences, farm roads, outbuildings, and other ancillary structures to support a ranching operation. However, the flow characteristics and functions of the off-site and downstream portions of the stream were removed altogether when the stream was filled to allow construction of a large solar energy facility (Lockhart solar facility) north and northeast of the project site. Removal of the off-site downstream segment of the stream eliminated any meaningful chemical, physical, and biological functions, values, and interchange between remnant segment of the stream on the project site and the Harper Lake playa. Lastly, unlike the Lockhart facility to the northeast, the proposed project would not mass grade the site or remove (fill) the remnant segment of stream.

The project would strategically locate certain elements (i.e., solar array structures) in the stream such that water would still be able to flow across the site via its current alignment. Therefore, impacts to jurisdictional aquatic resources would be less than significant. However, impacts would require resource agency (i.e., RWQCB and CDFW) permits for permanent impacts. The proposed project would require, prior to project implementation, state permitting from CDFW for a Streambed Alteration Agreement, required by California Fish and Game Code Section 1600 et seq., and from the RWQCB for a Waste Discharge Requirement. As compensation for direct permanent impacts to jurisdictional aquatic resources, the applicant would provide compensatory mitigation acceptable to the resource agencies (i.e., RWQCB and CDFW). If it is determined that compensatory mitigation is necessary, a Mitigation and Monitoring Plan would be prepared that outlines the compensatory mitigation in coordination with the RWQCB and CDFW.

4.2.3 Special-Status Plants

No special-status plant species were observed within the project site during the 2022 survey effort, and there are no other special-status plant species with a moderate to high potential to occur on the project site. Therefore, impacts to special-status plants are not anticipated with implementation of the proposed project.

Additionally, there are no plants within the project site that would be protected or regulated by the Desert Native Plants Act. Therefore, impacts to Desert Native Plants are not anticipated.

4.2.4 Special-Status Wildlife and Nesting Birds

LeConte's thrasher was observed within the project site (Figure 4). In addition, the following special-status species have not been detected on site, but have a moderate or low potential to occur: Mohave ground squirrel, burrowing owl, American badger, and desert tortoise. A discussion of direct impacts to these species and desert kit fox is provided below.

LeConte's Thrasher and Nesting Birds

LeConte's thrasher was observed during the biological surveys conducted within the project site, and this species has potential to nest within scrub habitat on the project site. Given the mobile nature of this species (i.e., they are likely to move away from the project site to use adjacent areas of equally suitable habitat), it is anticipated that project impacts would not result in direct impacts to birds outside of the nesting season. Additionally, because impacts to suitable nesting habitat would be small in comparison to the amount of suitable nesting habitat occurring in the surrounding area, impacts to suitable nesting habitat would be less than significant.

Potential direct impacts to nesting birds within the project site may occur if construction occurs during the breeding season. However, a pre-construction nesting bird survey during the breeding season (i.e., February 1 through September 1) as directed by **MM-BIO-1** (Nesting Bird Surveys) would avoid direct impacts to nesting birds in accordance with the MBTA and California Fish and Game Code. Therefore, implementation of **MM-BIO-1** (Nesting Bird Surveys) and **MM-BIO-5** (Education Programs) (see Chapter 5) would reduce impacts to LeConte's thrasher and other nesting birds to less than significant.

Mohave Ground Squirrel

There is moderate potential for Mohave ground squirrel to occur within the project site. To determine whether this species is present, a survey as described in the Mohave Ground Squirrel Survey Guidelines (CDFG 2010) and as directed by **MM-BIO-2** (Mohave Ground Squirrel Surveys) would be implemented. In the event that the surveys determine that Mohave ground squirrel is present within the areas to be either temporarily or permanently disturbed, the project applicant would be required to obtain an ITP from CDFW under Section 2081 of California Fish and Game Code. Unavoidable impacts to occupied suitable habitat would be compensated at a minimum of 1:1, through on- or off-site preservation with permanent protection and long-term funding, or through purchase of equivalent credits through a mitigation bank (if available), in addition to implementing all other measures and conditions of the ITP. Therefore, implementation of **MM-BIO-2** (Mohave Ground Squirrel Surveys) and **MM-BIO-5** (Education Programs) would reduce impacts to Mohave ground squirrel to less than significant. If surveys for Mohave ground squirrel are negative, then impacts to unoccupied habitat would be less than significant and would not require mitigation.

Burrowing Owl

There is low potential for burrowing owl to occur within the project site based on the lack of suitable burrows and burrowing owl sign. Therefore, to demonstrate that burrowing owl is absent, pre-construction surveys as described in the 2012 Staff Report on Burrowing Owl Mitigation (CDFG 2012) would be conducted by a qualified biologist as directed by **MM-BIO-3**. If burrowing owls are detected on site, a burrowing owl relocation plan shall be implemented and no ground-disturbing activities would be permitted within 200 meters (656 feet) of an occupied burrow during the breeding season (February 1 through August 31), unless otherwise authorized by CDFW. If avoidance of active burrows is infeasible, then before breeding behavior is exhibited and after the burrow is confirmed empty by site surveillance and/or scoping, a qualified project biologist would implement a passive relocation program in accordance with the 2012 Staff Report on Burrowing Owl Mitigation, Appendix E (i.e., Example Components for Burrowing Owl Artificial Burrow and Exclusion Plans) (CDFG 2012). Therefore, implementation of **MM-BIO-3** (Burrowing Owl Pre-Construction Surveys) and **MM-BIO-5** (Education Programs) would reduce direct impacts to burrowing owl to less than significant. Additionally, because this species has low potential to occur based on lack of suitable burrows and burrowing owl sign, and because impacts would be small in comparison to the amount of suitable nesting habitat occurring in the surrounding area, impacts to habitat from project implementation would be less than significant.

American Badger and Desert Kit Fox

There is moderate potential for American badger and desert kit fox to occur within the project site. As directed by **MM-BIO-4**, a pre-construction survey for American badger and desert kit fox would be conducted on the project site within 10 days prior to the start of construction to determine the presence/absence of either species. If either species is discovered during the survey, an American Badger/Desert Kit Fox Mitigation and Monitoring Plan would be developed. Therefore, implementation of **MM-BIO-4** (American Badger and Desert Kit Fox Surveys) and **MM-BIO-5** (Education Programs) would reduce direct impacts to American badger and desert kit fox to less than significant. Additionally, because impacts to habitat would be small in comparison to the amount of suitable habitat occurring in the surrounding area, impacts to habitat from project implementation would be less than significant.

Mojave Desert Tortoise

No desert tortoise sign (e.g., feathers, whitewash, scat, carapace), individuals, or suitable tortoise burrows were observed during the protocol-level surveys conducted with the project site. Therefore, impacts to this species are not anticipated with project implementation. Additionally, because the desert tortoise surveys were negative, impacts to unoccupied habitat would be less than significant and would not require mitigation. MM-BIO-5 (Education Programs) would be implemented during construction to ensure that direct impacts to desert tortoise are completely avoided.

4.2.5 Wildlife Corridors and Habitat Linkages

No significant direct permanent impacts would occur to wildlife movement or habitat linkages associated with project activities. Existing nearby habitat linkages and wildlife corridor functions would remain intact while construction activities are conducted and following project completion. Wildlife movement may be temporarily disrupted during the construction phase of the project, although this impact would be both localized and short-term. Nearby corridors that could support wildlife movement in the region, including the Desert Tortoise Conservation Area/Least Cost Corridor approximately 1,330 feet to the west, would not be impacted by the project. Further, the project site does not contain nursery sites, such as bat colony roosting sites or colonial bird nesting areas. Therefore, impacts associated with wildlife movement, wildlife corridors, and wildlife nursery sites would be less than significant under CEQA.

4.3 Indirect Impacts

4.3.1 Vegetation Communities and Land Covers

Potential short-term indirect impacts on vegetation communities adjacent to the project site would include dust, construction-related soil erosion and runoff, and increased human presence (e.g., trash and noise). Indirect impacts to vegetation communities would be significant absent mitigation, and would be avoided with implementation of MM-BIO-6 (Best Management Practices/Erosion/Runoff), which would require impacts to occur only within the disturbance limits, the use of best management practices, erosion control measures, and avoiding the use of toxic substances that could affect plant life.

Long-term indirect impacts to sensitive vegetation communities would be less than significant due to solar array maintenance occurring infrequently and would not affect off-site areas.

4.3.2 Jurisdictional Aquatic Resources

Indirect impacts to on-site and off-site jurisdictional waters could occur from accidental release of materials, such as debris, oil, or petroleum products, into jurisdictional waters during project construction. Implementation of MM-BIO-6 (Best Management Practices/Erosion/Runoff) would reduce indirect impacts from project construction to less than significant by controlling site runoff and hazardous waste spills, and implementing best management practices.

Additionally, indirect impacts would be reduced through permit compliance and standard best management practices. Specifically, the project applicant would incorporate methods to control runoff, including a Stormwater

Pollution Prevention Plan to meet National Pollutant Discharge Elimination System regulations. Implementation of stormwater regulations is expected to substantially control adverse edge effects (e.g., erosion, sedimentation, habitat conversion) during and following construction both adjacent to and downstream of the project site. Typical construction best management practices specifically related to reducing impacts from dust, erosion, and runoff generated by construction activities would be implemented. During construction, material stockpiles would be placed such that they cause minimal interference with on-site drainage patterns. This would protect jurisdictional aquatic resources from being inundated with sediment-laden runoff.

Long-term indirect impacts to aquatic jurisdictional resources would be less than significant due to solar array maintenance occurring infrequently and would not affect off-site areas.

4.3.3 Special-Status Plant Species

Potential temporary indirect impacts to special-status plants would be similar to those described above for vegetation communities and would include decreased rigor from dust, invasive plant species, and accidental trampling. **MM-BIO-6** (Best Management Practices/Erosion/Runoff) would be implemented to avoid significant indirect impacts to special-status plants during construction.

Long-term indirect impacts would be less than significant due to solar array maintenance occurring infrequently and would not affect off-site areas.

4.3.4 Special-Status Wildlife Species and Nesting Birds

Most of the indirect impacts to vegetation communities previously described can also affect special-status wildlife. Breeding birds can be significantly affected by short-term construction-related noise, which can result in the disruption of foraging, nesting, and reproductive activities. Some bird species present or potentially present adjacent to work areas, including the special-status species LeConte's thrasher, may nest within the shrubs on site and within 250 to 500 feet of work areas. These species are protected under the MBTA. If nesting birds nest in off-site areas within 250 to 500 feet of a work area, short-term indirect impacts could occur if construction takes place during their breeding season (February 1 through September 1). Pre-construction nesting bird surveys during the breeding season are a condition of project approval and would avoid impacts to nesting birds in accordance with the MBTA and California Fish and Game Code (**MM-BIO-1,** Nesting Bird Surveys).

Although desert tortoise is not present within the project site, adjacent off-site areas occupied by desert tortoise can be significantly affected by construction-related trash that may attract ravens. To avoid any indirect impacts to desert tortoises potentially occurring within the surrounding area, the project would implement **MM-BIO-6** (Best Management Practices/Erosion/Runoff), which would require all trash and debris that may attract ravens to be fully contained.

Long-term (operational) indirect impacts to special-status wildlife would be less than significant due to solar array maintenance occurring infrequently and because it would not affect off-site areas.

4.3.5 Wildlife Corridors and Habitat Linkages

Construction-related short-term noise and work in the vicinity would be temporary and would not be expected to significantly disrupt wildlife movement due to ambient noise conditions and the ability for wildlife to continue to

move around the construction area during and after construction. Temporary disturbance to local species may occur but would not substantially degrade the quality or use of the vegetation communities in the vicinity. Work activities are not currently proposed during the nighttime. Therefore, implementation of the project would not result in significant indirect impacts to wildlife corridors and migratory routes.

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5 Avoidance, Minimization, and Mitigation

This section describes proposed project avoidance, minimization, and mitigation measures that would avoid or mitigate adverse and significant impacts to biological resources resulting from proposed project activities.

MM-BIO-1 Nesting Bird Surveys**.** In the event that construction activities occur during the nesting bird breeding season (February 1 through September 1), a qualified biologist shall conduct pre-construction surveys within 7 days prior to any on-site grading and construction activities in accordance with the Migratory Bird Treaty Act and California Fish and Game Code Sections 3503, 3503.5, and 3513. Pre-construction nesting bird surveys shall also cover a 500-foot buffer around the site, as feasible.

If occupied nests are found, then limits of construction to avoid occupied nests shall be established by the qualified biologist in the field with flagging, fencing, or other appropriate barriers (e.g., 250 feet around active passerine nests to 500 feet around active non-listed raptor nests), and construction personnel shall be instructed on the sensitivity of nest areas. The nest area shall be avoided until the nest is vacated and the juveniles have fledged and are no longer reliant upon the nest or parental care for survival, construction may proceed in the setback areas. If migratory birds are not detected during the pre-construction survey, no further measures would be required, and construction activities may proceed.

MM-BIO-2 Mohave Ground Squirrel Surveys**.** Focused surveys for Mohave ground squirrel shall be required to determine its presence or absence and any potential project effects to this species. Focused Mohave ground squirrel surveys shall be conducted either in accordance with the 2003 (updated in 2010) Mohave Ground Squirrel Survey Guidelines from the California Department of Fish and Wildlife (CDFW), or in accordance with any modified survey methodology as approved in writing by CDFW.

In the event that the surveys determine that Mohave ground squirrel is present within the areas to be either temporarily or permanently disturbed, the project applicant shall be required to obtain an Incidental Take Permit (ITP) from CDFW under Section 2081 of California Fish and Game Code. The ITP process shall be coordinated with the regional CDFW office. The ITP shall include an analysis of whether project impacts would jeopardize the continued existence of the species, provide suitable avoidance and minimization measures to reduce potential impacts, and provide adequate mitigation through conservation or mitigation banking.

MM-BIO-3 Burrowing Pre-Construction Owl Surveys. One pre-construction burrowing owl survey shall be completed no more than 14 days before initiation of site preparation or grading activities, and a second survey shall be completed within 24 hours of the start of site preparation or grading activities. If ground-disturbing activities are delayed or suspended for more than 30 days after the pre-construction surveys, the project site shall be resurveyed. Surveys for burrowing owl shall be conducted in accordance with protocols established in the California Department of Fish and Wildlife (CDFW) 2012 Staff Report on Burrowing Owl Mitigation or current version.

If burrowing owls are detected, the Burrowing Owl Relocation Plan shall be implemented in consultation with CDFW. As required by the Burrowing Owl Relocation Plan, disturbance to burrows shall be avoided during the nesting season (February 1 through August 31). Buffers shall be established around occupied burrows in accordance with guidance provided in the Staff Report on Burrowing Owl Mitigation or current version. No project activities shall be allowed to encroach into established buffers without the consent of a monitoring biologist. The buffer shall remain in place until it is determined that occupied burrows have been vacated or the nesting season has completed.

Outside of the nesting season, passive owl relocation techniques approved by CDFW shall be implemented. Burrowing owls shall be excluded from burrows in the immediate project site and within a buffer zone by installing one-way doors in burrow entrances. These doors shall be placed at least 48 hours prior to ground-disturbing activities. The project site shall be monitored daily for 1 week to confirm owl departure from burrows prior to any ground-disturbing activities.

Where possible, burrows shall be excavated using hand tools and refilled to prevent reoccupation. Sections of flexible plastic pipe shall be inserted into the tunnels during excavation to maintain an escape route for any wildlife inside the burrow.

MM-BIO-4 American Badger and Desert Kit Fox Surveys. A pre-construction survey for American badger and desert kit fox shall be conducted on the project site within 10 days prior to the start of construction to determine the presence/absence of either species. If either species is discovered during the survey, an American Badger/Desert Kit Fox Mitigation and Monitoring Plan shall be developed. The Mitigation and Monitoring Plan shall include avoidance and minimization measures to reduce potential impacts to either species, as well as compensatory mitigation to offset direct or indirect impacts. The plan shall be developed in consultation with CDFW. At a minimum, the plan shall do the following:

- Identify pre-construction survey methods for American badger and desert kit fox.
- Describe feasible pre-construction and construction-phase avoidance methods.
- Describe pre-construction and construction-phase relocation methods, including the possibility for passive relocation.
- For burrows that will not be impacted by the project, identify appropriate construction exclusion zones for both active and natal burrows.
- Coordinate survey findings prior to and during construction to meet the information needs of wildlife health officials in monitoring the health of kit fox populations.

MM-BIO-5 Education Program. An education program (Worker Environmental Awareness Program [WEAP]) for all persons employed or otherwise working at the project site shall be administered before performing any clearing and grubbing activities. The WEAP shall consist of a video presentation created by the qualified biologist that includes a discussion of the biology and status of desert tortoise, Mohave ground squirrel, burrowing owl, LeConte's thrasher, American badger, and kit fox, and about the other biological resources mitigation measures described in the California Environmental Quality Act document. Interpretation for non-English-speaking workers shall be provided, and the same instruction shall be provided to any new workers before they are authorized to perform clearing and grubbing activities at the project site. Upon completion of the WEAP, which

can be administered by the lead person from the construction crew, employees shall sign a form stating they attended the program and understand all protection measures. This training shall be repeated at least once annually for long-term and/or permanent staff who will be conducting work at the project site.

MM-BIO-6 Best Management Practices/Erosion/Runoff. The construction limits shall be flagged prior to ground-disturbance activities, and all construction activities, including equipment staging and maintenance, shall be conducted within the flagged disturbance limits.

All vehicles and equipment shall be maintained in proper condition to minimize the potential for fugitive emissions of motor oil, antifreeze, hydraulic fluid, grease, or other hazardous materials. Hazardous spills shall be immediately cleaned up and the contaminated soil shall be properly handled or disposed of at a licensed facility. Servicing of construction equipment shall take place only at a designated staging area. Soil binding and weighting agents used on unpaved surfaces shall be non-toxic to wildlife and plants.

All trash and food-related waste shall be placed in self-closing, animal-proof containers and removed at least once per week from the site to prevent overflow. The fully covered trash receptacles shall be installed and used by the operator to contain all food, food scraps, food wrappers, beverage containers, and other miscellaneous trash. Workers shall not feed wildlife or bring pets to the project site. Construction work areas shall be kept clean of debris, such as cable, trash, and construction materials. All construction/contractor personnel shall collect all litter, vehicle fluids, and food waste from the project site on a daily basis.

6 References

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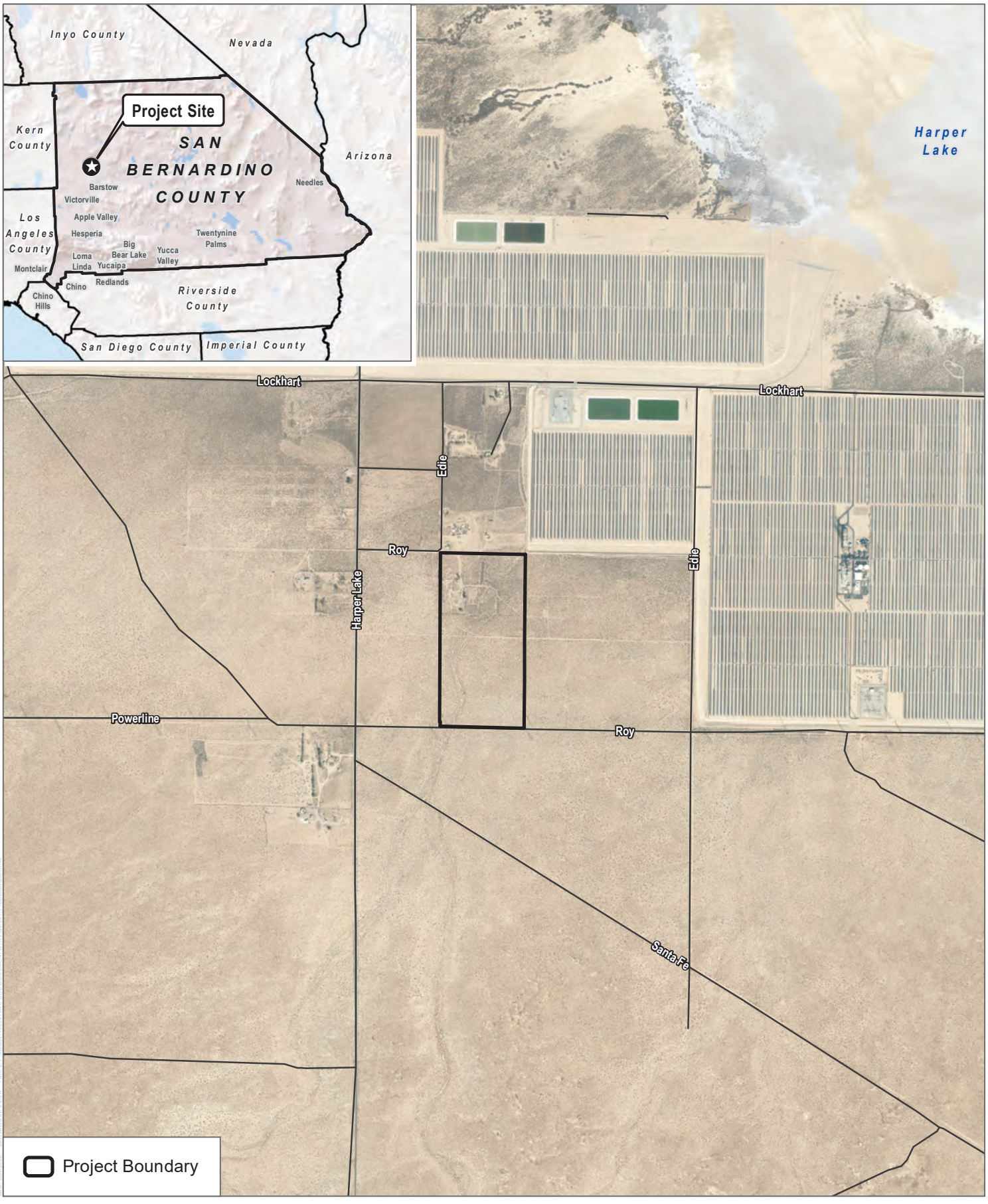
Figure 1 Project Location



SOURCE: ESRI Imagery 2022, County of San Bernardino 2021

DUDEK

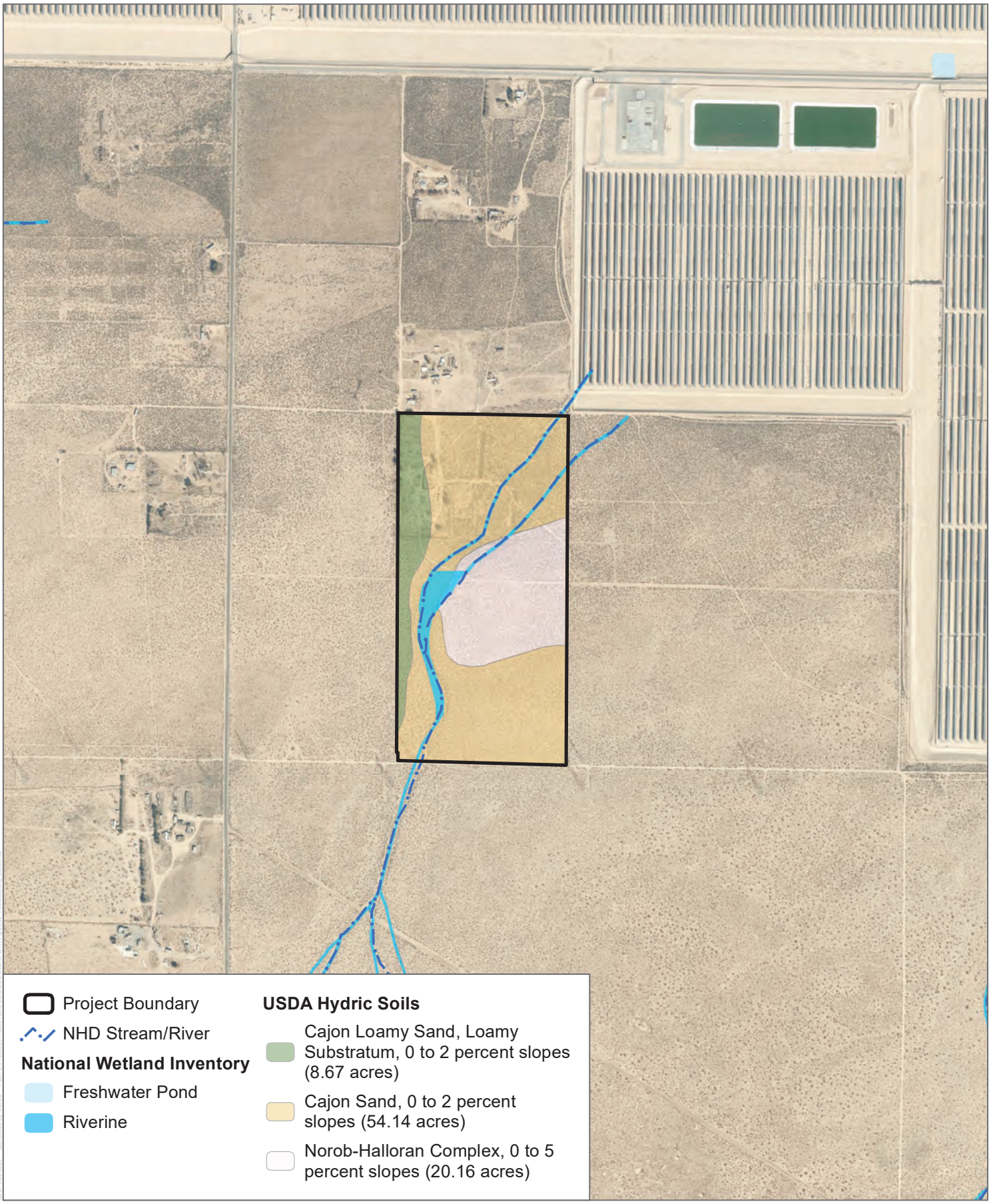
0 1,000 2,000 Feet

FIGURE 1

Project Location

Biological Technical Report for the Juniper Energy Project at 315 Roy Street, Hinkley, San Bernardino County

Figure 2 Soils and Hydrology



SOURCE: ESRI Imagery 2022, County of San Bernardino 2021, USGS 2021, USFWS 2021, USDA 2008

DUDEK

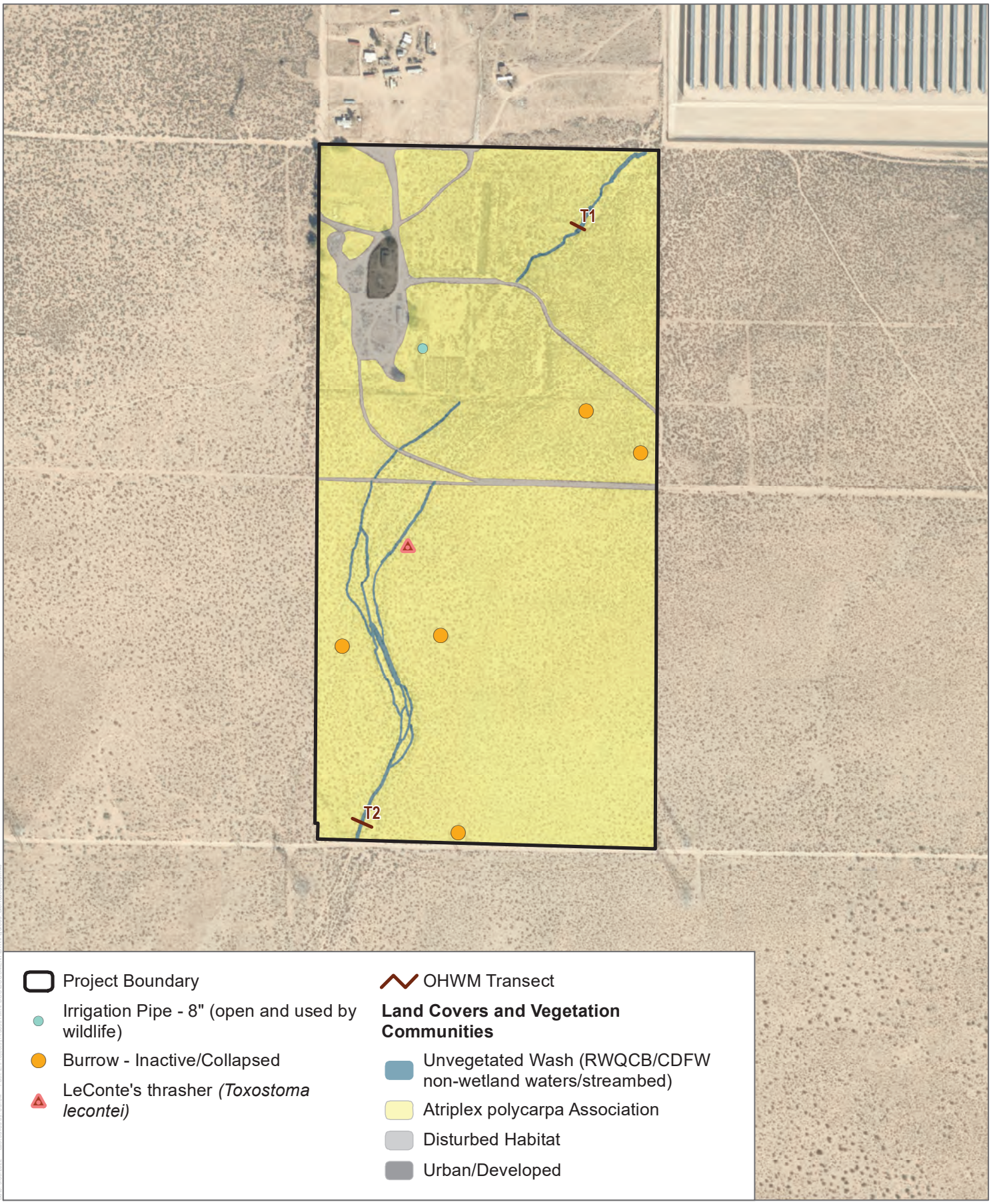
0 500 1,000 Feet

FIGURE 2

Soils and Hydrology

Biological Technical Report for the Juniper Energy Project at 315 Roy Street, Hinkley, San Bernardino County

Figure 3 Biological Resources



SOURCE: ESRI Imagery 2022, County of San Bernardino 2021, USGS 2021, USFWS 2021, USDA 2008

DUDEK

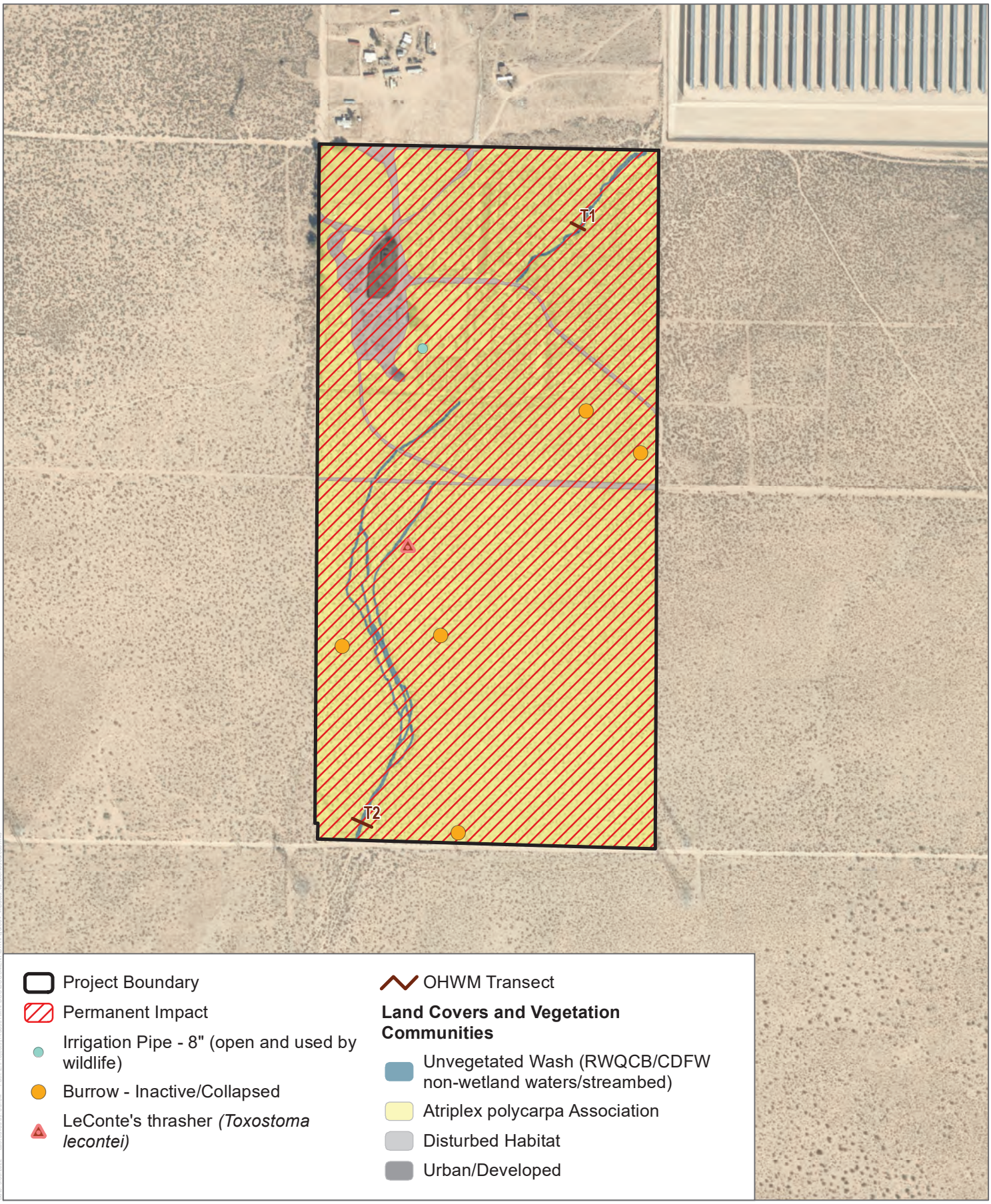
0 250 500 Feet

FIGURE 3

Biological Resources

Biological Technical Report for the Juniper Energy Project at 315 Roy Street, Hinkley, San Bernardino County

Figure 4 Impacts to Biological Resources



SOURCE: ESRI Imagery 2022, County of San Bernardino 2021, USGS 2021, USFWS 2021, USDA 2008

DUDEK

0 250 500 Feet

FIGURE 4

Impacts to Biological Resources

Biological Technical Report for the Juniper Energy Project at 315 Roy Street, Hinkley, San Bernardino County

Appendix A
Plant Species Observed

Vascular Species

Eudicots

ASTERACEAE — SUNFLOWER FAMILY

Ambrosia salsola — cheesebush

Chaenactis fremontii — pincushion flower

Malacothrix glabrata — smooth desertdandelion

BORAGINACEAE — BORAGE FAMILY

Cryptantha sp. — cryptantha sp.

BRASSICACEAE — MUSTARD FAMILY

* *Brassica tournefortii* — Tournefort's mustard

CACTACEAE — CACTUS FAMILY

Cylindropuntia echinocarpa — Wiggins' cholla

CHENOPODIACEAE — GOOSEFOOT FAMILY

Atriplex polycarpa — allscale

GERANIACEAE — GERANIUM FAMILY

* *Erodium cicutarium* — redstem stork's bill

POLEMONIACEAE — PHLOX FAMILY

Langloisia setosissima — Great Basin langloisia

SOLANACEAE — NIGHTSHADE FAMILY

Lycium andersonii — Anderson's boxthorn

Lycium cooperi — peach thorn

TAMARICACEAE — TAMARISK FAMILY

* *Tamarix ramosissima* — tamarisk

ZYGOPHYLLACEAE — CALTROP FAMILY

Larrea tridentata — creosote bush

Monocots

POACEAE — GRASS FAMILY

* *Schismus arabicus* — Arabian schismus

* Signifies introduced non-native species.

Appendix B
Wildlife Species Observed

Birds

Flycatchers

TYRANNIDAE — TYRANT FLYCATCHERS

Sayornis saya — Say's phoebe

Jays, Magpies and Crows

CORVIDAE — CROWS AND JAYS

Corvus corax — common raven

Mockingbirds and Thrashers

MIMIDAE — MOCKINGBIRDS AND THRASHERS

Mimus polyglottos — northern mockingbird

Toxostoma lecontei — LeConte's thrasher

Old World Sparrows

PASSERIDAE — OLD WORLD SPARROWS

* *Passer domesticus* — house sparrow

Pigeons and Doves

COLUMBIDAE — PIGEONS AND DOVES

Zenaida macroura — mourning dove

Starlings and Allies

STURNIDAE — STARLINGS

* *Sturnus vulgaris* — European starling

New World Sparrows

PASSERELLIDAE — NEW WORLD SPARROWS

Artemisiospiza nevadensis — sagebrush sparrow

Reptiles

Lizards

PHRYNOSOMATIDAE — IGUANID LIZARDS

Uta stansburiana — common side-blotched lizard

TEIIDAE — WHIPTAIL LIZARDS

Aspidoscelis tigris — tiger whiptail

CROTAPHYTIDAE — COLLARED LIZARDS

Gambelia wislizenii — long-nosed leopard lizard

* Signifies introduced non-native species.

Appendix C

Approved Jurisdictional Determination for the Juniper Energy Project

DUDEK
MAIN OFFICE
605 THIRD STREET
ENCINITAS, CALIFORNIA 92024
T 800.450.1818 F 760.632.0164

June 28, 2022 14339

Stephen Estes
Chief Regulatory Division
U.S. Army Corps of Engineers
Los Angeles Regulatory District
915 Wilshire Boulevard, Ste 1101
Los Angeles, California 90017

Subject: Approved Jurisdictional Determination for the Juniper Energy Project at 315 Roy Road, Hinkley, San Bernardino County, California

On behalf of Juniper Energy, Dudek is submitting this request for an Approved Jurisdictional Determination for the Juniper Energy Project (project) located in Hinkley, San Bernardino County, California. The project applicant is proposing to build a solar facility on approximately 83 acres on Assessor's Parcel Number 049017101. The entire site would be impacted by the project and, as noted in the delineation (see Attachment B), there are no waters of the United States regulated by the U.S. Army Corps of Engineers within the project site. The enclosed package serves as a request for an Approved Jurisdictional Determination. As part of this request submittal, the Aquatic Resource Delineation Report for the project and the following attachments are included for your review (all attachments are provided digitally):

- Figures
- Attachment A, Rapanos Approved Jurisdictional Determination Form
- Attachment B, Antecedent Precipitation Tool Output
- Attachment C, Data Sheets
- Attachment D, Review Area Photos
- Attachment E, Digital Data

Dudek, on behalf of Juniper Energy, hopes that the U.S. Army Corps of Engineers deems this request for an Approved Jurisdictional Determination complete and looks forward to your written response and approval. Thank you for reviewing this application package. Please let me know if you have any questions or require further information regarding the project. I can be reached at 510.601.2514 or dwickens@dudek.com.

Sincerely,

David Wickens
Senior Regulatory Specialist

cc: Keith McDaniels, Juniper Energy
Megan Enright, Dudek
Danielle Mullen, Dudek

Aquatic Resources Delineation Report

Juniper Energy Project

JUNE 2022

Prepared for:

JUNIPER ENERGY LLC
8181 Crystal Springs Road
Hillsborough, California 94010
Contact: Keith McDaniels

Prepared by:

DUDEK

1630 San Pablo Ave, Suite 300
Oakland, California 94612
Contact: David Wickens

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APPENDICES

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Acronyms and Abbreviations

Acronym/Abbreviation	Definition
APT	Antecedent Precipitation Tool
ARC	antecedent runoff condition
CDFW	California Department of Fish and Wildlife
OHWM	ordinary high water mark
PDSI	Palmer Drought Severity Index
project	Juniper Energy Project
RWQCB	Regional Water Quality Control Board
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

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1 Introduction

This Aquatic Resources Delineation Report was prepared in accordance with the Minimum Standards for Acceptance of Aquatic Resources Delineation Reports (USACE 2017). This report and supporting attachments provide the 20 items listed in the Minimum Standards for Acceptance of Aquatic Resources Delineation Reports. This report presents the results of the jurisdictional aquatic resource delineation conducted by Dudek for the proposed Juniper Energy Project (project) located in unincorporated Hinkley, San Bernardino County, California. The delineation was conducted to identify and map existing aquatic resources potentially subject to the regulatory jurisdiction of the U.S. Army Corps of Engineers (USACE) pursuant to Section 404 of the Clean Water Act (33 USC 1344), waters of the state potentially subject to the regulatory jurisdiction of the Regional Water Quality Control Board (RWQCB) pursuant to Section 401 of the Clean Water Act and the Porter-Cologne Water Quality Control Act, and stream and riparian habitats potentially subject to the jurisdiction of the California Department of Fish and Wildlife (CDFW) pursuant to Section 1602 of the California Fish and Game Code (collectively defined as jurisdictional aquatic resources).

1.1 Disclaimer Statement

This report presents Dudek's best effort to quantify the extent of aquatic resources potentially regulated by USACE, RWQCB, and CDFW (i.e., regulatory agencies) within the identified review area using the current regulations, written policies, and guidance from these regulatory agencies. The potential jurisdictional boundaries described in this report are subject to verification by the regulatory agencies. Only the regulatory agencies can make a final determination on whether the features present are subject to USACE, RWQCB, and/or CDFW regulation. A request for an USACE Approved Jurisdictional Determination is provided as Attachment A.[1]

1.2 Contact Information

Contact information for the project applicant and agent are provided in Table 1.[2] Access to the review area is not restricted, but if a site visit is requested, the project applicant or agent will accompany regulatory staff to the review area.[3] Juniper Energy LLC is the project applicant and landowner.

Table 1. Contact Information

Project Applicant	Juniper Energy LLC	**Agent**	Dudek
Contact Name	Keith McDaniels	**Contact Name**	David Wickens
Address	818 Crystal Springs Road Hillsborough, California 94010	**Address**	1630 San Pablo Ave, Suite 300 Oakland, California 94612
Phone	650.288.6810	**Phone**	510.601.2514
Email	kmcdaniels@junipersolar.com	**Email**	dwickens@dudek.com

1 Minimum Standards Item 1 (Request for Jurisdictional Determination)
2 Minimum Standards Item 2 (Contact Information)
3 Minimum Standards Item 3 (Site Access Statement)

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2 Review Area Description and Landscape Setting

The approximately 83-acre review area[4] for the Juniper Energy Project is located on 315 Roy Road in unincorporated Hinkley, San Bernardino County (Figure 1, Project Location). The project site lies within the U.S. Geological Survey (USGS) Twelve Gauge and Lockhart quadrangles with a latitude of N 34°59′58.71″ and longitude of W 117°19′25.20″. The review area occurs on Assessor's Parcel Number 049017101. The review area (which is the same as the project site) is currently undeveloped land located in the southwestern region of the Mojave Desert, containing areas of native vegetation communities and disturbed land covers, at an elevation range of 2,116 feet to 2,084 feet above mean sea level. The review area is surrounded by rural land uses to the north and open space to the south, west, and east. The Lockhart solar facility occurs to the northeast of the review area.

Directions to the review area are as follows: from Interstate 15, exit CA-58 west. After 16 miles, head north onto Harper Lake Road. Turn right onto Roy Road after 5.5 miles.[5]

2.1 Soils[6]

Soils within the review area are characterized as Cajon Sand, 0% to 2% slopes; Cajon loamy sand, loamy substratum, 0% to 2% slopes; and Norob-Halloran complex, 0% to 5% slopes (USDA 2022a) (Figure 2). The Cajon series consists of very deep, somewhat excessively drained soils that formed in sandy alluvium from dominantly granitic rocks (USDA 2022a). Cajon soils are typically found on desert features such as alluvial fans, fan aprons, fan skirts, inset fans, and river terraces. The Norob series consists of very deep, moderately well drained soils that formed from mixed alluvium, with many areas having eolian deposits on the soil surface (USADA 2022b). These soils are typically observed in the Mojave Desert on features such as alluvial plains and alluvial flats. The Halloran series are deep, moderately well drained soils that formed in mixed alluvium dominantly from granitic sources (USDA 2022b). These soils are also located within the Mojave Desert and occur on old alluvial terraces and depressional areas and have slopes of 0% to 2%. All soils within the review area are considered partially hydric.

2.2 Vegetation

The review area is dominated by allscale scrub (77.69 acres). The review area also contains disturbed habitat, urban/developed areas, and an unvegetated wash. The review area does not support any hydrophytic vegetation or vegetation communities.

2.3 Watershed

The review area occurs within the Coyote-Cuddeback Lakes Hydrological Unit (HUC 18090207) in the Harper Valley Groundwater Basin (Figure 3, Hydrology). Significant surface flow is both unpredictable and scarce in the arid desert environment. Substantial surface water is typically ephemeral and usually the result of flash-flood events. These

4 Minimum Standards Item 10 (Description of Existing Field Conditions)
5 Minimum Standards Item 4 (Directions)
6 Minimum Standards Item 13 (Soil Descriptions)

events may result in stream channels taking the form of alluvial fans, discontinuous ephemeral channels, single-thread channels with floodplains, and compound (braided) channels (USACE 2008). Surface flows within the immediate watershed of the project drain into Harper Lake playa. However, the existing Lockhart solar facility may prevent surface flow within the review area from reaching Harper Lake. The Harper Lake playa is at the lowest part of an undrained desert basin, generally devoid of vegetation (USGS 2021).

2.4 Review Area Alterations, Current and Past Land Use

Most of the review area is undeveloped open space with a portion of the review area containing developed and disturbed areas associated with a previously occupied residence. Otherwise, the review area has experienced very little anthropogenic alteration.

3 Precipitation Data and Analysis[7]

The USACE-developed Antecedent Precipitation Tool (APT) was used to assess whether the delineation date occurred in a drier, average, or wetter than normal period (USACE 2022a). To determine what constitutes a "typical year," USACE developed the APT. The information generated from the APT can help to determine whether normal hydrologic and/or climatic conditions were present during the site visit and assist with completing the Wetland Determination Data Form.

The APT provides three climatological parameters: Palmer Drought Severity Index (PDSI), season, and antecedent precipitation condition. The PDSI is a standardized index calculated on a monthly basis with PDSI value outputs ranging from −4 (extreme drought) to +4 (very wet) (NOAA 2021) to assess drought conditions (i.e., PDSI Class). The APT determines wet vs. dry season based on related procedures provided in the applicable regional supplement for the review area (in this case, the Arid West Supplement). If the antecedent runoff condition (ARC) score is less than 10, then the antecedent precipitation condition is classified as drier than normal; normal conditions are present with an ARC score of 10 to 14; conditions are wetter than normal when an ARC score is greater than 14 (USACE 2022a).

Table 2 summarizes the key data extrapolated from the APT output: estimated drought conditions (PDSI Class), wet or dry season determination, ARC score, and antecedent precipitation condition. Based on the APT output provided in Attachment B and summarized in Table 2, the precipitation and climatic conditions for the review area were within a drier than normal range during the time of the delineation.

Table 2. Antecedent Precipitation Tool Data for the Review Area

Main Field Survey Date	PDSI Class	Season	ARC Score	Antecedent Precipitation Condition
04/07/2022	Extreme drought	Dry season	6	Drier than normal

Notes: PDSI = Palmer Drought Severity Index; ARC = antecedent runoff condition.

Additionally, according to the U.S. Department of Agriculture's Agricultural Applied Climate Information System (USDA 2022c), the area around the review area receives an average of 5 inches of precipitation annually.

[7] Minimum Standards Item 11 (Discussion of Hydrology)

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4 Investigation Methods[8]

The jurisdictional delineation was conducted by Dudek Biologist Anna Cassady on April 7, 2022. Prior to conducting the jurisdictional delineation, U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory data (USFWS 2021) were reviewed to determine if the review area contained any features mapped by USFWS. Additionally, the National Hydrography Dataset complied by the USGS was also reviewed (USGS 2021). Site-specific topographical data were reviewed in conjunction with aerials, both current and historical, to determine the potential presence of non-wetland waters. Jurisdictional boundaries were mapped in the field using ESRI Collector on a mobile device. Remote sensing was not used for the delineation.

4.1 U.S. Army Corps of Engineers

The USACE wetlands delineation was conducted in accordance with the 1987 USACE Wetlands Delineation Manual (USACE 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (USACE 2008a). A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States: A Delineation Manual (USACE 2008b) was used to determine the limits of non-wetland waters. Non-wetland waters were delineated on topographical maps in conjunction with ESRI Collector on a mobile device. The widths of each non-wetland water were determined in the field according to the OHWM manual.

Due to the lack of hydric vegetation within the review area, no Wetland Determination Forms were taken. No USACE three-parameter wetlands were suspected to be present based on site review. USACE OHWM Forms were completed at representative cross-sections of non-wetland waters to capture their characteristics and widths. All data forms can be found in Attachment C.

4.2 Regional Water Quality Control Board

Waters of the state regulated by the RWQCB were mapped in accordance with the State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State (SWRCB 2019). As described in these procedures, wetland waters of the state are mapped based on the procedures in USACE's 1987 Corps of Engineers Wetlands Delineation Manual (USACE 1987) and its 2008 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0) (USACE 2008a). Non-wetland waters are mapped at the OHWM based on the procedures defined in USACE's 2008 A Field Guide to Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States (USACE 2008b).

4.3 California Department of Fish and Wildlife

CDFW jurisdictional areas were mapped to include the bank of the stream/channel and outer dripline of adjacent riparian vegetation, as set forth under California Fish and Game Code Section 1602. Streambeds under the jurisdiction of CDFW were delineated using the Cowardin method of waters classification, which defines waters boundaries by a single parameter (i.e., hydric soils, hydrophytic vegetation, or hydrology) (Cowardin et al. 1979).

[8] Minimum Standards Item 8 (Dates of Field Work), Item 5 (Use of 1987 Manual, Regional Supplement, and OHWM guide), Item 12 (Statement Regarding Use of Remote Sensing), Item 18 (Data Forms) and Item 19 (Methods)

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5 Aquatic Resource Narrative[9]

5.1 U.S. Army Corps of Engineers Waters of the United States

Approximately 0.86 acres of non-wetland waters (4,810 linear feet) potentially regulated by USACE are present within the review area (Figure 4, Potential Jurisdictional Aquatic Feature).[10] Table 3 provides a detailed summary of aquatic resources delineated within the review area. Table 3 also includes a description of each feature identified within the review area; its Cowardin type, if available (Cowardin et al. 1979; USACE 2022b); any OHWM indicators present; and the acreage/linear feet. A copy of the ORM Bulk Upload Aquatic Resources or Consolidated Excel spreadsheet is not submitted with this report because Table 3 in this section provides all of the information requested.[11] Photos of the potential aquatic features delineated within the review area, as well as additional areas reviewed for the presence of these resources, are provided in Attachment D.[12] The locations of these photos are shown on Figure 4.

Table 3. Potential Jurisdictional Aquatic Resources within the Review

Potential Resource	Cowardin[1]	OHWM Indicators	Acreage/Linear feet
Non-Wetland Water/ Stream Channel (NWW-01)	R6	CAST, CVS, BBS, W	0.86/4,810
		Total	**0.86/4,810**

Notes: NWW = non-wetland water; CAST = change in average sediment texture; CVS = change in vegetation species; BBS = break in bank slope; W=wracking.

1 Pursuant to Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al. 1979) and USACE Cowardin Codes for ORM Data Entry (USACE 2022b). R6 = A wetland, spring, stream, river, pond or lake that only exists for a short period.

A system of braided ephemeral channels flows from the southwest corner to the northeast corner across the review area carrying surface flows. The braided channels dissipate (i.e., lose OHWM indictors) within the middle of the review area where there is a former residence, and dissipate off site prior to reaching Harper Lake (surface flow may be blocked by an existing solar facility). Indicators, including bed and bank (only present for the first 100 feet along the southern end), drainage swales, minor wracking, and sediment sorting, were observed in the field. Transect data collected at both ends of this system confirmed active fluvial processes throughout this area (Figure 4).

The mapped features carry surface flows across the site from south to north toward Harper Lake, which is a dry lakebed or playa (Figure 3). However, the existing Lockhart solar facility may prevent surface flow from reaching Harper Lake. Ephemeral channels within the project site likely dissipate, evaporate, or infiltrate into the groundwater basin, or may continue to flow to Harper Dry Lake during larger storm events. The Harper Valley is considered a closed basin and functions as an isolated intrastate watershed system lacking the presence of a traditional navigable water. Therefore, the review area does not contain any streams, wetland waters, or other waters that are subject to federal jurisdiction under Section 404 of the Clean Water Act.

9 Minimum Standards Item 6 (Aquatic Resource Narrative)
10 Minimum Standards Item 16 (Delineation Maps)
11 Minimum Standards Item 15 (ORM Bulk Upload Aquatic Resources or Consolidated Excel spreadsheet)
12 Minimum Standards Item 17 (Ground Photos)

5.2 Regional Water Quality Control Board Waters of the State

The feature described in Section 5.1, Waters of the United States, has been identified as waters of the state. This feature is subject to regulation by the RWQCB under the Porter-Cologne Water Quality Control Act. Unlike USACE, the RWQCB takes jurisdiction over isolated features.

5.3 California Department of Fish and Wildlife Jurisdiction

The feature described in Section 5.1 has been identified as a streambed potentially regulated by CDFW. Resources subject to the jurisdiction of CDFW pursuant to Section 1602 of the California Fish and Game Code include ephemeral, intermittent, and perennial stream channels, as well as lakes, including dry lakes or playas. Therefore, the feature mapped within the review area meets the definition of a CDFW regulated resource.

5.4 National Wetland Inventory

The USFWS National Wetland Inventory depicts a riverine feature, as well as a freshwater pond, as occurring within the review area (USFWS 2021) (Figure 3). The USGS National Hydrography Dataset depicts an unnamed ephemeral flowline occurring within the review area (USGS 2021) (Figure 3). The feature mapped during the delineation generally occurs within the same location as the features identified by the USFWS and USGS. However, portions of the feature are interrupted by roads and thus are not mapped contiguously as is shown in the National Wetland Inventory.

6 Results and Conclusions

Based on the jurisdictional delineation and review of relevant information provided in this Aquatic Resources Delineation Report, the 0.86 acres of non-wetland waters mapped within the review area are not subject to USACE jurisdiction due to the lack of connectivity to a traditional navigable water.

Those same 0.86 acres of non-wetland waters/streambed are regulated by both RWQCB and CDFW. This report can be used by those agencies to determine if they would regulate the features described herein. The geographic information system (GIS) data for the delineation are provided in Attachment E (digital only).

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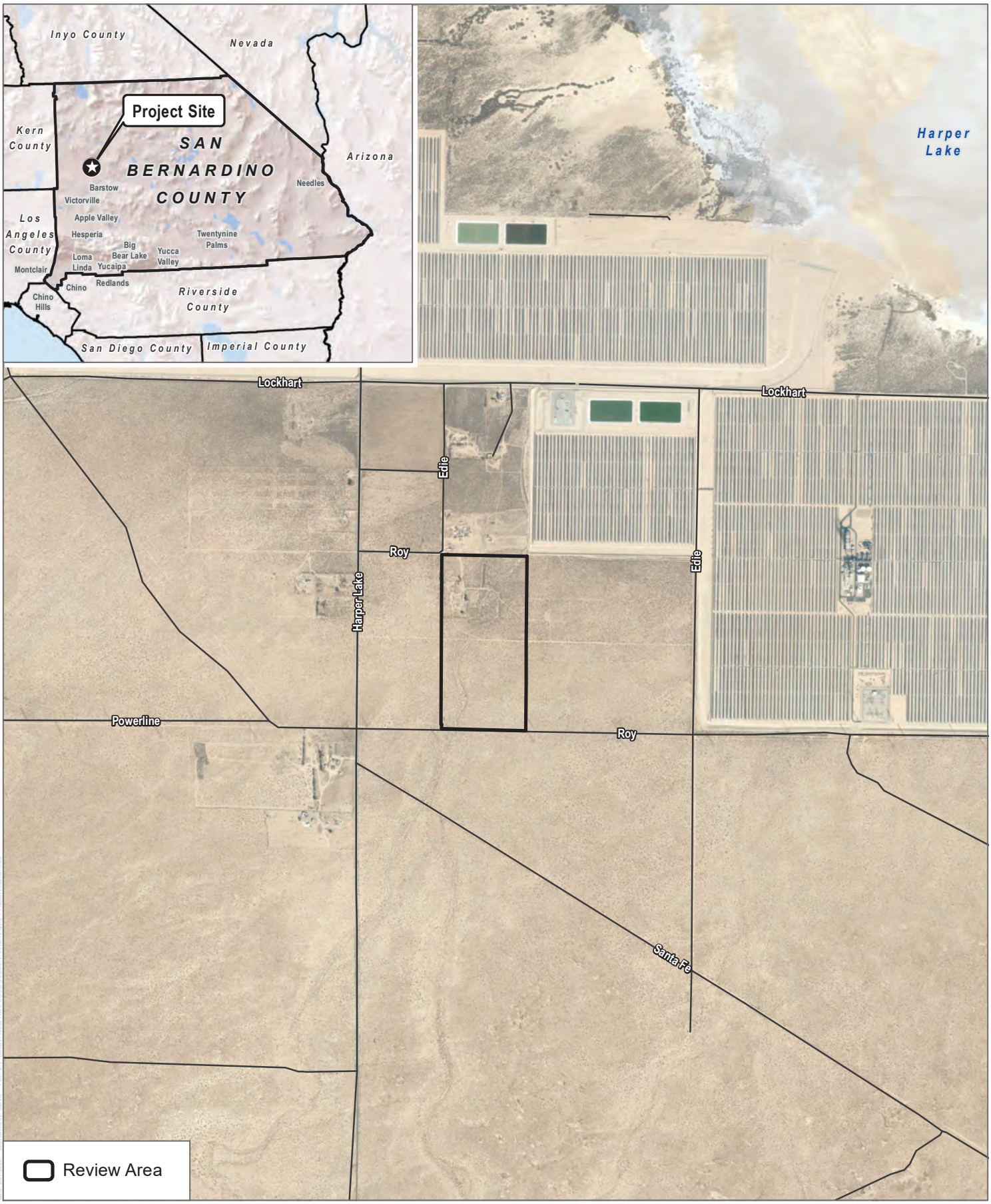

SOURCE: ESRI Imagery 2022, County of San Bernardino 2021

DUDEK

0 1,000 2,000 Feet

FIGURE 1

Project Location

Aquatic Resource Delineation Report for the Juniper Energy Project

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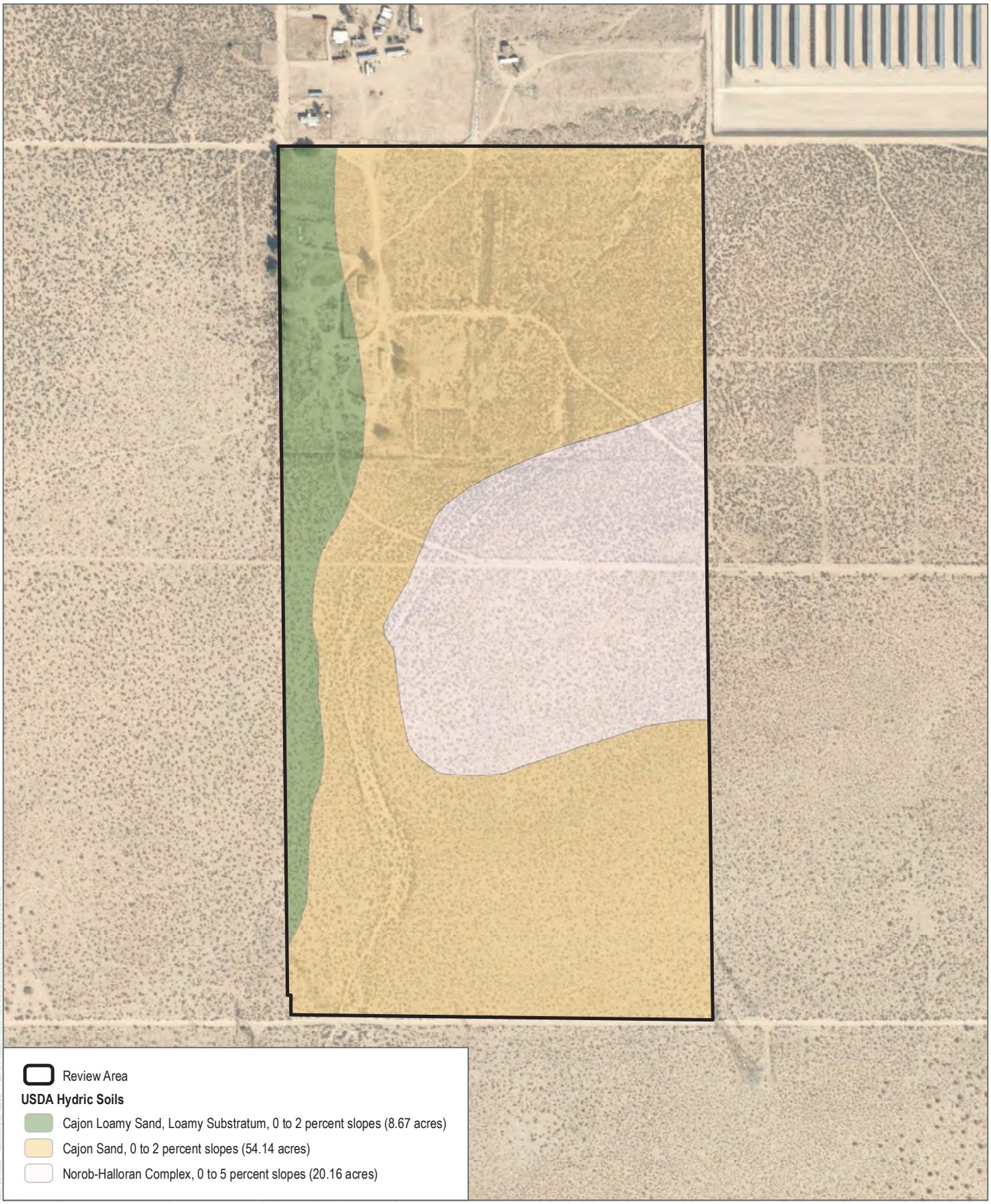

SOURCE: ESRI Imagery 2022, County of San Bernardino 2021, USGS 2021, USFWS 2021, USDA 2008

DUDEK

0 250 500 Feet

FIGURE 2

Soils

Aquatic Resource Delineation Report for the Juniper Energy Project

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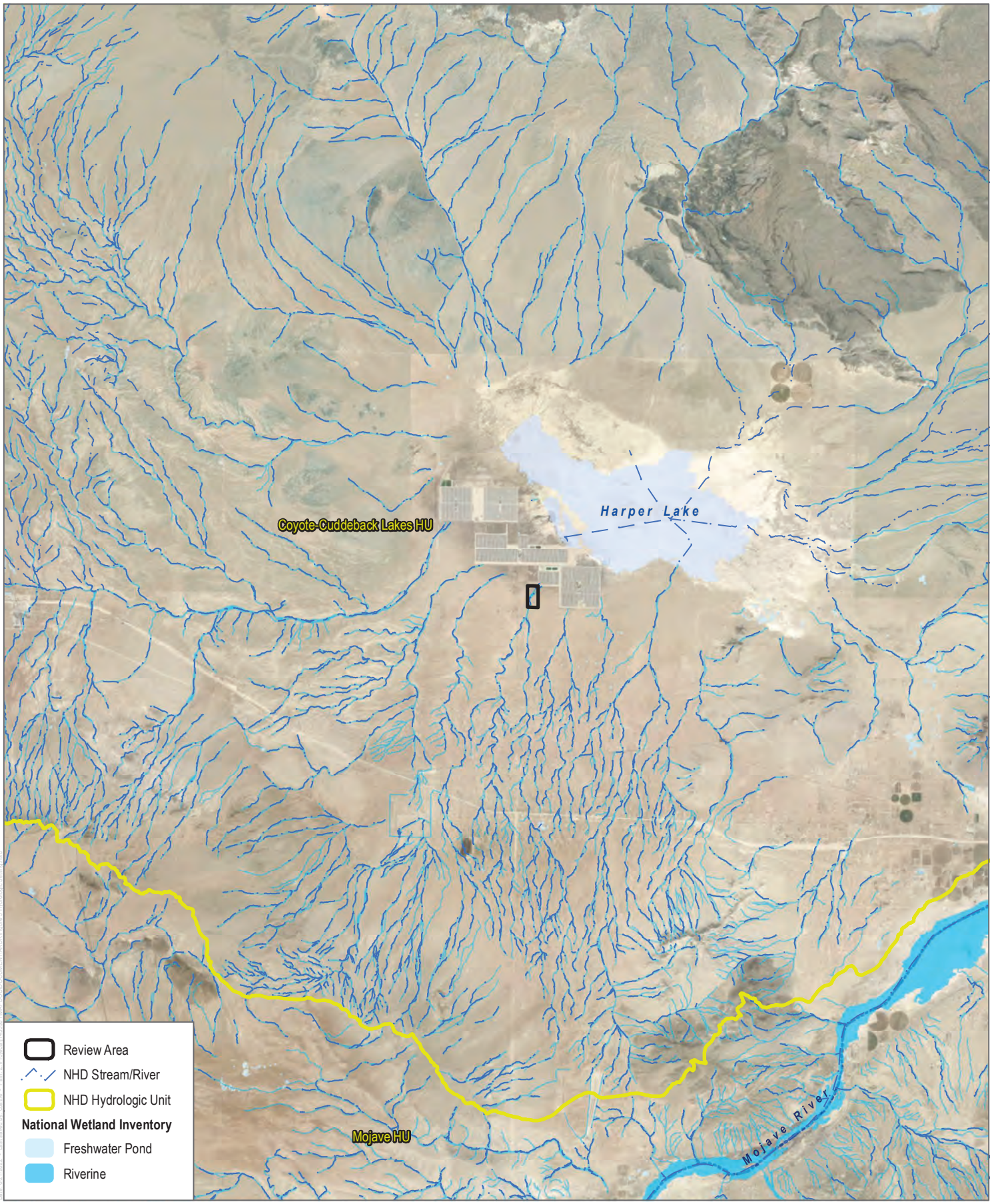

SOURCE: ESRI Imagery 2022, County of San Bernardino 2021, USGS 2021, USFWS 2021, USDA 2008

DUDEK

0 2.5 5 Miles

FIGURE 3

Hyrdrologic Setting

Aquatic Resource Delineation Report for the Juniper Energy Project

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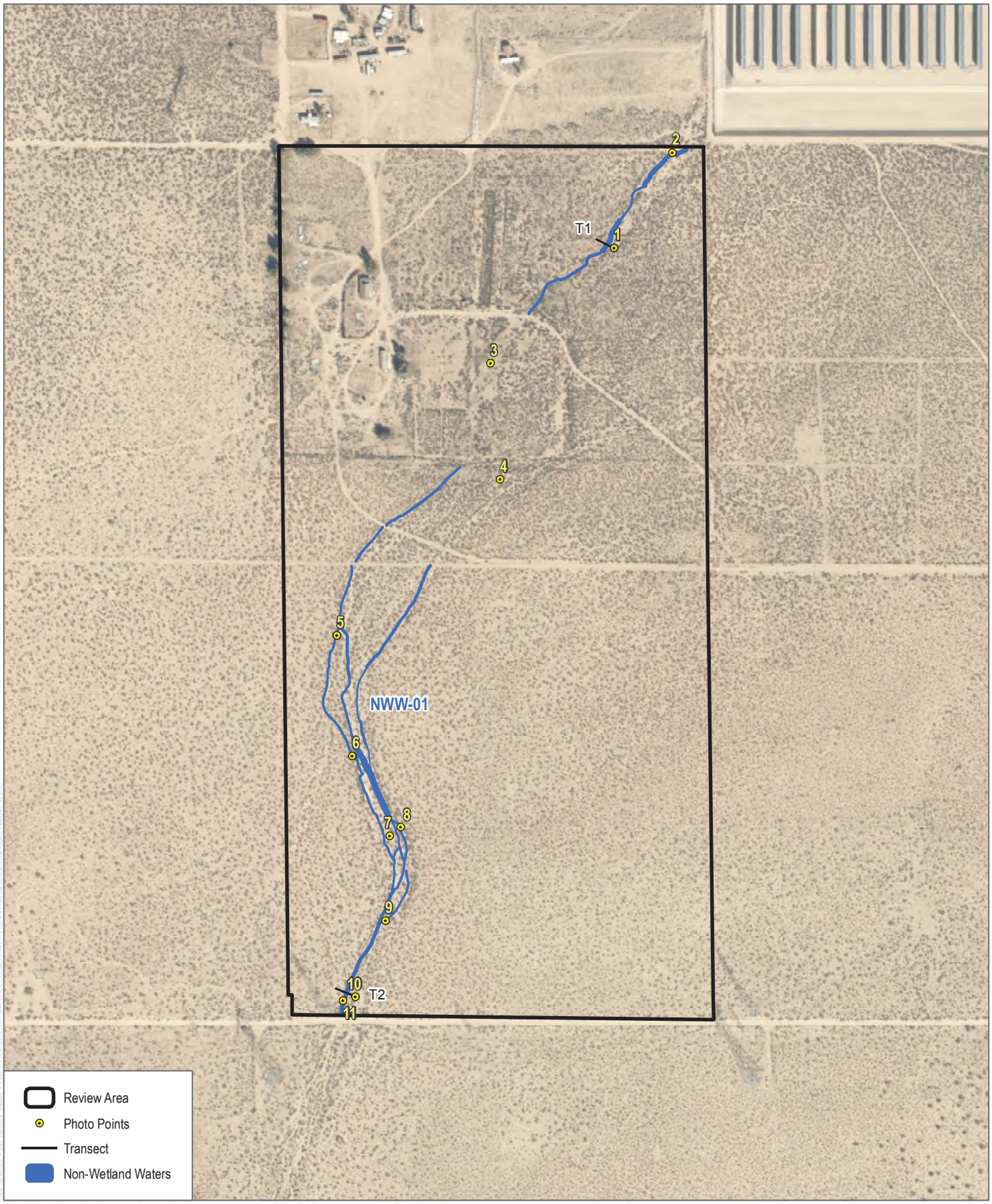

SOURCE: ESRI Imagery 2022, County of San Bernardino 2021, USGS 2021, USFWS 2021, USDA 2008

FIGURE 4

Potential Jurisdictional Aquatic Feature

Aquatic Resource Delineation Report for the Juniper Energy Project

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Attachment A

Rapanos Approved Jurisdictional Delineation Form

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD):

B. DISTRICT OFFICE, FILE NAME, AND NUMBER:

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: CA County/parish/borough: San Bernardino County City: Hinkley
Center coordinates of site (lat/long in degree decimal format): Lat. 34°59'58.71"° **N**, Long. 117°19'25.20"° **W**.
Universal Transverse Mercator:
Name of nearest waterbody: San Timoteo Creek
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: Pacific Ocean
Name of watershed or Hydrologic Unit Code (HUC): 801.61

☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc…) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☐ Office (Desk) Determination. Date:
☒ Field Determination. Date(s): April 7, 2022

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Are no** "*navigable waters of the U.S.*" within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [*Required*]

☐ Waters subject to the ebb and flow of the tide.
☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.
Explain: .

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **Are no** "*waters of the U.S.*" within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [*Required*]

1. **Waters of the U.S.**
   a. **Indicate presence of waters of U.S. in review area (check all that apply):** [1]
      ☐ TNWs, including territorial seas
      ☐ Wetlands adjacent to TNWs
      ☐ Relatively permanent waters[2] (RPWs) that flow directly or indirectly into TNWs
      ☐ Non-RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
      ☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
      ☐ Impoundments of jurisdictional waters
      ☐ Isolated (interstate or intrastate) waters, including isolated wetlands

   b. **Identify (estimate) size of waters of the U.S. in the review area:**
      Non-wetland waters: linear feet: width (ft) and/or acres.
      Wetlands: acres.

   c. **Limits (boundaries) of jurisdiction** based on: **Not Applicable.**
      Elevation of established OHWM (if known): .

2. **Non-regulated waters/wetlands (check if applicable):**[3]
   ☒ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional.
   Explain: **The non-wetland waters mapped within the review area are not subject to USACE jurisdiction due to the lack of connectivity to a traditional navigable water**.

[1] Boxes checked below shall be supported by completing the appropriate sections in Section III below.
[2] For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).
[3] Supporting documentation is presented in Section III.F.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. TNW
Identify TNW: .

Summarize rationale supporting determination: .

2. Wetland adjacent to TNW
Summarize rationale supporting conclusion that wetland is "adjacent": .

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody[4] is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:
Watershed size: **Pick List**
Drainage area: **Pick List**
Average annual rainfall: inches
Average annual snowfall: inches

(ii) Physical Characteristics:
(a) Relationship with TNW:
☐ Tributary flows directly into TNW.
☐ Tributary flows through **Pick List** tributaries before entering TNW.

Project waters are **Pick List** river miles from TNW.
Project waters are **Pick List** river miles from RPW.
Project waters are **Pick List** aerial (straight) miles from TNW.
Project waters are **Pick List** aerial (straight) miles from RPW.
Project waters cross or serve as state boundaries. Explain: .

Identify flow route to TNW[5]: .
Tributary stream order, if known: .

[4] Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.
[5] Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.

(b) General Tributary Characteristics (check all that apply):

Tributary is: ☐ Natural
☐ Artificial (man-made). Explain: .
☐ Manipulated (man-altered). Explain: .

Tributary properties with respect to top of bank (estimate):
Average width: feet
Average depth: feet
Average side slopes: **Pick List.**

Primary tributary substrate composition (check all that apply):

☐ Silts	☐ Sands	☐ Concrete
☐ Cobbles	☐ Gravel	☐ Muck
☐ Bedrock	☐ Vegetation. Type/% cover:	
☐ Other. Explain: .		

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: .
Presence of run/riffle/pool complexes. Explain: .
Tributary geometry: **Pick List**
Tributary gradient (approximate average slope): %

(c) Flow:
Tributary provides for: **Pick List**
Estimate average number of flow events in review area/year: **Pick List**
Describe flow regime: .
Other information on duration and volume: .

Surface flow is: **Pick List.** Characteristics: .

Subsurface flow: **Pick List**. Explain findings: .
☐ Dye (or other) test performed: .

Tributary has (check all that apply):
☐ Bed and banks
☐ OHWM[6] (check all indicators that apply):

☐ clear, natural line impressed on the bank	☐ the presence of litter and debris
☐ changes in the character of soil	☐ destruction of terrestrial vegetation
☐ shelving	☐ the presence of wrack line
☐ vegetation matted down, bent, or absent	☐ sediment sorting
☐ leaf litter disturbed or washed away	☐ scour
☐ sediment deposition	☐ multiple observed or predicted flow events
☐ water staining	☐ abrupt change in plant community
☐ other (list):	

☐ Discontinuous OHWM.[7] Explain: .

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

☐ High Tide Line indicated by:	☐ Mean High Water Mark indicated by:
☐ oil or scum line along shore objects	☐ survey to available datum;
☐ fine shell or debris deposits (foreshore)	☐ physical markings;
☐ physical markings/characteristics	☐ vegetation lines/changes in vegetation types.
☐ tidal gauges	
☐ other (list):	

(iii) Chemical Characteristics:
Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).
Explain: .
Identify specific pollutants, if known: .

[6]A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.
[7]Ibid.

(iv) Biological Characteristics. Channel supports (check all that apply):

- ☐ Riparian corridor. Characteristics (type, average width): .
- ☐ Wetland fringe. Characteristics: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) Physical Characteristics:

(a) General Wetland Characteristics:

Properties:

Wetland size: acres

Wetland type. Explain: .

Wetland quality. Explain: .

Project wetlands cross or serve as state boundaries. Explain: .

(b) General Flow Relationship with Non-TNW:

Flow is: **Pick List**. Explain: .

Surface flow is**: Pick List**

Characteristics: .

Subsurface flow: **Pick List**. Explain findings: .

- ☐ Dye (or other) test performed: .

(c) Wetland Adjacency Determination with Non-TNW:

- ☐ Directly abutting
- ☐ Not directly abutting
  - ☐ Discrete wetland hydrologic connection. Explain: .
  - ☐ Ecological connection. Explain: .
  - ☐ Separated by berm/barrier. Explain: .

(d) Proximity (Relationship) to TNW

Project wetlands are **Pick List** river miles from TNW.

Project waters are **Pick List** aerial (straight) miles from TNW.

Flow is from: **Pick List.**

Estimate approximate location of wetland as within the **Pick List** floodplain.

(ii) Chemical Characteristics:

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: .

Identify specific pollutants, if known: .

(iii) Biological Characteristics. Wetland supports (check all that apply):

- ☐ Riparian buffer. Characteristics (type, average width): .
- ☐ Vegetation type/percent cover. Explain: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

3. Characteristics of all wetlands adjacent to the tributary (if any)

All wetland(s) being considered in the cumulative analysis: **Pick List**

Approximately ( ) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N)	Size (in acres)	Directly abuts? (Y/N)	Size (in acres)

Summarize overall biological, chemical and physical functions being performed: .

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: .

2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
   - ☐ TNWs: linear feet width (ft), Or, acres.
   - ☐ Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**
   - ☐ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: .
   - ☐ Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally: .

Provide estimates for jurisdictional waters in the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .

3. **Non-RPWs[8] that flow directly or indirectly into TNWs.**
☐ Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional waters within the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .

4. **Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.**
☐ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
☐ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

☐ Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. **Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.**
☐ Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.

Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. **Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.**
☐ Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

Provide estimates for jurisdictional wetlands in the review area: acres.

7. **Impoundments of jurisdictional waters.[9]**
As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.
☐ Demonstrate that impoundment was created from "waters of the U.S.," or
☐ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
☐ Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):[10]
☐ which are or could be used by interstate or foreign travelers for recreational or other purposes.
☐ from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
☐ which are or could be used for industrial purposes by industries in interstate commerce.
☐ Interstate isolated waters. Explain: .
☐ Other factors. Explain: .

Identify water body and summarize rationale supporting determination: .

---

[8]See Footnote # 3.
[9] To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.
[10] Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA *Memorandum Regarding CWA Act Jurisdiction Following Rapanos.*

Provide estimates for jurisdictional waters in the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .
☐ Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):
☒ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
☐ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
☐ Prior to the Jan 2001 Supreme Court decision in "*SWANCC*," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
☐ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: .
☐ Other: (explain, if not covered above): .

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):
☒ Non-wetland waters (i.e., rivers, streams): **0.86 acres, 4,810** linear feet, **3-18** width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):
☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: .
☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
☐ Office concurs with data sheets/delineation report.
☐ Office does not concur with data sheets/delineation report.
☐ Data sheets prepared by the Corps: .
☐ Corps navigable waters' study: .
☒ U.S. Geological Survey Hydrologic Atlas: .
☒ USGS NHD data.
☒ USGS 8 and 12 digit HUC maps.
☒ U.S. Geological Survey map(s). Cite scale & quad name: USGS El Casco 7.5' Topographic Quadrangle Map.
☒ USDA Natural Resources Conservation Service Soil Survey. Citation: USDA 2019.
☒ National wetlands inventory map(s). Cite name:USFWS NWI 2019.
☐ State/Local wetland inventory map(s): .
☐ FEMA/FIRM maps: .
☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
☒ Photographs: ☒ Aerial (Name & Date):Refer to Figure 3 in Appendix A of ARDR.
or ☒ Other (Name & Date):Refer to Appendix C in ARDR.
☐ Previous determination(s). File no. and date of response letter: .
☐ Applicable/supporting case law: .
☐ Applicable/supporting scientific literature: .
☐ Other information (please specify): .

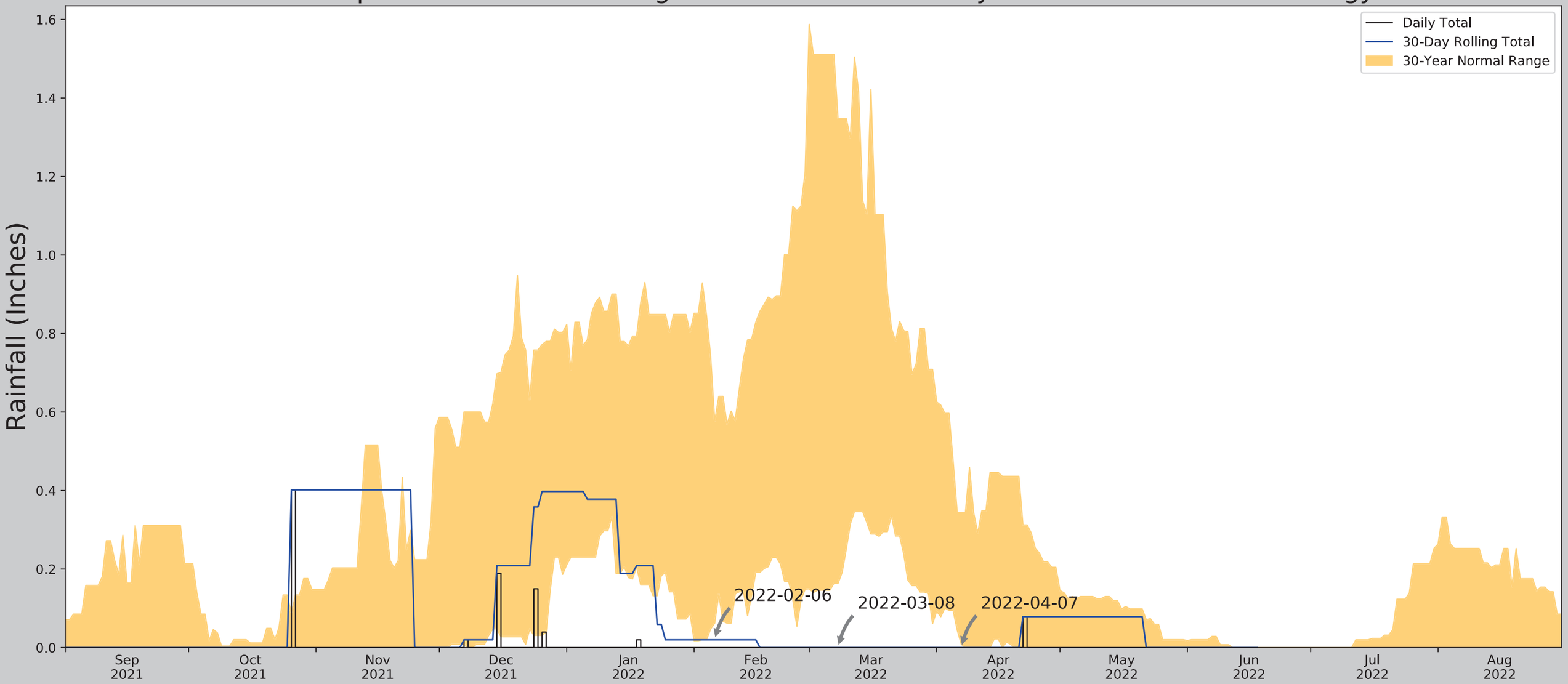
B. ADDITIONAL COMMENTS TO SUPPORT JD:
A system of braided ephemeral channels flows from the southwest corner to the northeast corner across the review area carrying surface flows. The braided channels dissipate (i.e., lose OHWM indictors) within the middle of the review area where there is a former residence, and dissipate off site prior to reaching Harper Lake (i.e., surface flow may be blocked by an existing solar facility). The mapped features carry

surface flows across the site from south to north toward Harper Lake, which is a dry lakebed or playa (Figure 3). However, the existing Lockhart solar facility may prevent surface flow from reaching Harper Lake. Ephemeral channels within the project site likely dissipate, evaporate or infiltrate into the groundwater basin, or may continue to flow to Harper Dry Lake during larger storm events. The Harper Valley is considered a closed basin and functions as an isolated intrastate watershed system lacking the presence of a traditional navigable water. Therefore, the review area does not contain any streams, wetland waters, or other waters that are subject to federal jurisdiction under Section 404 of the Clean Water Act.

Attachment B

Antecedent Precipitation Tool Output

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	34.999642, -117.323667
Observation Date	2022-04-07
Elevation (ft)	2099.32
Drought Index (PDSI)	Extreme drought
WebWIMP H_2O Balance	Dry Season

30 Days Ending	30th %ile (in)	70th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2022-04-07	0.008268	0.343701	0.0	Dry	1	3	3
2022-03-08	0.163386	1.348032	0.0	Dry	1	2	2
2022-02-06	0.062205	0.576378	0.019685	Dry	1	1	1
Result							Drier than Normal - 6

Figure and tables made by the
Antecedent Precipitation Tool
Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

BARSTOW 3.0 W	34.88, -117.118	2229.003	14.284	129.683	8.28	303	0
BARSTOW 4.2 NE	34.9237, -117.0177	2169.948	18.102	70.628	9.424	572	23
BARSTOW	34.8928, -117.0219	2220.144	18.617	120.824	10.627	10231	66
EDWARDS AFB NORTH AUX FLD	34.9883, -117.8647	2283.137	30.634	183.817	19.416	1	0
BARSTOW DAGGETT AP	34.8536, -116.7858	1916.995	32.097	182.325	20.296	246	1

Attachment C

Data Sheets

T-01

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Hinkley	**Date:** 4/7/2022	**Time:**
Project Number:	**Town:**	**State:**
Stream: NWN-01	**Photo begin file#:**	**Photo end file#:**
Investigator(s): Anna Cassady		

Y ☑ / N ☐ Do normal circumstances exist on the site?

Y ☑ / N ☐ Is the site significantly disturbed?

Location Details:

Projection: **Datum:**

Coordinates:

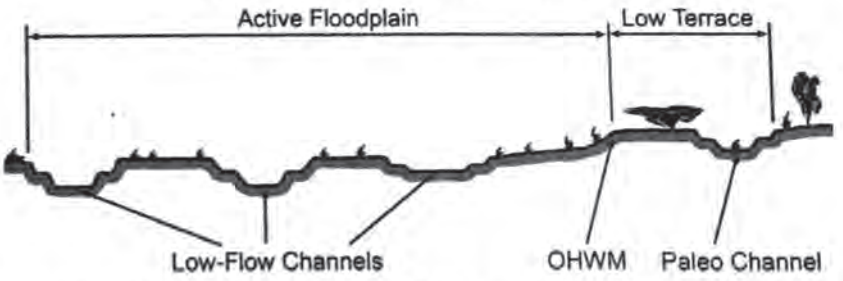
Potential anthropogenic influences on the channel system: [redacted]. Misc dirt roads and debris throughout system.

Brief site description: Salt bush scrub in relatively flat topography

Checklist of resources (if available):

- ☑ Aerial photography
  - Dates:
- ☑ Topographic maps
- ☐ Geologic maps
- ☐ Vegetation maps
- ☑ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☑ Global positioning system (GPS)
- ☐ Other studies
- ☐ Stream gage data
  - Gage number:
  - Period of record:
  - ☐ History of recent effective discharges
  - ☐ Results of flood frequency analysis
  - ☐ Most recent shift-adjusted rating
  - ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

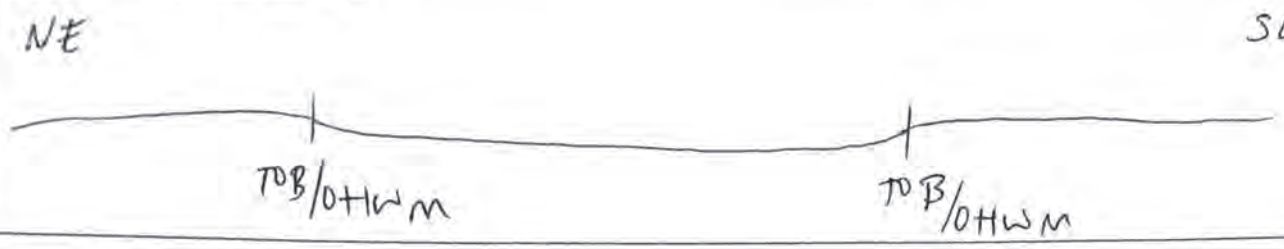


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☐ Mapping on aerial photograph
   - ☐ Digitized on computer
   - ☑ GPS
   - ☐ Other:

oject ID: Cross section ID: T-01 Date: 4-7-22 Time:

Cross section drawing:



OHWM

GPS point: _____

Indicators:

- [x] Change in average sediment texture
- [ ] Change in vegetation species
- [x] Change in vegetation cover
- [ ] Break in bank slope
- [x] Other: wracking
- [ ] Other: _____

Comments:

Floodplain unit: [x] Low-Flow Channel [ ] Active Floodplain [ ] Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: sand

Total veg cover: 0 % Tree: 0 % Shrub: 2 % Herb: 5 %

Community successional stage:

- [ ] NA
- [x] Early (herbaceous & seedlings)
- [ ] Mid (herbaceous, shrubs, saplings)
- [ ] Late (herbaceous, shrubs, mature trees)

Indicators:

- [ ] Mudcracks
- [ ] Ripples
- [x] Drift and/or debris
- [ ] Presence of bed and bank
- [ ] Benches
- [ ] Soil development
- [x] Surface relief
- [x] Other: change in sediment texture
- [ ] Other: _____
- [ ] Other: _____

Comments:

OHWM indicators intermittently present throughout drainage. Potentially from an impediment in flow caused by the solar site to the north.

T-02

Arid West Ephemeral and Intermittent Streams OHWM Datasheet

Project: Hinkley
Project Number:
Stream:
Investigator(s): Anna Cassidy
Date:
Time:
Town:
State:
Photo begin file#:
Photo end file#:

Y ☑ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☑ Is the site significantly disturbed?

Location Details:

Projection: **Datum:**
Coordinates:

Potential anthropogenic influences on the channel system:

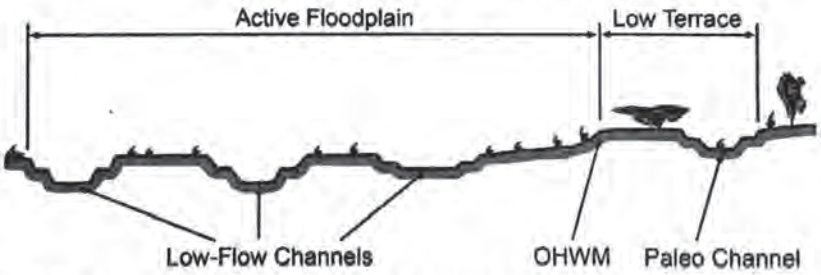
Misc dirt roads

Brief site description: Saltbush scrub in flat topography

Checklist of resources (if available):

- ☑ Aerial photography
  Dates:
- ☑ Topographic maps
- ☐ Geologic maps
- ☐ Vegetation maps
- ☑ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☑ Global positioning system (GPS)
- ☐ Other studies
- ☐ Stream gage data
  Gage number:
  Period of record:
  - ☐ History of recent effective discharges
  - ☐ Results of flood frequency analysis
  - ☐ Most recent shift-adjusted rating
  - ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

Hydrogeomorphic Floodplain Units

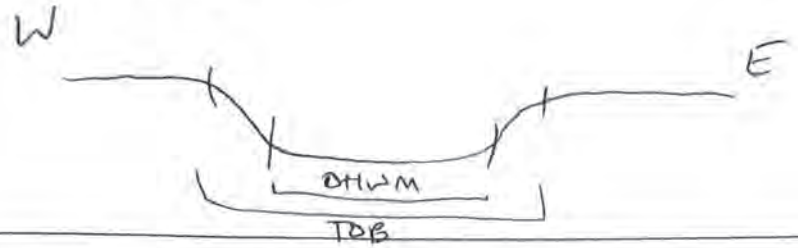


Procedure for identifying and characterizing the floodplain units to assist in identifying the OHWM:

1. Walk the channel and floodplain within the study area to get an impression of the geomorphology and vegetation present at the site.
2. Select a representative cross section across the channel. Draw the cross section and label the floodplain units.
3. Determine a point on the cross section that is characteristic of one of the hydrogeomorphic floodplain units.
   a) Record the floodplain unit and GPS position.
   b) Describe the sediment texture (using the Wentworth class size) and the vegetation characteristics of the floodplain unit.
   c) Identify any indicators present at the location.
4. Repeat for other points in different hydrogeomorphic floodplain units across the cross section.
5. Identify the OHWM and record the indicators. Record the OHWM position via:
   - ☐ Mapping on aerial photograph
   - ☑ GPS
   - ☐ Digitized on computer
   - ☐ Other:

ect ID: **Cross section ID:** T-02 **Date:** **Time:**

ross section drawing:



OHWM

GPS point: _____

Indicators:

- [x] Change in average sediment texture
- [ ] Change in vegetation species
- [x] Change in vegetation cover
- [x] Break in bank slope
- [x] Other: wracking
- [ ] Other: _____

Comments:

Floodplain unit:

- [x] Low-Flow Channel
- [ ] Active Floodplain
- [ ] Low Terrace

GPS point: _____

Characteristics of the floodplain unit:

Average sediment texture: sand

Total veg cover: 0 % Tree: 0 % Shrub: 0 % Herb: 5 %

Community successional stage:

- [ ] NA
- [x] Early (herbaceous & seedlings)
- [ ] Mid (herbaceous, shrubs, saplings)
- [ ] Late (herbaceous, shrubs, mature trees)

Indicators:

- [ ] Mudcracks
- [ ] Ripples
- [x] Drift and/or debris
- [x] Presence of bed and bank
- [ ] Benches
- [ ] Soil development
- [x] Surface relief
- [ ] Other: _____
- [ ] Other: _____
- [ ] Other: _____

Comments:

Attachment D

Review Area Photos

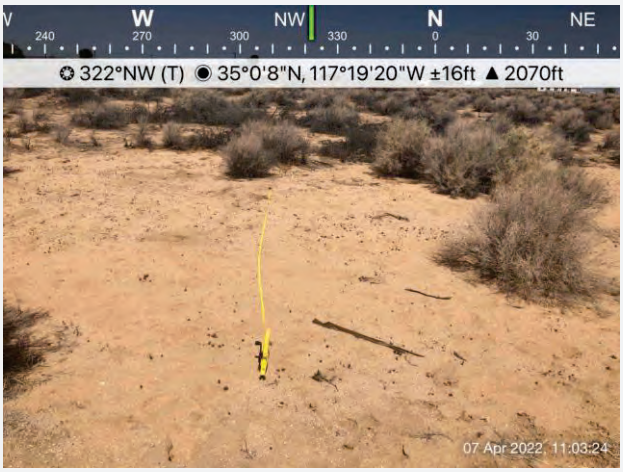


Photo 1. Transcript 1, facing northwest.

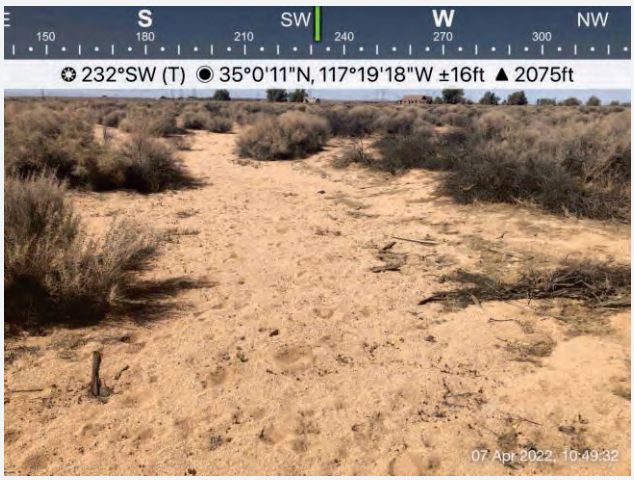


Photo 2. Northern boundary of review area, facing southwest.

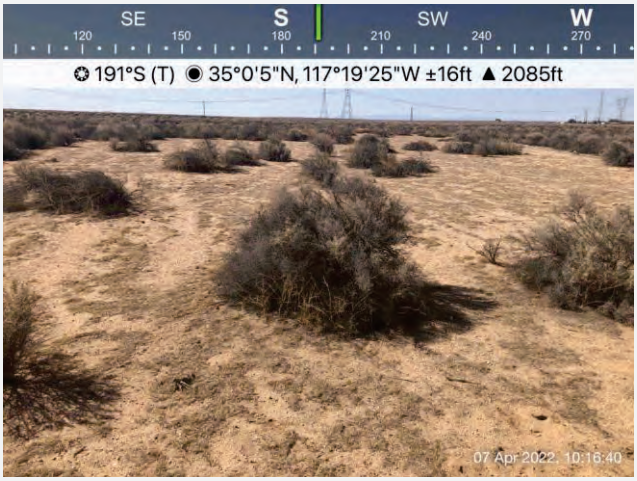


Photo 3. Review area with no OHWM indicators.

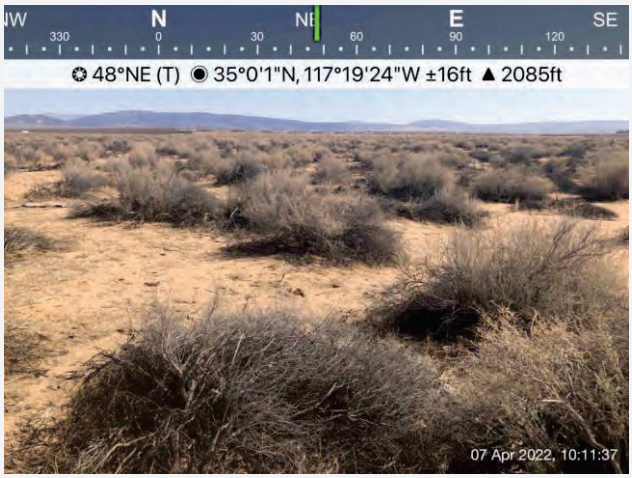


Photo 4. Review area with no OHWM indicators.

Photo 5. NWW-1, facing south.

Photo 6. NWW-1, facing northwest.

Photo 7. NWW-1, facing north.

Photo 8. NWW-1, facing south.

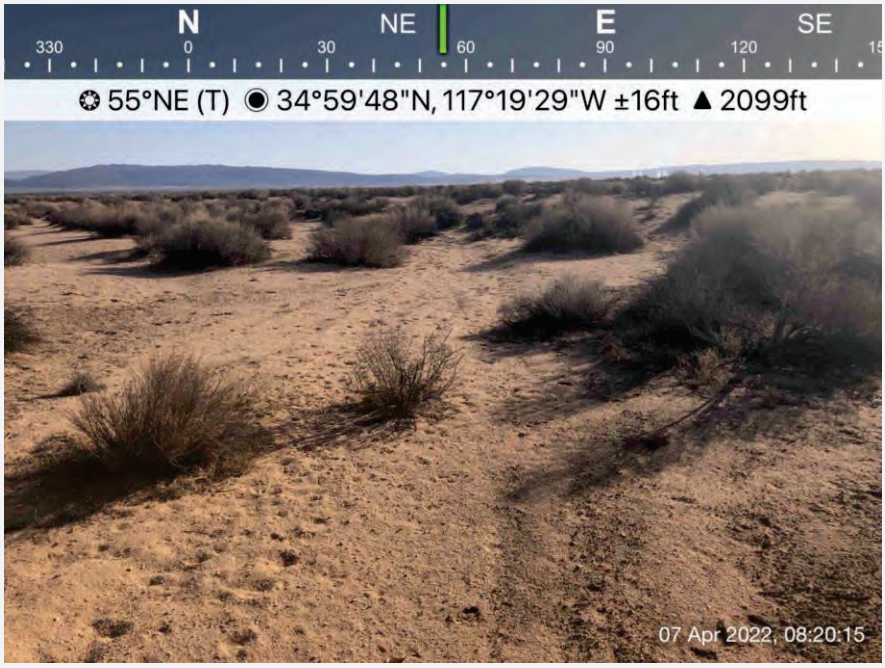


Photo 9. NWW-1, facing northeast.

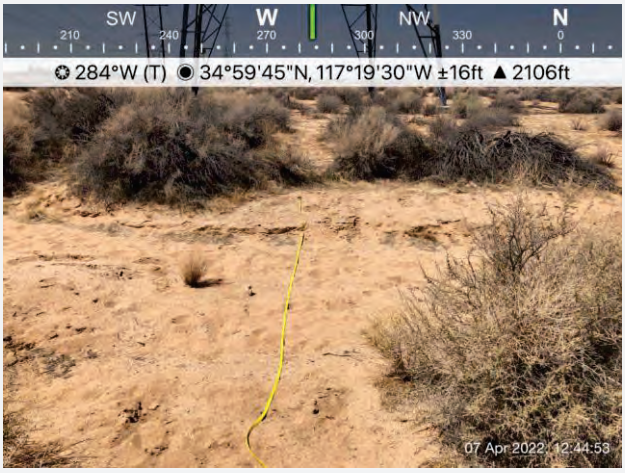


Photo 10. Transect 2, facing west.

Photo 11. Southern boundary of review area, facing north.

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Attachment E

Digital Data (provided via Email)

Appendix D

Special-Status Plant Species Observed or Potentially Occurring within the Project Site

Scientific Name	Common Name	Status (Federal/State/CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
Canbya candida	white pygmy-poppy	None/None/4.2	Joshua tree "woodland," Mojavean desert scrub, Pinyon and juniper woodland; Granitic, Gravelly, Sandy/annual herb/Mar–June/1,965–4,790	Low potential to occur. Species not observed during rare plant survey.
Chorizanthe spinosa	Mojave spineflower	None/None/4.2	Chenopod scrub, Joshua tree "woodland," Mojavean desert scrub, Playas; Alkaline (sometimes)/annual herb/Mar–July/20–4,265	Low potential to occur. Species not observed during rare plant survey.
Cymopterus deserticola	desert cymopterus	None/None/1B.2	Joshua tree "woodland," Mojavean desert scrub; Sandy/perennial herb/Mar–May/2,065–4,920	Low potential to occur. Species not observed during rare plant survey.
Diplacus mohavensis	Mojave monkeyflower	None/None/1B.2	Joshua tree "woodland," Mojavean desert scrub; Gravelly (sometimes), Sandy (sometimes), Washes (often)/annual herb/Apr–June/1,965–3,935	Low potential to occur. Species not observed during rare plant survey.
Eriophyllum mohavense	Barstow woolly sunflower	None/None/1B.2	Chenopod scrub, Mojavean desert scrub, Playas/annual herb/Mar–May/1,640–3,145	Low potential to occur. Species not observed during rare plant survey.
Lycium torreyi	Torrey's box-thorn	None/None/4.2	Mojavean desert scrub, Sonoran desert scrub; Rocky, Sandy, Streambanks, Washes/perennial shrub/(Jan–Feb)Mar–June(Sep–Nov)/-,165–4,000	Low potential to occur. Species not observed during rare plant survey.
Mentzelia tridentata	creamy blazing star	None/None/1B.3	Mojavean desert scrub; Gravelly, Rocky, Sandy/annual herb/Mar–May/2,295–3,850	Not expected to occur. The site is outside of the species' known elevation range.
Muilla coronata	crowned muilla	None/None/4.2	Chenopod scrub, Joshua tree "woodland," Mojavean desert scrub, Pinyon and juniper woodland/perennial bulbiferous herb/Mar–Apr(May)/2,195–6,430	Not expected to occur. The site is outside of the species' known elevation range.

Scientific Name	Common Name	Status (Federal/State/CRPR)	Primary Habitat Associations/ Life Form/ Blooming Period/ Elevation Range (feet)	Potential to Occur
Pediomelum castoreum	Beaver Dam breadroot	None/None/1B.2	Joshua tree "woodland," Mojavean desert scrub/perennial herb/Apr–May/2,000–5,000	Low potential to occur. Species not observed during rare plant survey.
Sclerocactus polyancistrus	Mojave fish-hook cactus	None/None/4.2	Great Basin scrub, Joshua tree "woodland," Mojavean desert scrub/perennial stem/Apr–July/2,095–7,610	Low potential to occur. Species not observed during rare plant survey.
Yucca brevifolia	western Joshua tree	None/SC/CBR	Great Basin grassland, Great Basin scrub, Joshua tree woodland, Mojavean desert scrub, Pinyon and juniper woodland, Sonoran desert scrub, Valley and foothill grassland/perennial leaf succulent/Apr–May/ 1,310–6,560	Not expected to occur. Perennial species not observed during rare plant survey. Additionally, site occurs outside of CDFW Distribution for this species.

Appendix E

Special-Status Wildlife Species Observed or Potentially Occurring within the Project Site

Scientific Name	Common Name	Status (Federal/State)	Habitat	Potential to Occur
Amphibians				
Anaxyrus californicus	arroyo toad	FE/SSC	Semi-arid areas near washes, sandy riverbanks, riparian areas, palm oasis, Joshua tree, mixed chaparral and sagebrush; stream channels for breeding (typically third order); adjacent stream terraces and uplands for foraging and wintering	Not expected to occur. Suitable aquatic habitat is not present on the project site or in the vicinity.
Reptiles				
Gopherus agassizii	Mojave desert tortoise	FT/ST	Arid and semi-arid habitats in Mojave and Sonoran Deserts, including sandy or gravelly locations along riverbanks, washes, sandy dunes, canyon bottoms, desert oases, rocky hillsides, creosote flats, and hillsides	Not expected to occur. There are local, recent records of the species within the project vicinity; however, no sign or suitable burrows were observed during the 2022 protocol-level survey.
Uma scoparia	Mohave fringe-toed lizard	None/SSC	Loose wind-blown sand dunes, flats with sandy hummocks, washes, and banks of rivers	Not expected to occur. Suitable habitat is not present on the project site or in the vicinity.
Birds				
Aquila chrysaetos (nesting & wintering)	golden eagle	None/FP, WL	Nests and winters in hilly, open/semi-open areas, including shrublands, grasslands, pastures, riparian areas, mountainous canyon land, open desert rimrock terrain; nests in large trees and on cliffs in open areas and forages in open habitats	Not expected to occur (nesting and wintering). Suitable nesting habitat is not present on the project site or in the vicinity; however, the species may forage in the area.
Athene cunicularia (burrow sites & some wintering sites)	burrowing owl	None/SSC	Nests and forages in grassland, open scrub, and agriculture, particularly with ground squirrel burrows	Moderate potential to occur. There are local, recent records of the species and suitable habitat is present; however, no sign of the species was observed during the initial survey or during the desert tortoise surveys.
Charadrius alexandrinus nivosus (nesting)	western snowy plover	FT/SSC	On coasts nests on sandy marine and estuarine shores; in the interior nests on sandy, barren or sparsely vegetated flats near saline or alkaline lakes, reservoirs, and ponds	Not expected to occur (nesting). Suitable habitat is not present on the project site or in the vicinity.
Charadrius montanus (wintering)	mountain plover	None/SSC	Winters in shortgrass prairies, plowed fields, open sagebrush, and sandy deserts	Not expected to occur (wintering). Suitable aquatic habitat is not present on the project site or in the vicinity.
Coccyzus americanus occidentalis (nesting)	western yellow-billed cuckoo	FT/SE	Nests in dense, wide riparian woodlands and forest with well-developed understories	Not expected to occur. Suitable habitat is not present on the project site or in the vicinity.
Falco mexicanus (nesting)	prairie falcon	None/WL	Forages in grassland, savanna, rangeland, agriculture, desert scrub, alpine meadows; nest on cliffs or bluffs	Not expected to occur (nesting). Suitable nesting habitat is not present on the project site or in the vicinity; however, the species may forage in the area.
Lanius ludovicianus (nesting)	loggerhead shrike	None/SSC	Nests and forages in open habitats with scattered shrubs, trees, or other perches	Low potential to occur. Limited suitable habitat within the site and species was not observed during the habitat assessment.
Rallus obsoletus yumanensis	Yuma Ridgway's rail	FE/FP, ST	Freshwater marsh dominated by Typha spp., Scirpus spp., Schoenoplectus spp., and Bolboschoenus spp.; mix of riparian tree and shrub species along the marsh edge; many occupied areas are now man-made, such as managed ponds or effluent-supported marshes	Not expected to occur. Suitable habitat is not present in the project site.
Toxostoma lecontei	LeConte's thrasher	None/SSC	Nests and forages in desert wash, desert scrub, alkali desert scrub, desert succulent, and Joshua tree habitats; nests in spiny shrubs or cactus	Observed within the site during the initial survey in April 2022 and during the desert tortoise survey in September 2022.This species has high potential to nest within the on-site desert scrub habitat.
Fishes				
Siphateles bicolor mohavensis	Mohave tui chub	FE/FP, SE	Lacustrine ponds or pools; 4 feet min water depth; freshwater flow; mineralized and alkaline environment; habitat for aquatic invertebrate prey and egg attachment substrate; Ruppia maritima preferred for egg attachment and thermal refuge in summer months	Not expected to occur. Suitable aquatic habitat is not present on the project site or in the vicinity.
Mammals				
Lasionycteris noctivagans	silver-haired bat	None/None	Old-growth forest, maternity roosts in trees, large snags 50 feet aboveground; hibernates in hollow trees, rock crevices, buildings, mines, caves, and under sloughing bark; forages in or near coniferous or mixed deciduous forest, stream or river drainages	Not expected to occur. Suitable habitat is not present in the project site.
Microtus californicus mohavensis	Mojave river vole	None/SSC	Wet, weedy, herbaceous areas along the Mojave River	Not expected to occur. Suitable habitat is not present in the project site.

Scientific Name	Common Name	Status (Federal/State)	Habitat	Potential to Occur
Spermophilus (Xerospermophilus) mohavensis	Mohave ground squirrel	None/ST	Desert scrub habitats including those dominated by creosote bush and burrobush, desert sink scrub, and desert saltbush scrub	Moderate potential to occur. There are local, recent records of the species and suitable habitat is present; however, no small burrows were observed during the initial survey.
Taxidea taxus	American badger	None/SSC	Dry, open, treeless areas; grasslands, coastal scrub, agriculture, and pastures, especially with friable soils	Moderate potential to occur. There are local, recent records of the species; however, no suitable badger burrows were observed during the desert tortoise surveys.
Invertebrates				
Bombus crotchii	Crotch bumble bee	None/None	Open grassland and scrub communities supporting suitable floral resources.	Low potential to occur. Limited floral resources occur within the site.
Bombus occidentalis	western bumble bee	None/None	Once common and widespread, species has declined precipitously from central California to southern British Columbia, perhaps from disease	Not expected to occur. Suitable habitat is not present in the project site.

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:
Project Code: 2023-0135020
Project Name: Lockhart Solar

September 28, 2023

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: 2023-0135020
Project Name: Lockhart Solar
Project Type: Operations and Maintenance - Electric Power Transmission and Distribution Facilities
Project Description: 80 acre site located in Hinkley, CA
Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@34.999568249999996,-117.32376020200756,14z

Counties: San Bernardino County, California

ENDANGERED SPECIES ACT SPECIES

There is a total of 3 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.

---

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
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

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

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: Keith McDaniels
Address: 204 E 2nd Ave, #606
City: San Mateo
State: CA
Zip: 94401
Email kmcdaniels@junipersolar.com
Phone: 5105029117

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Rural Utilities Service

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: 11/20/2024 23:01:09 UTC
Project Code: 2024-0003033
Project Name: Project Lockhart Solar and Project Harper Solar

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: 2024-0003033
Project Name: Project Lockhart Solar and Project Harper Solar
Project Type: Power Gen - Solar
Project Description: The Proposed Action involves the design and construction of two 4MWac solar PV power generating facilities with battery storage capabilities on approximately 73 acres. Arrays of solar modules approximately three to nine feet in height are, arranged in rows spanning on a north-south axis, will cover almost the entire Project Site with a few exceptions. Solar modules mounted to metal beams, which can pivot east to west, will sit atop pile driven supports posts. The posts supporting the solar arrays and a approximately four equipment pads would create less than one acre of impervious surfaces. The Project Site parcel is approximately 80 acres in which the proposed PV generation systems would occupy approximately 73 acres. Surrounding parcels range from 5 acres to 1,750 acres, with the average parcel size of approximately 106 acres.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@34.99964615,-117.32352635203264,14z

Counties: San Bernardino County, California

ENDANGERED SPECIES ACT SPECIES

There is a total of 4 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.

---

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
Southwestern Willow Flycatcher *Empidonax traillii extimus*	Endangered
There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6749	
Western Snowy Plover *Charadrius nivosus nivosus*	Threatened
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	

REPTILES

NAME	STATUS
Desert Tortoise *Gopherus agassizii*	Threatened
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	

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus*	Candidate
No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	

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: Department of Agriculture
Name: Alan Hachey
Address: 1400 Independence Avenue, SW Room 4004a
City: Washington
State: DC
Zip: 20250
Email alan.hachey@usda.gov
Phone: 2028193261

You have indicated that your project falls under or receives funding through the following special project authorities:

- IRA (SECTION 50303)

APPENDIX G

Visual Impact Analysis, September 23, 2022, Dudek

MEMORANDUM

To:	Keith McDaniels, Juniper Energy
From:	Josh Saunders, AICP (Dudek)
Subject:	Lockhart Solar Project – Visual Impact Analysis
Date:	September 23, 2022
cc:	David Wickens (Dudek)
Attachment(s):	Figures 1-5

1 Purpose

The purpose of this technical memorandum is to provide an impact analysis of potential effects to views and visual resources associated with the proposed Lockhart 1 and Lockhart 2 Solar Projects (project) in the community of Hinkley in west central San Bernardino County, California. For purposes of this report, the Lockhart 1 and Lockhart 2 Solar Projects are assessed as a single project. Located at 315 Powerline Road in the County's expansive North Desert area, the project site is located on Assessor's Parcel Number 0490-171-01-0-000, which consists of primarily undeveloped land crossed by a drainage running from the southwest from the northeast corner of the approximately 75-acre site. While the southern portion of the project site does not support evidence of previous development, the northern portion appears to have previously supported multiple structures and areas of visible disturbance. The project site and surrounding area are depicted on Figure 1, Project Vicinity (all figures are provided in Attachment A).

This analysis is prepared in accordance with County environmental review requirements and the California Environmental Quality Act (CEQA). More specifically, this analysis addresses aesthetics-related significance criteria included in Appendix G of the CEQA Guidelines.

2 Project Description

The project includes the development of an 8 megawatt (MW) solar facility that would include solar panels, inverters, switchgear, battery storage containers ("ESS warehouse"), and electrolyte storage tanks. Development would also include the construction of perimeter and internal access roads and installation of a seven (7-) foot high chain link perimeter fence. Power generated by the project will be transferred to an existing 33 kilovolt (kV) electrical transmission line which is aligned along Roy Street. The proposed interconnection would necessitate an extension of the existing line from the point of interconnection (POI) to the southwest corner of the project site (see Figure 2, Site Plan). Project components are described in additional detail as follows:

- **Solar Panels.** As proposed, long rows or strings of ground mounted panels would be aligned in a north-south orientation across the Project site. Access roads would be constructed on the site and would separate panel rows in to four quadrants of comparable size each on the northern and southern portions of the site. Approximately 15,750 solar panels would be installed across the Project Site on an ATI tracker racking system comprised of anodized aluminum allow that would allow for 180 degree tracking of the sun throughout the day.

- **Power Inverters and Transformers.** Power inverters to convert between alternating current (AC) and direct current (DC) will be included, along with transformers that will step up the voltage.
- **Battery Storage Containers.** Battery storge containers and appurtenances will be constructed that will provide energy storage capacity and dispatch for the electric grid. The energy storage batteries will be housed in containers or purpose-built enclosures (dimensions of approximately 20 feet long by 8 feet wide by 8 feet high) that would be mounted on a concrete pad or equivalent. The battery storge containers/ESS warehouse will be unstaffed, with remote operational control and periodic inspections and maintenance performed as necessary. Containers would be installed along the site's southern boundary and centrally on the project site. See Figure 2, Site Plan.
- **Generator Tie-Line (Gen-Tie Line).** The project's point of interconnection (POI) is an existing 33 kV transmission line located near the intersection of Powerline Road and Harper Lake Road. Approximately six (6) new 30-45 foot high wood poles would be required to extend the existing 33 kV line to the southwest corner of the project site.
- **Telecommunication Facilities.** Telecommunication equipment, including underground and overhead fiber optics or supervisory control and data acquisition (SCADA), will be installed.
- **Site Access and Security.** The project site is primarily accessed from Roy Road via Hinkley Road which is located approximately 7.5 miles to the east of the Project Site. Hinkley Road has direct access to State Route 58 from which Interstates 5 and 40 are accessible near Barstow (located approximately 10 miles to the southeast of Hinkley). A 16-foot wide aggregate on-site access driveway from Edie Road/Roy Road, perimeter security fencing, and ingress/egress point security lighting will be provided for the project. Double gates will be constructed off the main driveway near Edie Road/Roy Road, and off the existing unnamed access road that splits the site in two.

  In addition to 7-foot high perimeter fencing that will be maintained over the operational life of the project, security lighting will be installed. Specifically, permanent motion-sensitive, directional security lights will be installed to provide adequate illumination at the points of ingress/egress. All lighting will be shielded and directed downward to minimize the potential for glare or spillover onto adjacent properties. Security cameras will be placed on site and monitored 7 days a week, 24 hours per day.

The facilities are intended to operate year-round and will be available to receive or deliver energy 24 hours a day, 365 days a year.

3 Existing Conditions

The following discussion is supported by photographs of the site and surrounding area taken in August and September 2022. The location of specific photographs referenced in the discussion is depicted on Figure 3, Existing Conditions – Key Map and photographs of the site and surrounding area are presented on Figure 4, Existing Conditions – Project Site and Figure 5, Existing Conditions – Surrounding Area.

The project site comprises primarily undeveloped, flat desert terrain. Specifically, the southern portion of the project site (approximately 45 acres) is undeveloped (a single steel lattice tower supporting a regional transmission line is located in the southwest corner) and covered by low and dry desert shrubs (generally no taller than 2-4 feet high) that present as a stippled appearance across the site. See Photos A and B on Figure 4. A desert wash/drainage also occurs on the southern portion and generally extends from the southwest to the northeast corner of the two-

parcel site. The northern portion of the site displays a similar terrain and vegetation character as the southern portion however, a former housing compound comprised of two dilapidated structures (and the remnants of up to four others) is also present. See Photo C on Figure 4. The northern portion is also crossed by several dirt access roads associated with the former compound and several trees ostensibly planted to provide wind breaks. In addition to electrical transmission infrastructure, existing trees and dirt roads on the northern portion of the site are shown on Photos C and D (Figure 4).

Land uses in the surrounding area include flat undeveloped terrain (to the immediate east and west of the project site), electrical transmission lines, limited scattered residences (to the north, northwest, and west, Harper Dry Lake, and solar farm development. Existing terrain and electrical transmission lines are shown in Photos E and F, Figure 5. Specifically, multiple utility- scale solar farm developments are located to the east (along Roy Street), north, and northeast and include the 250 MW Mojave Solar Project (a concentrated solar power facility featuring solar steam generators and auxiliary boilers) and the Solar Energy Generating System VIII-IX (SEGS VIII-IX) solar power plants. In total, there is over 2,000 acres of operating solar farm development within a 5-mile area from the Project Site. See Photos F and G which include surrounding solar development to the east and north. Lastly, existing residences along Edie Road to the north of the project site are captured in Photo G, Figure 5.

4 Regulatory Setting

State

California Scenic Highway Program

Caltrans manages the California Scenic Highway Program, which was created in 1963 by the California legislature to preserve and protect scenic highway corridors from changes that would diminish the aesthetic value of lands adjacent to highways. The program includes a list of highways that are designated or eligible for designation as scenic highways. A highway may be designated as scenic based on certain criteria, including how much of the natural landscape can be seen by travelers, the scenic quality of the landscape, and the extent to which development intrudes on the traveler's enjoyment of the view. State laws governing the Scenic Highway Program are found in Sections 260 through 263 of the Streets and Highways Code.

The nearest state scenic highway (i.e., State Route 58 ,an eligible state scenic highway) is located 4.9 miles to the south and I-15, an eligible state scenic highway, is located 16 miles to the southeast of the Project Site near Barstow]) (Caltrans 2022).

Local

San Bernardino County General Plan

Goal NR-4 of the of the Natural Resources Elements pertains to Scenic Resources. The following policies are applicable to the Project Site and area:

- **Policy NR-4.1 Preservation of scenic resources.** We consider the location and scale of development to preserve regionally significant scenic vistas and natural features, including prominent hillsides, ridgelines, dominant landforms, and reservoirs.

San Bernardino County Code

Section 83.07.060 provides standards for outdoor lighting in the mountain and desert regions of the County. For example, Section 83.07.060 (a) requires that all outdoor light fixtures be fully shielded, installed and maintained in such a manner that the shielding does not permit light trespass in excess of amounts set forth in subdivision (f). Further and in accordance with Section 83.07.060 (b), light pollution and trespass shall be minimized through the use of directional lighting, fixture location, height and the use of shielding and/or motion sensors and timers. Regarding light trespass, Section 83.07.060 (f) states that outdoor lighting shall not cause light trespass exceeding one-tenths foot-candles measured with a light meter oriented vertically or horizontally either at the property line of the adjacent property or measured from some other point on the property where light trespass may be reasonably determined to occur due to differences in property or improvement elevations.

5 Impact Analysis

1. Would the project have a substantial adverse effect on a scenic vista?

Less-Than-Significant Impact. While specific scenic vistas are not identified, the General Plan does seek to preserve prominent hillsides, ridgelines, and dominant landforms. As stated in Section 3 above, the project site comprises primarily undeveloped flat terrain and thus, proposed development would not result in damage to alteration to hillsides, ridgelines, or dominant landforms. Hillsides and ridgelines do occur to the east, north and west (see Photos A through D on Figure 4) however, these landforms are approximately 20 miles or greater away and due to proposed based the anticipated low vertical profile of panels and racks, future solar panels to be installed on the project site would not substantially adversely effect the quality of existing views from perimeter roads to distant hillside and ridgeline terrain. Solar panels would also be setback from the project site boundary such that their visual prominence and vertical scale (as experienced from perimeter roads) would appear to be lessened. The project does include the installation of battery storage containers and electrolyte storage tanks along the southern site boundary (and through the center of the site in an east west alignment); however, these components would also be setback from Powerline Road such that distant terrain would remain visible in views from Roy Street. Lastly and due to the existing aesthetic context of the area which includes high voltage electrical transmission infrastructure and multiple solar development (and because use of Powerline Road and other local roads is assumed limited), the presence of project components in future views from local roads in the surrounding area would not substantially interrupt views to distant hillside and ridgeline terrain the region. Therefore, impacts to scenic vistas resulting from implementation of the project would be less than significant.

2. Would the project substantially damage scenic resources including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

No Impact. Due to distance and occasionally, low intervening hills, clear views to the project site and more specifically, project components including solar panels, battery storage containers, and overhead collection lines are not available from the nearest state scenic highways (i.e., State Route 58 ,an eligible state scenic highway located 4.9 miles to the south and I-15, an eligible state scenic highway located 16 miles to the southeast near Barstow]) (Caltrans 2022). Because the site is not clearly distinguishable from these roadways of the state Scenic Highway System and because proposed development would not result in the

removal of or substantial damage to unique features or resources in the region, no impacts to scenic resources within a designated state scenic highway would occur.

3. ***In non-urbanized areas, would the project substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?***

Less-Than-Significant Impact. Because the project site is within a non-urbanized area, the analysis presented below focuses on whether proposed development would substantially degrade the existing visual quality and character of public views of the site and its surroundings.

As proposed, the project would transform the existing primarily undeveloped 75-acre site into an operating PV solar facility featuring ground-mounted solar panels and battery storage containers. The proposed site plan depicting location of project components is included on Figure 2. While proposed development would alter the existing character of the site and the existing open qualities of views across the site from roads including Powerline Road and Edie Road/Roy Road, the northern portion of the project site presents an unorganized visual appearance due to the effects and presence of previous development which is concentrated in the northwestern corner of the site. As proposed, construction and operation of project would result in an organized scene typified by repeating rows of solar panels and clustered battery storage containers. Furthermore and due to the presence of existing solar development in the immediate area (approximately 2,000 acres of solar development is present within a 5-mile distance of the project site), construction and operation of a PV solar facility would not degrade the existing character of the landscape. Rather, implementation of the project would reflect the growing concentration of solar development in the Lockhart area. As such and based on the analysis presented above, implementation of the Project would not substantially degrade the existing visual character or quality of public views of the site and surroundings. Impacts would be less than significant.

4. ***Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?***

Less-Than-Significant Impact – Lighting. Construction of the project would primarily occur during daylight hours, Monday through Friday. Weekend construction work is not expected to be required, but may occur on occasion, depending on schedule considerations and site conditions. During evening hours and in the event that nighttime construction activities occur due to unanticipated schedule delays or to complete critical activities, the use of construction lighting may occur. During these infrequent occurrences, the minimum amount of lighting needed to ensure a safe work environment and provide adequate illumination of work areas would be used. In addition, all lighting in use would be shielded and directed downward to avoid unnecessary illumination of (and light trespass of) adjacent properties and the night sky.

The project site is currently undeveloped and does not support lighting source or elements that produce glare. Development of the project will introduce new sources (albeit limited) of lighting and glare on the project site. New light and glare sources within the project site will generally be limited to low-elevation security lighting at a site ingress/egress gate(s). All lighting installed on the Project Site will be directed downwards and shielded to control illumination of off-site areas (including nearby residential lands) and reduce skyglow

Section 83.07.010 of the County's Zoning Ordinance comprises the County's Light Trespass Ordinance. Applicable requirements of the Light Trespass Ordinance are listed in Section 3 above. As required by the County, all lighting installed on the Project Site will conform to Light Trespass Requirements for Mountain and Desert Areas (see Section 83.07.060). Specifically, all outdoor light fixtures would be fully shielded, managed with automated control systems, and feature a correlated color temperature of 3,000 Kelvin or less. In addition, the operation of outdoor lighting on the Project Site would not exceed the allowable light trespass standards established by County Code Section 83.07.060(f) ("outdoor lighting shall not cause light trespass exceeding one-tenths foot-candles measured with a light meter oriented vertically or horizontally either at the property line of the adjacent property or measured from some other point on the property where light trespass may be reasonably determined to occur due to differences in property or improvement elevations"). Lastly, no blinking, flashing, or high-intensity lighting would be installed on the Project Site.

Therefore, based on the analysis presented above, lighting impacts associated with the Project would be less than significant

Less-Than-Significant – Glare. As described above, the majority of construction activities would occur during daytime hours wherein lighting would not be required. Potential glare associated with infrequent use of stationary and mobile lighting fixtures during nighttime construction would be minimized through use of the minimum amount of lighting needed to ensure a safe work environment and use would be shielded and directed downward lighting. With the exception of solar panels and energy storage containers, the project would not contain large expanses of material, such as glass or particularly reflective metal, that will result in glare. Solar panels and more specifically, the glass surface of solar panels, represent a potential source of glare during project operations. Inbound sunlight could potentially reflect off the panel surface and be received by an assume limited number receptors/viewers in the surrounding area. However, potential glare produced by panels is not anticipated to result in visual discomfort or impairment of views for residents or motorists. Panel reflectively is reduced by efficiencies in the glass panel manufacturing process, and panels are designed to absorb as much sunlight as possible. Further, panels would be angled and tilted such that reflected light from inbound sun rays would be projected at a similar angle and would generally be "above" the typical height of residences and the assumed limited number of vehicles on roads in the immediate surrounding area of the Project Site. Lastly and as previously stated, potential glare associated with site lighting would be minimized by limiting the overall number of lighting fixtures to be installed and through compliance with County Code Section 83.07.060 (see Lighting discussion above). Therefore, based on the analysis presented above, glare impacts associated with the Project would be less than significant.

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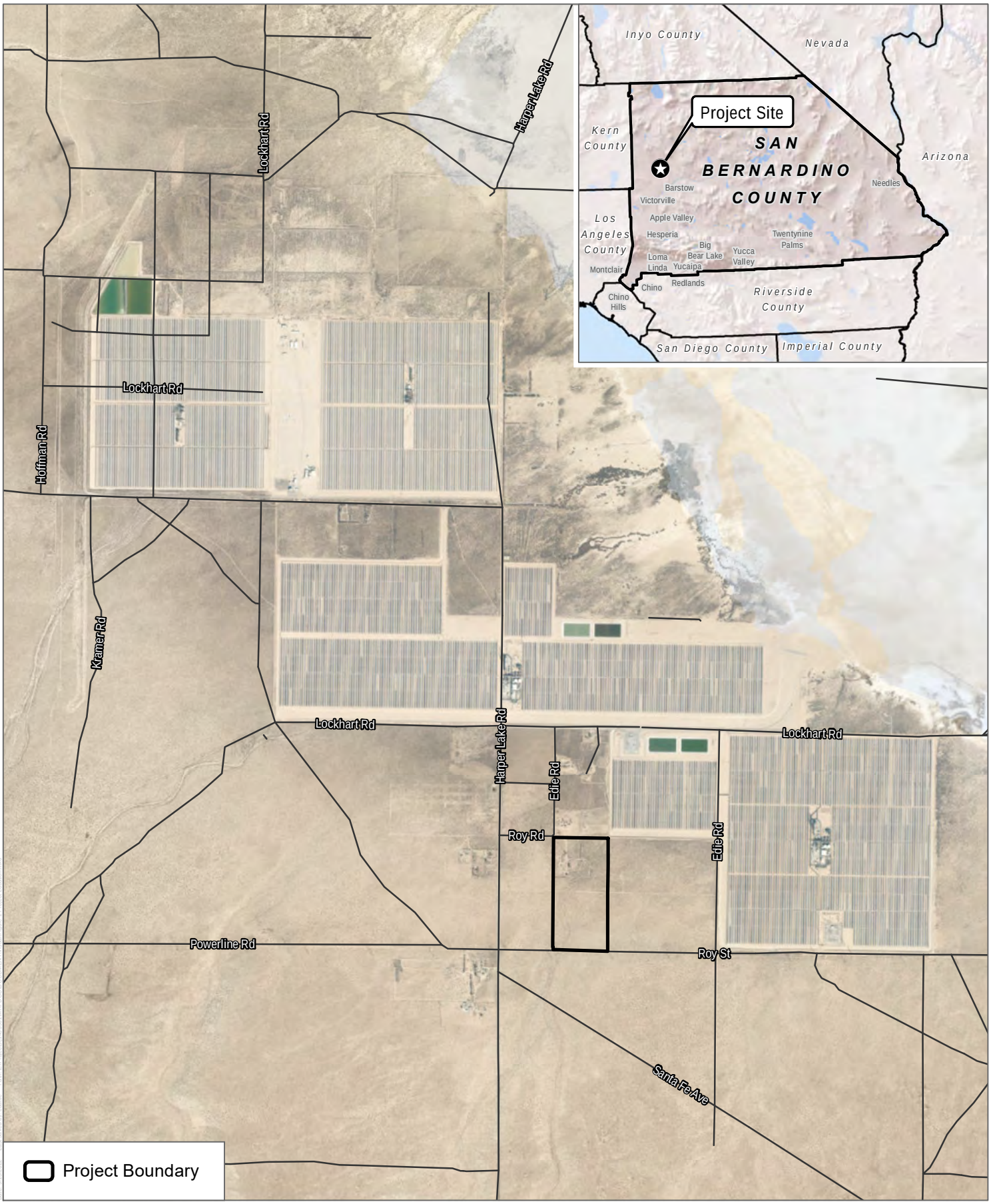
Appendix A
Figures 1-5



SOURCE: ESRI Imagery 2022, County of San Bernardino 2021

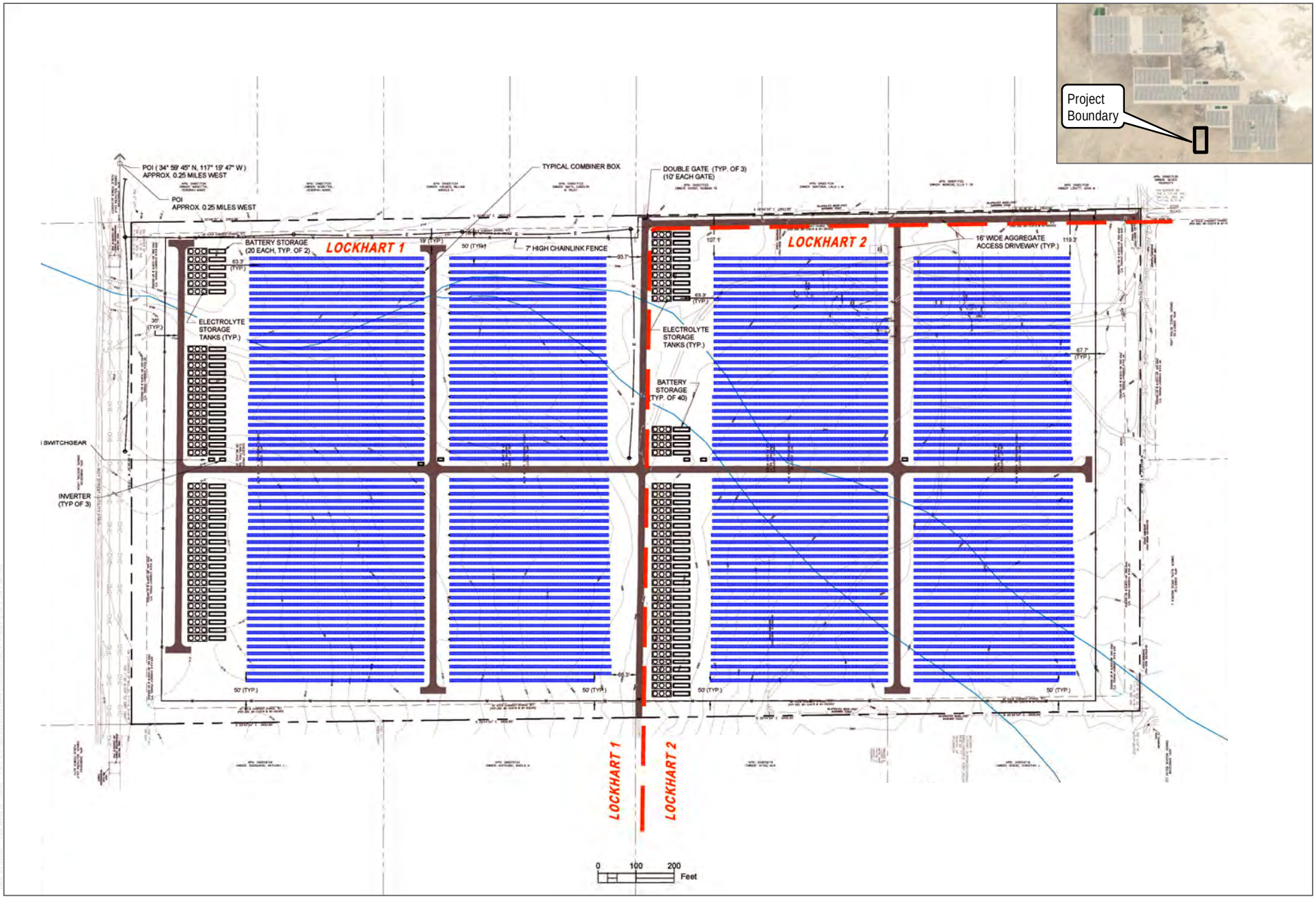
DUDEK

0 1,550 3,100 Feet

FIGURE 1

Project Location

Visual Impact Analysis - Lockhart Solar Project



SOURCE: Partners Engineering & Science, Inc. 2022

DUDEK 0 340 680 Feet

FIGURE 2

Site Plan

Visual Impact Analysis - Lockhart Solar Project

SOURCE: ESRI Imagery 2022, County of San Bernardino 2021

DUDEK

0 250 500 Feet

FIGURE 3

Existing Conditions - Key Map

Visual Impact Analysis - Lockhart Solar Project

Photo A

Photo B

Photo C

Photo D

FIGURE 4

Existing Conditions - Project Site

Lockhart Solar Project

DUDEK

Photo E

Photo F

Photo G

Photo H

FIGURE 5

Existing Conditions - Surrounding Area

Lockhart Solar Project

DUDEK

APPENDIX H

Air Quality & Greenhouse Gas Study dated October 17, 2022,
BlueScape Environmental

AIR QUALITY & GREENHOUSE GAS STUDY

for the Construction of

JUNIPER ENERGY LOCKHART 2 SOLAR PROJECT
HINKLEY, CALIFORNIA

Prepared for:

Partner Engineering and Science, Inc.
2154 Torrance Boulevard, Suite 200
Torrance, California 90501

Prepared by:

BlueScape Environmental
James A. Westbrook
16870 West Bernardo Drive, Suite 400
San Diego, California 92127

October 17, 2022

October 18, 2022

Keith McDaniels
Juniper Energy, LLC
818 Crystal Springs Rd
Hillsborough , CA 94010

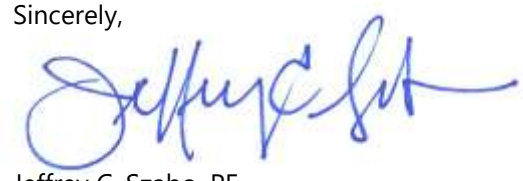
Subject: Project Lockhart Solar
Air Quality and Greenhouse Gas Report
315 Rox Road
Hinkley, CA 92347
Partner Project No. 22-358548.11

Dear Mr. McDaniels:

Partner Engineering and Science, Inc. (Partner) is pleased to provide this Air Quality and Greenhouse Gas Report for Project Lockhart Solar.

We appreciate the opportunity to provide these services to you. If you have any questions concerning this report, or if we can assist you in any other matter, please contact me at 732-221-8066.

Sincerely,



Jeffrey C. Szabo, PE
Senior Project Manager

PARTNER ENGINEERING AND SCIENCE, INC.
100 DEERFIELD LN #200, MALVERN, PA 19355
P: 800-419-4923 | P: 610-577-0412 | C: 732-221-8066

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GLOSSARY OF TERMS AND ACRONYMS

Acronym	Description
AB	Assembly Bill
AC	Alternating Current
APCD	Air Pollution Control District
AQMP	Air Quality Management Plan
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
CalEPA	California Environmental Protection Agency
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CCAA	California Clean Air Act
CEQA	California Environmental Quality Act
CFC	Chlorofluorocarbons
CH_4	Methane
CO	Carbon monoxide
CO_2	Carbon dioxide
CO_2e	Carbon dioxide equivalent
CUP	Conditional Use Permit
DC	Direct Current
EIB	Emission Inventory Branch
EPA	Environmental Protection Agency
GHG	Greenhouse Gases
g/L	Grams per liter
GWP	Global Warming Potential
HAP	Hazardous Air Pollutant
HFC	Hydrofluorocarbons
HI	Hazard Index
IPCC	Intergovernmental Panel on Climate Change
lb/day	Pounds per day
$\mu g/m^3$	Micrograms per cubic meter
MACT	Maximum Achievable Control Technology
MD	Mojave Desert
MDAB	Mojave Desert Air Basin
MDAQMD	Mojave Desert Air Quality Management District
MT	Metric tons
MW	Megawatt
NAAQS	National Ambient Air Quality Standards
NESHAP	National Emissions Standards for Hazardous Air Pollutants
N_2O	Nitrous oxide
NO_2	Nitrogen dioxide
NO_x	Oxides of nitrogen
O_3	Ozone
Pb	Lead
PFC	Perfluorocarbon
PM	Particulate Matter

GLOSSARY OF TERMS AND ACRONYMS

Acronym	Description
PM_{10}	Particulate Matter less than or equivalent to 10 microns in diameter
$PM_{2.5}$	Particulate Matter less than or equivalent to 2.5 microns in diameter
ppb	Parts per billion
ppm	Parts per million
PV	Photovoltaic
Q	Quarter
RC	Resource Conservation
RGHGRP	Regional Greenhouse Gas Reduction Plan
RL	Rural Living
RLM	Resource/Land Management
ROG	Reactive Organic Gases
RTP	Regional Transportation Plan
SB	Senate Bill
SCAG	Southern California Association of Governments
SCS	Sustainable Communities Strategy
SF_6	Sulfur hexafluoride
SIP	State Implementation Plan
SO_2	Sulfur dioxide
SO_x	Oxides of sulfur
TAC	Toxic Air Contaminant
TPY	Tons per year
US	United States
USEPA	United States Environmental Protection Agency
VOC	Volatile Organic Compounds

1.0 INTRODUCTION

This study provides an analysis of the potential construction-related air quality impacts associated with the proposed Juniper Energy Lockhart 2 Solar Project (Project) located at 315 Roy Street in the City of Hinkley and County of San Bernardino. This report has been prepared by BlueScape Environmental, to support preparation of the environmental documentation pursuant to the California Environmental Quality Act (CEQA).

1.1 Project Description

The proposed Project site is located at 315 Roy Street in the City of Hinkley, California and encompasses approximately 80.3 acres of vacant land. Within the 80.3-acre parcel, 53 acres will be disturbed for Project construction. The site lies in Section 32, Township 11 North, Range 4 West, San Bernardino Base and Meridian. There are currently two buildings on the Project site that will be demolished prior to site preparation and grading.

Juniper Energy proposes development of a 10.3 MW_{DC} and 8.0 MW_{AC} ground mounted tracking solar photovoltaic (PV) and 6.0 MW_{AC} long duration energy storage system that will be interconnected to and send renewable electricity to the utility grid. The Project will include a racking system mechanically attached to the ground via driven steel piles.

The Project site is bordered on the north by the approved Lockhart Solar 1 facility and has a zoning designation of Resource/Land Management (RLM) in the current Countywide Plan. The implementing land use/zoning districts within the RLM designation include Rural Living (RL) (SB County 2022). As discussed in Section 3.4, the proposed use of the Project site would be compatible with the land use and zoning designations. Construction for the Project is anticipated to begin in January 2024 and anticipated to be operational in Q3 or Q4 of the same year.

2.0 AIR QUALITY SETTING

Air pollutants are regulated at the national, state, and air basin level; each agency has a different degree of control. The United States Environmental Protection Agency (USEPA) regulates at the national level; the California Air Resources Control Board (CARB) regulates at the state level; and the Mojave Desert Air Quality Management District (MDAQMD) regulates air quality in San Bernardino County.

The federal and state governments have been empowered by the federal and state Clean Air Acts to regulate the emission of airborne pollutants and have established ambient air quality standards for the protection of public health. The USEPA is the federal agency designated to administer national air quality regulations, while CARB is the state equivalent in the California Environmental Protection Agency (CalEPA). Local control over air quality management is provided by CARB through multi-county and county-level Air Pollution Control Districts (APCDs) (also referred to as Air Quality

Management Districts). CARB establishes statewide air quality standards and is responsible for the control of mobile emission sources, while the local APCDs are responsible for enforcing standards and regulating stationary sources. CARB has established 15 air basins statewide. The County of San Bernardino is located in the Mojave Desert Air Basin (MDAB), which is under the jurisdiction of the MDAQMD.

2.1 California Air Resources Board

CARB, which became part of the CalEPA in 1991, is responsible for ensuring implementation of the California Clean Air Act (CCAA), meeting state requirements of the federal Clean Air Act and establishing the California Ambient Air Quality Standards (CAAQS). It is also responsible for setting emission standards for vehicles sold in California and for other emission sources such as consumer products and certain off-road equipment. CARB also established passenger vehicle fuel specifications and oversees the functions of local air pollution control districts and air quality management districts, which in turn administer air quality activities at the regional and county level. The CCAA is administered by CARB at the state level and by the Air Quality Management Districts at the regional level. Both state and federal standards are summarized in Table 2-1 below. The federal "primary" standards have been established to protect the public health. The federal "secondary" standards are intended to protect the nation's welfare and account for air pollutant effects on soil, water, visibility, materials, vegetation, and other aspects of the general welfare.

2.2 Mojave Desert Air Quality Management District

The Project site is located in the portion of the County of San Bernardino, California, that is part of the Mojave Desert Air Basin (MDAB) and is under the jurisdiction of the MDAQMD. The air quality assessment for the proposed Project includes estimating emissions associated with short-term construction of the proposed Project. A number of air quality modeling tools are available to assess the air quality impacts of projects. In addition, certain air districts, such as the MDAQMD, have created guidelines and requirements to conduct air quality analyses. The MDAQMD's current guidelines, included in its California Environmental Quality Act and Federal Conformity Guidelines, dated February 2020 (MDAQMD 2020), were adhered to in the assessment of construction-related air quality impacts for the proposed Project.

TABLE 2-1
NATIONAL AND STATE AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Standards [1]		National Standards [2]		
		Concentration [3]	Method [4]	Primary [3,5]	Secondary [3,6]	Method [7]
Ozone (O_3)[8]	1 Hour	0.09 ppm (180 µg/m^3)	Ultraviolet Photometry	—	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m^3)		0.070 ppm (137 µg/m^3)		
Respirable Particulate Matter (PM10)[9]	24 Hour	50 µg/m^3	Gravimetric or Beta Attenuation	150 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m^3		—		
Fine Particulate Matter (PM2.5)[9]	24 Hour	—	—	35 µg/m^3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m^3	Gravimetric or Beta Attenuation	12.0 µg/m^3	15 µg/m^3	
Carbon Monoxide (CO)	1 Hour	20 ppm (23 mg/m^3)	Non-Dispersive Infrared Photometry (NDIR)	35 ppm (40 mg/m^3)	—	Non-Dispersive Infrared Photometry (NDIR)
	8 Hour	9.0 ppm (10 mg/m^3)		9 ppm (10 mg/m^3)	—	
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m^3)		—	—	
Nitrogen Dioxide (NO_2)[10]	1 Hour	0.18 ppm (339 µg/m^3)	Gas Phase Chemiluminescence	100 ppb (188 µg/m^3)	—	Gas Phase Chemiluminescence
	Annual Arithmetic Mean	0.030 ppm (57 µg/m^3)		0.053 ppm (100 µg/m^3)	Same as Primary Standard	
Sulfur Dioxide (SO_2)[11]	1 Hour	0.25 ppm (655 µg/m^3)	Ultraviolet Fluorescence	75 ppb (196 µg/m^3)	—	Ultraviolet Flourescence; Spectrophotometry (Pararosaniline Method)
	3 Hour	—		—	0.5 ppm (1300 µg/m^3)	
	24 Hour	0.04 ppm (105 µg/m^3)		0.14 ppm (for certain areas)[11]	—	
	Annual Arithmetic Mean	—		0.030 ppm (for certain areas)[11]	—	
Lead[12,13]	30 Day Average	1.5 µg/m^3	Atomic Absorption	—	—	High Volume Sampler and Atomic Absorption
	Calendar Quarter	—		1.5 µg/m^3 (for certain areas)[12]	Same as Primary Standard	
	Rolling 3-Month Average	—		0.15 µg/m^3		
Visibility Reducing Particles[14]	8 Hour	See footnote 14	Beta Attenuation and Transmittance through Filter Tape	**No National Standards**		
Sulfates	24 Hour	25 µg/m^3	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m^3)	Ultraviolet Fluorescence			
Vinyl Chloride[12]	24 Hour	0.01 ppm (26 µg/m^3)	Gas Chromatography			

See footnotes on next page ...

1. California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM10, PM2.5, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.

2. National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24 hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 $\mu g/m^3$ is equal to or less than one. For PM2.5, the 24 hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.

3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.

4. Any equivalent measurement method which can be shown to the satisfaction of the ARB to give equivalent results at or near the level of the air quality standard may be used.

5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.

6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.

7. Reference method as described by the U.S. EPA. An “equivalent method” of measurement may be used but must have a “consistent relationship to the reference method” and must be approved by the U.S. EPA.

8. On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.

9. On December 14, 2012, the national annual PM2.5 primary standard was lowered from 15 $\mu g/m^3$ to 12.0 $\mu g/m^3$. The existing national 24-hour PM2.5 standards (primary and secondary) were retained at 35 $\mu g/m^3$, as was the annual secondary standard of 15 $\mu g/m^3$. The existing 24-hour PM10 standards (primary and secondary) of 150 $\mu g/m^3$ also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.

10. To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.

11. On June 2, 2010, a new 1-hour SO_2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO_2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.

    Note that the 1-hour national standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the 1-hour national standard to the California standard the units can be converted to ppm. In this case, the national standard of 75 ppb is identical to 0.075 ppm.

12. The ARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.

13. The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 $\mu g/m^3$ as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

14. In 1989, the ARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

2.3 Air Pollutants of Concern

2.3.1 Criteria Air Pollutants

The seven criteria air pollutants regulated under the National Ambient Air Quality Standards (NAAQS) are as follows: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), respirable particulate matter (or particulate matter with an aerodynamic diameter of 10 microns or less, PM_{10}), fine particulate matter (or particulate matter with an aerodynamic diameter of 2.5 microns or less, $PM_{2.5}$), sulfur dioxide (SO_2), and lead (Pb). The U.S. EPA uses the term VOC and the CARB's Emission Inventory Branch (EIB) uses the term Reactive Organic Gases (ROG) to essentially define the same thing. Primary standards are designed to protect human health with an adequate margin of safety. Secondary standards are designed to protect property and the public welfare from air pollutants in the atmosphere. Areas that do not meet the NAAQS for a particular pollutant are considered to be “non-attainment areas” for that pollutant.

The California Air Resources Board (CARB) is the state regulatory agency with authority to enforce regulations to both achieve and maintain air quality in the state. CARB is responsible for the development, adoption, and enforcement of the state’s motor vehicle emissions program, as well as the adoption of the California Ambient Air Quality Standards (CAAQS). CARB also reviews operations and programs of the local air districts and requires each air district with jurisdiction over a non-attainment area to develop its own strategy for achieving the NAAQS and CAAQS. The California Clean Air Act of 1988 (CCAA) provides the state with the ability to adopt ambient air quality standards and other regulations provided they are at least as stringent as federal standards, or more stringent.

Through the CCAA, CARB has established the CAAQS for six criteria air pollutants also regulated by the NAAQS.

2.3.2 Toxic Air Contaminants

Toxic air contaminants (TACs) are controlled under a different regulatory process than criteria pollutants. Because no safe level of emissions can be established for TACs region-wide, the regulation of TACs is based on the levels of cancer risk and other health risks posed to persons who may be exposed. Joint federal, state and local regulations aimed at lessening public exposure to TACs are constantly revisited and updated.

Under federal law, 188 substances are listed as Hazardous Air Pollutants (HAPs) that are TACs. Major sources of specific HAPs are subject to the requirements of the National Emissions Standards for Hazardous Air Pollutants (NESHAP) program. The USEPA establishes regulatory schemes for specific source categories and requires implementation of Maximum Achievable Control Technologies (MACTs) for major sources of HAPs in each source category.

State law has established the framework for California's TAC identification and control program, which is generally more stringent than the federal program, and is aimed

at HAPs that are a concern in California. The state has formally identified more than 200 substances as TACs and has adopted appropriate control measures for each. Once adopted at the state level, each air district is required to adopt a measure that is equally or more stringent.

As an example of TAC emissions from the proposed Project, development projects generate diesel emissions from construction vehicles during the construction and operational phases. Diesel exhaust is mainly composed of particulate matter and gases.

2.3.3 Greenhouse Gases

Greenhouse Gases (GHG) are gases that trap heat in the atmosphere, analogous to the way a greenhouse retains heat. Common GHGs include water vapor, carbon dioxide (CO_2), methane (CH_4), nitrous oxides (N_2O), chlorofluorocarbons (CFCs), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF_6), and aerosols.

Individual GHGs have varying potential to contribute to global warming and atmospheric lifetimes. The effect each GHG has on climate change is measured as a combination of the mass of its emissions and the potential of a gas or aerosol to trap heat in the atmosphere, known as its global warming potential (GWP). The Intergovernmental Panel on Climate Change (IPCC) identifies the GWP and atmospheric lifetimes of basic GHGs. The CO_2 equivalent (CO_2e) is a unit used for comparing GHG emissions since it normalizes various GHG emissions to a consistent measure. The reference gas for GWP is CO_2; therefore, CO_2 has a GWP of one (1). By comparison, the GWP of CH_4 is 21 and the GWP of N_2O is 310. This means that CH_4 has a greater global warming effect than CO_2 on a molecule per molecule basis. The mass emission of CO_2e is the mass emissions of an individual GHG multiplied by its GWP.

2.3.4 Regional Air Quality

Air pollution contributes to a wide variety of adverse health effects. The United States Environmental Protection Agency (USEPA) has established NAAQS for six of the most common air pollutants: O_3, PM_{10}, $PM_{2.5}$, CO, NO_2, SO_2 and Pb which are known as criteria pollutants. The MDAQMD monitors levels of various criteria pollutants at six (6) permanent monitoring stations throughout the air district.

Attainment status for a pollutant means that the Air District meets the standards set by the USEPA or the California EPA (CalEPA). Conversely, nonattainment means that an area has monitored air quality that does not meet the NAAQS or CAAQS standards. In order to improve air quality in nonattainment areas, a State Implementation Plan (SIP) is drafted. The SIP outlines the measures that the state will take to improve air quality. Once nonattainment areas meet the standards and additional redesignation requirements, the EPA will designate the area as a maintenance area. Table 2-2 defines the attainment designations within the Mojave Desert AQMD.

TABLE 2-2
SUMMARY OF MDAQMD
FEDERAL AND STATE ATTAINMENT STATUS

Criteria Pollutant	Federal Designation	State Designation
Ozone (8-Hour)	Non-attainment*	Non-attainment
Ozone (1-Hour)	Non-Attainment*	Non-attainment
Carbon Monoxide	Attainment	Attainment
PM_{10}	Non-Attainment	Non-attainment**
$PM_{2.5}$	Non-Attainment*	Non-Attainment***
Nitrogen Dioxide	Attainment	Attainment
Sulfur Dioxide	Attainment	Attainment
Lead	Attainment	Attainment
Sulfates	No Federal Standard	Attainment
Hydrogen Sulfide	No Federal Standard	Non-attainment****
Visibility	No Federal Standard	Unclassified

* Southwest corner of desert portion of San Bernardino County only.
** San Bernardino County portion only.
*** Portion of MDAQMD outside of Western Mojave Desert Ozone Non-attainment Area is unclassifiable/attainment.
**** Searles Valley (Northwest corner of San Bernardino County) only.
Source: MDAQMD 2020.

2.3.5 Local Air Quality

Existing air quality is measured at established MDAQMD air quality monitoring stations. The purpose of the monitoring stations is to measure ambient concentrations of pollutants, including criteria pollutants, ozone precursors and TACs, and to determine whether the CAAQS and the NAAQS are met. Monitored air quality is evaluated in the context of ambient air quality standards. These standards are the levels of air quality that are considered safe, with an adequate margin of safety, to protect the public health and welfare.

Relative to the Project site, the nearest long-term air quality monitoring site for NO_2, O_3 and PM_{10} was obtained from the MDAQMD Barstow monitoring station, located approximately 18 miles southeast of the Project site. Data for $PM_{2.5}$ was obtained from the MDAQMD Victorville-Park Avenue, located approximately 35 miles South of the Project site. The most recent three (3) years of data available is shown in Table 2-3 and identifies the number of days ambient air quality standards were exceeded for the study area, which is considered to be representative of the local air quality at the Project site. Data for CO and SO_2 has been omitted as attainment is regularly met and few monitoring stations in the area measure CO or SO_2 concentrations.

TABLE 2-3
AMBIENT AIR BACKGROUND POLLUTANT
CONCENTRATIONS/EXCEEDANCES/STANDARDS

Pollutant	2019	2020	2021
Ozone (O_3)			
State maximum 1-hour concentration (ppm)	0.090	0.117	0.099
National maximum 8-hour concentration (ppm)	0.082	0.098	0.087
State maximum 8-hour concentration (ppm)	0.082	0.098	0.088
Number of Days Standard Exceeded			
CAAQS 1-hour (>0.09 ppm)	0	3	2
CAAQS 8- hour (>0.070 ppm)/NAAQS 8-hour (>0.070 ppm)	10 / 9	26 / 25	21 / 20
Respirable Particulate Matter (PM_{10})			
National maximum 24-hour concentration (µg/m^3)	209.5	213.5	372.7
State maximum 24-hour concentration (µg/m^3)	*	*	*
Annual federal average concentration (µg/m^3)	24.8	33.3	29.9
Annual or Days Standard Exceeded			
NAAQS 24-hour (>150 µg/m^3)	1	1	1
Fine Particulate Matter ($PM_{2.5}$)			
National maximum 24-hour concentration (µg/m^3)	17.8	48.4	87.1
State maximum 24-hour concentration (µg/m^3)	20.0	48.7	87.1
Annual average concentration (µg/m^3)	7.0	9.7	10.2
Annual or Days Standard Exceeded			
NAAQS 24-hour (>35 µg/m^3)/Annual (>12.0 µg/m^3)	0 / No	4	1
CAAQS Annual (>12 µg/m^3)	7	10.4	10.3
Nitrogen Dioxide (NO_2)			
National maximum 1-hour concentration (ppb)	59.8	62.8	62.4
State maximum 1-hour concentration (ppb)	59	62	62
Annual average concentration (ppb)	13	14	14

Notes:
µg/m^3 = micrograms per cubic meter; ppb = parts per billion; ppm = parts per million; N/A = Not available.
CAAQS = California Ambient Air Quality Standard; NAAQS = National Ambient Air Quality Standard.
BOLD value indicates greater than standard.
PM_{10} NO_2, and O_3 measured at the Barstow Monitoring Station (approx. 18 miles SE of the Project)
$PM_{2.5}$ measured at the Victorville Park Ave. Monitoring Station (approx. 35 miles S of the Project)
* Insufficient data available to determine the value.
In the case of an Annual standard a No or Yes response is provided.
Source: CARB 2020; https://www.arb.ca.gov/adam/topfour/topfourdisplay.php

3.0 AIR QUALITY IMPACTS

3.1 Significance Criteria Methodology

Air quality modeling was performed in general accordance with the methodologies outlined in the MDAQMD CEQA Guidelines (MDAQMD 2020) to identify construction emissions associated with the proposed Project. Emissions were calculated using the California Emissions Estimator Model (CalEEMod) software version 2020.4.0 which incorporates current air emission data, planning methods and protocol approved by CARB (CAPCOA 2022). The purpose of this model is to calculate construction-source and operational-source criteria pollutant (VOC/ROG, NO_X, CO, SO_X, PM_{10}, $PM_{2.5}$) and GHG emissions from direct and indirect sources; and quantify applicable air quality and GHG reductions achieved from best management practices and project design features. A newer version of CalEEMod, Version 2022.1, is available but is in "soft release" and subject to changes. Use of the newer version would not be expected to change the conclusions in this report. Accordingly, CalEEMod 2020.4.0 has been used for this Project to determine construction air quality emissions. Output from the model runs for construction activity are provided in Appendix A.

As referenced, construction activities would include demolition of two buildings, site preparation, grading, and construction of the buildings/utilities and related improvements. Construction activities would require the use of equipment that would generate criteria air pollutant emissions. For modeling purposes, it was assumed that all construction equipment used would be diesel-powered. Construction emissions associated with development of the proposed Project were quantified by estimating the types of equipment, including the number of individual pieces of equipment, that would be used on-site during each of the construction phases. Construction emissions are analyzed using the regional thresholds established by the MDAQMD. Operational emissions were not included in this analysis.

3.1.1 Determination of Significance

The criteria used to determine the significance of potential Project-related air quality impacts are taken from the MDAQMD CEQA and Federal Conformity Guidelines (MDAQMD 2020). Based on these thresholds, a project would result in a significant impact related to air quality if it would (referred to herein as MD thresholds 1 through 4):

1) *Generates total emissions (direct and indirect) in excess of the thresholds (shown below in Table 3-1).*
2) *Generates a violation of any ambient air quality standard when added to the local background.*
3) *Does not conform with the applicable attainment or maintenance plan(s).*
4) *Exposes sensitive receptors to substantial pollutant concentrations, including those resulting in a cancer risk greater than or equal to 10 in a million and/or a Hazard Index (HI) (non-cancerous) greater than or equal to 1.*

In addition, the MDAQMD CEQA Guidelines state that the District will clarify upon request which threshold is most appropriate for a given project, but in general, the emissions comparison to the thresholds is sufficient to define significance.

3.1.2 Significance Thresholds

The MDAQMD has developed regional significance thresholds for regulated pollutants, shown below in Table 3-1. The MDAQMD's Guidelines indicate that any projects in the MDAB with daily regional emissions that exceed any of the indicated thresholds may be considered as having an individually and cumulatively significant air quality impact. The daily construction and operational emission thresholds for pollutants evaluated are as follows:

TABLE 3-1
SIGNIFICANT EMISSIONS THRESHOLDS

Criteria Pollutant	Annual Threshold (tons)	Daily Threshold (pounds)
Carbon Monoxide (CO)	100	548
Oxides of Nitrogen (NO_x)	25	137
Volatile Organic Compounds (VOC)	25	137
Sulfur Oxides (SO_x)	25	137
Particulate Matter (PM_{10})	15	82
Particulate Matter ($PM_{2.5}$)	12	65

3.2 Construction Emissions

Project construction would generate temporary air pollutant emissions. These impacts are associated with fugitive dust (PM_{10} and $PM_{2.5}$) from soil disturbance and exhaust emissions (NO_x and CO) from heavy construction vehicles. For the purpose of estimating emissions, it was assumed that 53 acres within the parcel would be disturbed and graded for overall site development. No haul trips are expected because import or export of soils will not be required to achieve final grades. Construction phases would generally consist of demolition, site preparation and grading, and construction of the solar PV energy storage system and the associated racking system.

Construction is anticipated to begin in January 2024, with completion in Q3 or Q4 of the same year. Construction duration by phase is shown in Table 3-2. The duration of construction activity and associated equipment represents a reasonable approximation of the expected construction fleet as required per CEQA Guidelines. Site specific construction fleet may vary due to specific Project needs at the time of construction.

TABLE 3-2
CONSTRUCTION SCHEDULE AND DURATION

Phase Name	Start Date	End Date	Days
Demolition	01/01/24	01/05/24	5
Site Preparation	01/08/24	01/12/24	5
Grading	01/15/24	02/02/24	15
Building Construction	02/05/24	05/06/24	66

Grading and building construction would involve the greatest concentration of heavy equipment use and the highest potential for fugitive dust emissions. The Project would be required to comply with MDAQMD Rule 403, Fugitive Dust Control (Amended 10/28/20), which identifies fugitive dust standards and is required to be implemented at any project with a disturbed surface area of at least 20 acres, or at non-residential construction/demolition sites with a disturbed surface area of at least 5 acres. Therefore, the following conditions, which generally reduce fugitive dust emissions, were included in CalEEMod for grading and building construction phases of construction. In addition to these conditions, the Project will be required to obtain a MDAQMD approved Dust Control Plan. The following are conditions for construction/demolition activities, defined in Rule 403(C)(6):

a) Obtain and maintain a District-approved Dust Control Plan as set forth by Section (D) of the Rule;

b) Use periodic watering for short-term stabilization of Disturbed Surface Area to minimize visible fugitive dust emissions. For the purposes of this Rule, use of a water truck to maintain moist disturbed surfaces and actively spread water during visible dusting episodes shall be considered sufficient to maintain compliance;

c) Take actions sufficient to prevent Project-related Trackout onto paved surfaces;

d) Cover loaded haul vehicles while operating on Publicly Maintained paved surfaces;

e) Stabilize graded site surfaces upon completion of grading when subsequent development is delayed or expected to be delayed more than thirty days, except when such delay is due to precipitation that dampens the disturbed surface sufficiently to eliminate Visible Fugitive Dust emissions;

f) Cleanup Project-related Trackout or spills on Publicly Maintained paved surfaces within twenty-four hours;

g) Reduce non-essential Earth-Moving Activity under High Wind conditions. For purposes of this Rule, a reduction in Earth-Moving Activity when visible dusting occurs from moist and dry surfaces due to wind erosion shall be considered sufficient to maintain compliance;

h) Maintain the natural topography to the extent possible during grading and other earth movement;

i) Provide a construction schedule that specifies construction of parking lots and paved roads first, where feasible, and upwind structures prior to downwind structures;

j) Cover or otherwise contain Bulk Material carried on haul trucks operating on paved roads; and

k) Remove Bulk Material tracked onto paved road surfaces.

In addition, per Rule 403(C)(7), a construction/demolition source disturbing more than 10 or more acres shall:

a. Provide Stabilized access route(s) to the Project site as soon as feasible. For purposed of this Rule, as soon as feasible shall mean prior to the completion of Construction/Demolition activity.

b. Maintain natural topography to the extent possible;

c. Construct parking lots and paved roads first, where feasible; and

d. Construct upwind portions of Project first, where feasible.

Further, per Rule 403(C)(9) an Owner/Operator of any Solar Project subject to this Rule shall:

a. Obtain and maintain a District-approved Dust Control Plan; and

b. Not cause or allow PM_{10} to exceed 100 micrograms per cubic meter when determined using upwind and downwind samples collected on federal reference method samplers at the property line for more than four (4) hours in any consecutive 24 hours, except during High Winds.

In addition to MDAQMD Rule 403 conditions above, emissions modeling also includes the use of low-VOC paint (50 g/L for construction for any interior and exterior coatings, with 100 g/L for parking lot paint) as required by MDAQMD Rule 1113.

3.2.1 Construction Emissions Summary

Table 3-3 summarizes the Project maximum daily construction emissions, including dust control measures. Based on the emissions shown, construction of the proposed Project would not exceed the MDAQMD regional construction emission thresholds for daily emissions. Thus, the Project construction would not violate an air quality standard or result in a cumulatively considerable increase in ozone or particulate matter emissions or expose receptors to substantial pollutant concentrations (MD thresholds 1 and 2).

TABLE 3-3 MAXIMUM DAILY CONSTRUCTION EMISSIONS WITH CONTROL MEASURES						
	Maximum Emissions (lbs/day)					
	VOC	NO_x	CO	SO_2	PM_{10}	$PM_{2.5}$
Summer Daily Maximum	6.10	32.3	63.8	0.211	15.7	4.87
Winter Daily Maximum	5.98	33.1	57.1	0.201	15.7	4.87
Significance Thresholds	*13*	*137*	*548*	*137*	*82*	*65*
Threshold Exceeded?	No	No	No	No	No	No

See *Appendix for CalEEMod ver. 2020.4.0 computer model output for daily construction emissions.*

Table 3-4 summarizes the Project maximum annual construction emissions, including dust control measures. Based on the emissions shown, construction of the proposed Project would not exceed the MDAQMD regional construction emission thresholds for annual emissions. Thus, the Project construction would not violate an air quality standard or result in a cumulatively considerable increase in ozone or particulate matter emissions or expose receptors to substantial pollutant concentrations (MD thresholds 1 and 2).

TABLE 3-4 MAXIMUM ANNUAL CONSTRUCTION EMISSIONS WITH CONTROL MEASURES						
	Maximum Emissions (tons/year)					
	VOC	NO_x	CO	SO_2	PM_{10}	$PM_{2.5}$
Annual Maximum	0.206	1.27	2.03	0.007	0.548	0.177
Significance Thresholds	*25*	*25*	*100*	*25*	*15*	*12*
Threshold Exceeded?	No	No	No	No	No	No

See *Appendix for CalEEMod ver. 2020.4.0 computer model output for annual construction emissions.*

3.3 Objectionable Odors

The proposed Project would involve the use of diesel-powered construction equipment. Diesel exhaust may be noticeable temporarily at adjacent properties; however, construction activities would be temporary. The Project does not include industrial or agricultural uses that are typically associated with objectionable odors. Therefore, impacts associated with objectionable odors would be less than significant.

3.4 Conformance with Plans

The Federal Particulate Matter Attainment Plan and Ozone Attainment Plan for the Mojave Desert set forth a comprehensive set of programs that will lead the MDAB into compliance with federal and state air quality standards. The control measures and related emission reduction estimates within the Federal Particulate Matter Attainment Plan and Ozone Attainment Plan are based upon emissions projections for a future development scenario derived from land use, population, and employment characteristics defined in consultation with local governments. Accordingly, conformance with these attainment plans for development projects is determined by demonstrating compliance with Air Quality Management Plans (AQMPs).

Growth projections included in the AQMPs form the basis for the projections of air pollutant emissions and are based on general plan land use designations and the Southern California Association of Governments (SCAG) 2016–2040 Regional Transportation Plan/Sustainable Communities Strategy (2016-2040 RTP/SCS) demographics forecasts (SCAG 2017). While SCAG has recently adopted the 2020-2045 RTP/SCS, the MDAQMD has not released an updated AQMP that utilizes information from the 2020-2045 RTP/SCS. As such, this consistency analysis is based off the 2016-2040 RTP/SCS. The population, housing, and employment forecasts within the 2016-2040 RTP/SCS are based on local general plans as well as input from local governments, such as the County. The MDAQMD has incorporated these same demographic growth forecasts for various socioeconomic categories (e.g., population, housing, employment) into the AQMPs.

When the 2016-2040 RTP/SCS was adopted, the property likely was designated Resource Conservation (RC). Solar generation facilities are allowed under the current land use designation and was allowed under the RC land use designation. However, the zoning is expected to be changed to RC with Board approval of an upcoming County-initiated Zoning ordinance and map update. In the event the Project is considered prior to the adoption of the County-initiated zoning ordinance and map update, the Project has requested a site-specific zone change for the Project Site from RL to RC. The RC land use zoning district provides sites for open space and recreational activities, single-family homes on very large parcels and similar and compatible uses. Utility scale Renewable Energy Facilities are allowed in this zone. Solar generation facilities are permitted under the RC zone upon approval of a Conditional Use Permit (CUP). The Project would therefore conform to local use plans (MD threshold 3).

The Project would be required to comply with all applicable MDAQMD Rules and Regulations, including, but not limited to Rules 401 (Visible Emissions), 402 (Nuisance), 403 (Fugitive Dust), and Rule 1113 (Architectural Coatings).

Since the Project would conform to local land use plans and would comply with all applicable MDAQMD Rules and Regulations, impacts related to MD threshold 3 would be less than significant.

4.0 GREENHOUSE GAS IMPACTS

4.1 Significance Criteria Methodology

The Project has been evaluated to determine if it will result in a significant GHG impact. Land uses such as the Project affect GHGs through construction-source and operational-source emissions, which were defined in detail in Section 3.0.

The significance of these potential impacts is described in the following section.

4.1.1 Determination of Significance

The criteria used to determine the significance of potential Project-related GHG impacts are taken from MDAQMD's CEQA guidelines, which bases their significance criteria on the Initial Study Checklist in Appendix G of the State CEQA Guidelines. Based on these thresholds, a project would result in a significant impact related to GHG if it would (MDAQMD 2020):

1) *Generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?*

2) *Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of GHGs?*

4.1.2 Significance Thresholds

The MDAQMD has established 100,000 tons of CO_2e per year or 548,000 pounds per day as the District's significant emissions threshold for greenhouse gases.

4.2 Construction Emissions

Project construction activities would generate CO_2, CH_4, and N_2O emissions. As discussed in Section 3.0, construction-related emissions are expected mainly from the exhaust of heavy construction vehicles.

4.2.1 Construction Emissions Summary

The construction emissions are presented in Table 4-1. As shown in Table 4-1, the Project would result in 21,958 lbs CO_2e per day and 725.2 tons CO_2e per year, without accounting for applicable regulatory requirements and renewable energy. GHG emission impacts before regulatory requirements are well below the MDAQMD significance thresholds.

TABLE 4-1
CONSTRUCTION GHG EMISSIONS

	GHG Emissions			
	CO_2	CH_4	N_2O	CO_2e
Maximum Daily Construction Total (lb CO_2e/day)	21,543	1.62	1.25	21,958
Daily Construction Total (lb CO_2e/day)	21,958			
Significance Threshold (lb CO_2e/day)	548,000			
Annual Construction Total ($MTCO_2e$/year)	645.1	0.056	0.038	657.9
Total ($MTCO_2e$/year)	657.9			
Total (tons CO_2e/year)	725.2			
Significance Threshold (tons/year)	100,000			

See Appendix A for CalEEMod ver. 2020.4.0 computer model output for daily and annual construction emissions.

4.3 Conformance with Plans

In March 2021, San Bernardino County adopted a Regional GHG Reduction Plan (RGHGRP), which provides a framework for attaining SB 32 GHG reduction goals. The RGHGRP recommends general GHG reduction measures and jurisdiction-specific measures, including those for unincorporated areas of the county. Unincorporated San Bernardino selected a goal to reduce its community GHG emissions to a level that is 40% below its 2020 GHG emissions level by 2030. Approximately 80% of this reduction goal will be achieved through state efforts and the remaining 20% through local efforts. Of the ten local measures selected by unincorporated San Bernardino, two apply to the Lockhart 2 Solar Project. GHG reduction measure Water-3 encourages water-efficient landscaping practices and Waste-2 encourages increased waste diversion reduction as applicable. The proposed Project would be consistent with applicable portions of the RGHGRP.

The Project's consistency with SB 32 (2017 Scoping Plan) has also been reviewed (CARB 2017). It should be noted that the Project's consistency with the 2017 Scoping Plan also satisfies consistency with AB 32 since the 2017 Scoping Plan is based on the overall targets established by AB 32. Consistency with the 2008 Scoping Plan is not necessary, since the target year for the 2008 Scoping Plan was 2020, and the Project's buildout year is 2024. As such the 2008 Scoping Plan does not apply and consistency with the 2017 Scoping Plan is relevant. The 2017 Scoping Plan Update reflects the 2030 target of a 40% reduction below 1990 levels, set by Executive Order B-30-15 and codified by SB 32. The Project would not conflict with any of the 2017 Scoping Plan elements as any regulations adopted would apply directly or indirectly

to the Project. Therefore, the proposed Project would result in a less than significant impact with respect to GHG emissions for GHG Impact #2.

5.0 FINDINGS AND CONCLUSIONS

The construction air quality impacts evaluation presented in the preceding analysis demonstrates that Project short-term emissions from construction of the Project are below all applicable MDAQMD daily and annual thresholds of significance. Therefore, emissions from Project construction are considered less than significant.

6.0 REFERENCES

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SCAQMD 2008. *Interim CEQA GHG Significance Threshold for Stationary Sources, Rules and Plans,* South Coast Air Quality Management District, 2008. Available at: http://www.aqmd.gov/home/rules-compliance/ceqa/air-quality-analysis-handbook/ghg-significance-thresholds

APPENDIX A

CALEEMOD AIR EMISSION MODEL RESULTS

Daily Summer Emissions for Construction
Daily Winter Emissions for Construction
Annual Emissions for Construction

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Lockhart 2 Solar PV Project

San Bernardino-Mojave Desert County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	53.00	Acre	53.00	2,308,680.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	32
Climate Zone	10			**Operational Year**	2024
Utility Company	Statewide Average				
CO2 Intensity (lb/MWhr)	453.21	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Construction scheduled per client info.

Off-road Equipment - Per client info

Off-road Equipment - Per client info.

Off-road Equipment - Per client info

Off-road Equipment - per client info.

Demolition - Two structures as measured on google earth

Grading - Grading is the same as site acres.

Consumer Products - Per proposal, operational emissions are not being calculated

Area Coating - Per proposal, operational emissions are not being calculated

Landscape Equipment - Per proposal, operational emissions are not being calculated

Lockhart 2 Solar PV Project - San Bernardino-Mojave Desert County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Energy Use - Per proposal, operational emissions are not being calculated

Land Use Change -

Sequestration -

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	1,110.00	66.00
tblConstructionPhase	NumDays	70.00	5.00
tblConstructionPhase	NumDays	110.00	15.00
tblConstructionPhase	NumDays	40.00	5.00
tblConstructionPhase	PhaseEndDate	2/2/2029	5/6/2024
tblConstructionPhase	PhaseEndDate	4/5/2024	1/5/2024
tblConstructionPhase	PhaseEndDate	11/1/2024	2/2/2024
tblConstructionPhase	PhaseEndDate	5/31/2024	1/12/2024
tblConstructionPhase	PhaseStartDate	11/2/2024	2/5/2024
tblConstructionPhase	PhaseStartDate	6/1/2024	1/15/2024
tblConstructionPhase	PhaseStartDate	4/6/2024	1/8/2024
tblGrading	AcresOfGrading	22.50	53.00
tblOffRoadEquipment	LoadFactor	0.50	0.50
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.50	0.50
tblOffRoadEquipment	OffRoadEquipmentType		Dumpers/Tenders
tblOffRoadEquipment	OffRoadEquipmentType		Dumpers/Tenders
tblOffRoadEquipment	OffRoadEquipmentType		Bore/Drill Rigs
tblOffRoadEquipment	OffRoadEquipmentType		Plate Compactors
tblOffRoadEquipment	OffRoadEquipmentType		Dumpers/Tenders
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Dumpers/Tenders
tblOffRoadEquipment	OffRoadEquipmentType		Trenchers

Lockhart 2 Solar PV Project - San Bernardino-Mojave Desert County, Summer

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural

2.0 Emissions Summary

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2024	6.1020	32.2634	63.8207	0.2112	14.7067	0.9887	15.6954	3.9529	0.9158	4.8687	0.0000	21,543.4852	21,543.4852	1.6215	1.2543	21,957.8144
Maximum	**6.1020**	**32.2634**	**63.8207**	**0.2112**	**14.7067**	**0.9887**	**15.6954**	**3.9529**	**0.9158**	**4.8687**	**0.0000**	**21,543.4852**	**21,543.4852**	**1.6215**	**1.2543**	**21,957.8144**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2024	6.1020	32.2634	63.8207	0.2112	14.7067	0.9887	15.6954	3.9529	0.9158	4.8687	0.0000	21,543.4852	21,543.4852	1.6215	1.2543	21,957.8144
Maximum	**6.1020**	**32.2634**	**63.8207**	**0.2112**	**14.7067**	**0.9887**	**15.6954**	**3.9529**	**0.9158**	**4.8687**	**0.0000**	**21,543.4852**	**21,543.4852**	**1.6215**	**1.2543**	**21,957.8144**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.2580	5.0000e-005	5.4000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0116	0.0116	3.0000e-005		0.0124
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.2580**	**5.0000e-005**	**5.4000e-003**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**2.0000e-005**		**0.0116**	**0.0116**	**3.0000e-005**	**0.0000**	**0.0124**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.2580	5.0000e-005	5.4000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0116	0.0116	3.0000e-005		0.0124
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.2580**	**5.0000e-005**	**5.4000e-003**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**2.0000e-005**		**0.0116**	**0.0116**	**3.0000e-005**	**0.0000**	**0.0124**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2024	1/5/2024	5	5	
2	Site Preparation	Site Preparation	1/8/2024	1/12/2024	5	5	
3	Grading	Grading	1/15/2024	2/2/2024	5	15	
4	Building Construction	Building Construction	2/5/2024	5/6/2024	5	66	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 53

Acres of Paving: 53

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Dumpers/Tenders	1	8.00	16	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Dumpers/Tenders	2	8.00	16	0.38
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Building Construction	Bore/Drill Rigs	1	8.00	221	0.50
Grading	Graders	2	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Grading	Plate Compactors	2	8.00	8	0.43
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Dumpers/Tenders	2	8.00	16	0.38
Building Construction	Excavators	2	8.00	158	0.38
Building Construction	Forklifts	2	8.00	89	0.20
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Demolition	Dumpers/Tenders	1	8.00	16	0.38
Building Construction	Trenchers	1	8.00	78	0.50

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	3	8.00	0.00	16.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	5	13.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Grading	7	18.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	11	970.00	378.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.6977	0.0000	0.6977	0.1057	0.0000	0.1057			0.0000			0.0000
Off-Road	1.4636	14.7199	6.5131	0.0178		0.6596	0.6596		0.6082	0.6082		1,714.9023	1,714.9023	0.5415		1,728.4390
Total	**1.4636**	**14.7199**	**6.5131**	**0.0178**	**0.6977**	**0.6596**	**1.3572**	**0.1057**	**0.6082**	**0.7139**		**1,714.9023**	**1,714.9023**	**0.5415**		**1,728.4390**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.6400e-003	0.3531	0.1075	1.7700e-003	0.0560	3.6500e-003	0.0597	0.0154	3.5000e-003	0.0189		192.4926	192.4926	8.1200e-003	0.0305	201.7874
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0314	0.0186	0.3148	8.8000e-004	0.1022	4.8000e-004	0.1027	0.0271	4.4000e-004	0.0275		89.3440	89.3440	1.9000e-003	1.9700e-003	89.9790
Total	**0.0390**	**0.3717**	**0.4223**	**2.6500e-003**	**0.1582**	**4.1300e-003**	**0.1624**	**0.0425**	**3.9400e-003**	**0.0464**		**281.8366**	**281.8366**	**0.0100**	**0.0325**	**291.7664**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.2721	0.0000	0.2721	0.0412	0.0000	0.0412			0.0000			0.0000
Off-Road	1.4636	14.7199	6.5131	0.0178		0.6596	0.6596		0.6082	0.6082	0.0000	1,714.9023	1,714.9023	0.5415		1,728.4390
Total	**1.4636**	**14.7199**	**6.5131**	**0.0178**	**0.2721**	**0.6596**	**0.9317**	**0.0412**	**0.6082**	**0.6494**	**0.0000**	**1,714.9023**	**1,714.9023**	**0.5415**		**1,728.4390**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.6400e-003	0.3531	0.1075	1.7700e-003	0.0560	3.6500e-003	0.0597	0.0154	3.5000e-003	0.0189		192.4926	192.4926	8.1200e-003	0.0305	201.7874
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0314	0.0186	0.3148	8.8000e-004	0.1022	4.8000e-004	0.1027	0.0271	4.4000e-004	0.0275		89.3440	89.3440	1.9000e-003	1.9700e-003	89.9790
Total	**0.0390**	**0.3717**	**0.4223**	**2.6500e-003**	**0.1582**	**4.1300e-003**	**0.1624**	**0.0425**	**3.9400e-003**	**0.0464**		**281.8366**	**281.8366**	**0.0100**	**0.0325**	**291.7664**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Site Preparation - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.6492	6.2575	9.1933	0.0132		0.2831	0.2831		0.2619	0.2619		1,268.0073	1,268.0073	0.3969		1,277.9306
Total	**0.6492**	**6.2575**	**9.1933**	**0.0132**	**0.0000**	**0.2831**	**0.2831**	**0.0000**	**0.2619**	**0.2619**		**1,268.0073**	**1,268.0073**	**0.3969**		**1,277.9306**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0510	0.0303	0.5116	1.4400e-003	0.1661	7.8000e-004	0.1668	0.0440	7.1000e-004	0.0448		145.1840	145.1840	3.0900e-003	3.2000e-003	146.2158
Total	**0.0510**	**0.0303**	**0.5116**	**1.4400e-003**	**0.1661**	**7.8000e-004**	**0.1668**	**0.0440**	**7.1000e-004**	**0.0448**		**145.1840**	**145.1840**	**3.0900e-003**	**3.2000e-003**	**146.2158**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Site Preparation - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.6492	6.2575	9.1933	0.0132		0.2831	0.2831		0.2619	0.2619	0.0000	1,268.0073	1,268.0073	0.3969		1,277.9306
Total	**0.6492**	**6.2575**	**9.1933**	**0.0132**	**0.0000**	**0.2831**	**0.2831**	**0.0000**	**0.2619**	**0.2619**	**0.0000**	**1,268.0073**	**1,268.0073**	**0.3969**		**1,277.9306**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0510	0.0303	0.5116	1.4400e-003	0.1661	7.8000e-004	0.1668	0.0440	7.1000e-004	0.0448		145.1840	145.1840	3.0900e-003	3.2000e-003	146.2158
Total	**0.0510**	**0.0303**	**0.5116**	**1.4400e-003**	**0.1661**	**7.8000e-004**	**0.1668**	**0.0440**	**7.1000e-004**	**0.0448**		**145.1840**	**145.1840**	**3.0900e-003**	**3.2000e-003**	**146.2158**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Grading - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.7692	0.0000	9.7692	3.7148	0.0000	3.7148			0.0000			0.0000
Off-Road	1.6314	16.8707	7.3668	0.0242		0.6448	0.6448		0.5975	0.5975		2,298.8354	2,298.8354	0.7020		2,316.3856
Total	**1.6314**	**16.8707**	**7.3668**	**0.0242**	**9.7692**	**0.6448**	**10.4140**	**3.7148**	**0.5975**	**4.3123**		**2,298.8354**	**2,298.8354**	**0.7020**		**2,316.3856**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0706	0.0419	0.7083	1.9900e-003	0.2299	1.0700e-003	0.2310	0.0610	9.9000e-004	0.0620		201.0240	201.0240	4.2700e-003	4.4400e-003	202.4527
Total	**0.0706**	**0.0419**	**0.7083**	**1.9900e-003**	**0.2299**	**1.0700e-003**	**0.2310**	**0.0610**	**9.9000e-004**	**0.0620**		**201.0240**	**201.0240**	**4.2700e-003**	**4.4400e-003**	**202.4527**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Grading - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.8100	0.0000	3.8100	1.4488	0.0000	1.4488			0.0000			0.0000
Off-Road	1.6314	16.8707	7.3668	0.0242		0.6448	0.6448		0.5975	0.5975	0.0000	2,298.8354	2,298.8354	0.7020		2,316.3856
Total	**1.6314**	**16.8707**	**7.3668**	**0.0242**	**3.8100**	**0.6448**	**4.4547**	**1.4488**	**0.5975**	**2.0463**	**0.0000**	**2,298.8354**	**2,298.8354**	**0.7020**		**2,316.3856**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0706	0.0419	0.7083	1.9900e-003	0.2299	1.0700e-003	0.2310	0.0610	9.9000e-004	0.0620		201.0240	201.0240	4.2700e-003	4.4400e-003	202.4527
Total	**0.0706**	**0.0419**	**0.7083**	**1.9900e-003**	**0.2299**	**1.0700e-003**	**0.2310**	**0.0610**	**9.9000e-004**	**0.0620**		**201.0240**	**201.0240**	**4.2700e-003**	**4.4400e-003**	**202.4527**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.8705	17.0023	20.2428	0.0399		0.8368	0.8368		0.7726	0.7726		3,836.5625	3,836.5625	1.2145		3,866.9247
Total	**1.8705**	**17.0023**	**20.2428**	**0.0399**		**0.8368**	**0.8368**		**0.7726**	**0.7726**		**3,836.5625**	**3,836.5625**	**1.2145**		**3,866.9247**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.4261	13.0029	5.4086	0.0641	2.3169	0.0940	2.4108	0.6672	0.0899	0.7571		6,873.9645	6,873.9645	0.1767	1.0153	7,180.9415
Worker	3.8054	2.2581	38.1692	0.1072	12.3899	0.0579	12.4478	3.2857	0.0533	3.3390		10,832.9581	10,832.9581	0.2303	0.2390	10,909.9482
Total	**4.2315**	**15.2610**	**43.5779**	**0.1713**	**14.7067**	**0.1519**	**14.8586**	**3.9529**	**0.1432**	**4.0960**		**17,706.9226**	**17,706.9226**	**0.4070**	**1.2543**	**18,090.8897**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Building Construction - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.8705	17.0023	20.2428	0.0399		0.8368	0.8368		0.7726	0.7726	0.0000	3,836.5625	3,836.5625	1.2145		3,866.9247
Total	**1.8705**	**17.0023**	**20.2428**	**0.0399**		**0.8368**	**0.8368**		**0.7726**	**0.7726**	**0.0000**	**3,836.5625**	**3,836.5625**	**1.2145**		**3,866.9247**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.4261	13.0029	5.4086	0.0641	2.3169	0.0940	2.4108	0.6672	0.0899	0.7571		6,873.9645	6,873.9645	0.1767	1.0153	7,180.9415
Worker	3.8054	2.2581	38.1692	0.1072	12.3899	0.0579	12.4478	3.2857	0.0533	3.3390		10,832.9581	10,832.9581	0.2303	0.2390	10,909.9482
Total	**4.2315**	**15.2610**	**43.5779**	**0.1713**	**14.7067**	**0.1519**	**14.8586**	**3.9529**	**0.1432**	**4.0960**		**17,706.9226**	**17,706.9226**	**0.4070**	**1.2543**	**18,090.8897**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Non-Asphalt Surfaces	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Non-Asphalt Surfaces	0.540566	0.056059	0.172680	0.136494	0.026304	0.007104	0.011680	0.017449	0.000554	0.000251	0.025076	0.000954	0.004830

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.2580	5.0000e-005	5.4000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0116	0.0116	3.0000e-005		0.0124
Unmitigated	1.2580	5.0000e-005	5.4000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0116	0.0116	3.0000e-005		0.0124

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.4398					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.8177					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	5.0000e-004	5.0000e-005	5.4000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0116	0.0116	3.0000e-005		0.0124
Total	**1.2580**	**5.0000e-005**	**5.4000e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**		**0.0116**	**0.0116**	**3.0000e-005**		**0.0124**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.4398					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.8177					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	5.0000e-004	5.0000e-005	5.4000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0116	0.0116	3.0000e-005		0.0124
Total	**1.2580**	**5.0000e-005**	**5.4000e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**		**0.0116**	**0.0116**	**3.0000e-005**		**0.0124**

7.0 Water Detail

7.1 Mitigation Measures Water

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Lockhart 2 Solar PV Project

San Bernardino-Mojave Desert County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	53.00	Acre	53.00	2,308,680.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	32
Climate Zone	10			**Operational Year**	2024
Utility Company	Statewide Average				
CO2 Intensity (lb/MWhr)	453.21	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Construction scheduled per client info.

Off-road Equipment - Per client info

Off-road Equipment - Per client info.

Off-road Equipment - Per client info

Off-road Equipment - per client info.

Demolition - Two structures as measured on google earth

Grading - Grading is the same as site acres.

Consumer Products - Per proposal, operational emissions are not being calculated

Area Coating - Per proposal, operational emissions are not being calculated

Landscape Equipment - Per proposal, operational emissions are not being calculated

Lockhart 2 Solar PV Project - San Bernardino-Mojave Desert County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Energy Use - Per proposal, operational emissions are not being calculated

Land Use Change -

Sequestration -

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	1,110.00	66.00
tblConstructionPhase	NumDays	70.00	5.00
tblConstructionPhase	NumDays	110.00	15.00
tblConstructionPhase	NumDays	40.00	5.00
tblConstructionPhase	PhaseEndDate	2/2/2029	5/6/2024
tblConstructionPhase	PhaseEndDate	4/5/2024	1/5/2024
tblConstructionPhase	PhaseEndDate	11/1/2024	2/2/2024
tblConstructionPhase	PhaseEndDate	5/31/2024	1/12/2024
tblConstructionPhase	PhaseStartDate	11/2/2024	2/5/2024
tblConstructionPhase	PhaseStartDate	6/1/2024	1/15/2024
tblConstructionPhase	PhaseStartDate	4/6/2024	1/8/2024
tblGrading	AcresOfGrading	22.50	53.00
tblOffRoadEquipment	LoadFactor	0.50	0.50
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.50	0.50
tblOffRoadEquipment	OffRoadEquipmentType		Dumpers/Tenders
tblOffRoadEquipment	OffRoadEquipmentType		Dumpers/Tenders
tblOffRoadEquipment	OffRoadEquipmentType		Bore/Drill Rigs
tblOffRoadEquipment	OffRoadEquipmentType		Plate Compactors
tblOffRoadEquipment	OffRoadEquipmentType		Dumpers/Tenders
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Dumpers/Tenders
tblOffRoadEquipment	OffRoadEquipmentType		Trenchers

Lockhart 2 Solar PV Project - San Bernardino-Mojave Desert County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural

2.0 Emissions Summary

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2024	5.9774	33.1114	57.0711	0.2012	14.7067	0.9891	15.6958	3.9529	0.9162	4.8690	0.0000	20,542.8294	20,542.8294	1.6184	1.2651	20,960.2821
Maximum	**5.9774**	**33.1114**	**57.0711**	**0.2012**	**14.7067**	**0.9891**	**15.6958**	**3.9529**	**0.9162**	**4.8690**	**0.0000**	**20,542.8294**	**20,542.8294**	**1.6184**	**1.2651**	**20,960.2821**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2024	5.9774	33.1114	57.0711	0.2012	14.7067	0.9891	15.6958	3.9529	0.9162	4.8690	0.0000	20,542.8294	20,542.8294	1.6184	1.2651	20,960.2821
Maximum	**5.9774**	**33.1114**	**57.0711**	**0.2012**	**14.7067**	**0.9891**	**15.6958**	**3.9529**	**0.9162**	**4.8690**	**0.0000**	**20,542.8294**	**20,542.8294**	**1.6184**	**1.2651**	**20,960.2821**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.2580	5.0000e-005	5.4000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0116	0.0116	3.0000e-005		0.0124
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.2580**	**5.0000e-005**	**5.4000e-003**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**2.0000e-005**		**0.0116**	**0.0116**	**3.0000e-005**	**0.0000**	**0.0124**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.2580	5.0000e-005	5.4000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0116	0.0116	3.0000e-005		0.0124
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total	**1.2580**	**5.0000e-005**	**5.4000e-003**	**0.0000**	**0.0000**	**2.0000e-005**	**2.0000e-005**	**0.0000**	**2.0000e-005**	**2.0000e-005**		**0.0116**	**0.0116**	**3.0000e-005**	**0.0000**	**0.0124**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2024	1/5/2024	5	5	
2	Site Preparation	Site Preparation	1/8/2024	1/12/2024	5	5	
3	Grading	Grading	1/15/2024	2/2/2024	5	15	
4	Building Construction	Building Construction	2/5/2024	5/6/2024	5	66	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 53

Acres of Paving: 53

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Dumpers/Tenders	1	8.00	16	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Dumpers/Tenders	2	8.00	16	0.38
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Building Construction	Bore/Drill Rigs	1	8.00	221	0.50
Grading	Graders	2	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Grading	Plate Compactors	2	8.00	8	0.43
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Dumpers/Tenders	2	8.00	16	0.38
Building Construction	Excavators	2	8.00	158	0.38
Building Construction	Forklifts	2	8.00	89	0.20
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Demolition	Dumpers/Tenders	1	8.00	16	0.38
Building Construction	Trenchers	1	8.00	78	0.50

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	3	8.00	0.00	16.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	5	13.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Grading	7	18.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	11	970.00	378.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.6977	0.0000	0.6977	0.1057	0.0000	0.1057			0.0000			0.0000
Off-Road	1.4636	14.7199	6.5131	0.0178		0.6596	0.6596		0.6082	0.6082		1,714.9023	1,714.9023	0.5415		1,728.4390
Total	**1.4636**	**14.7199**	**6.5131**	**0.0178**	**0.6977**	**0.6596**	**1.3572**	**0.1057**	**0.6082**	**0.7139**		**1,714.9023**	**1,714.9023**	**0.5415**		**1,728.4390**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.0600e-003	0.3722	0.1094	1.7700e-003	0.0560	3.6600e-003	0.0597	0.0154	3.5000e-003	0.0189		192.7852	192.7852	8.0900e-003	0.0306	202.0931
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0306	0.0196	0.2577	8.0000e-004	0.1022	4.8000e-004	0.1027	0.0271	4.4000e-004	0.0275		80.9469	80.9469	1.8900e-003	2.0300e-003	81.6000
Total	**0.0377**	**0.3918**	**0.3671**	**2.5700e-003**	**0.1582**	**4.1400e-003**	**0.1624**	**0.0425**	**3.9400e-003**	**0.0464**		**273.7321**	**273.7321**	**9.9800e-003**	**0.0326**	**283.6932**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.2721	0.0000	0.2721	0.0412	0.0000	0.0412			0.0000			0.0000
Off-Road	1.4636	14.7199	6.5131	0.0178		0.6596	0.6596		0.6082	0.6082	0.0000	1,714.9023	1,714.9023	0.5415		1,728.4390
Total	**1.4636**	**14.7199**	**6.5131**	**0.0178**	**0.2721**	**0.6596**	**0.9317**	**0.0412**	**0.6082**	**0.6494**	**0.0000**	**1,714.9023**	**1,714.9023**	**0.5415**		**1,728.4390**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	7.0600e-003	0.3722	0.1094	1.7700e-003	0.0560	3.6600e-003	0.0597	0.0154	3.5000e-003	0.0189		192.7852	192.7852	8.0900e-003	0.0306	202.0931
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0306	0.0196	0.2577	8.0000e-004	0.1022	4.8000e-004	0.1027	0.0271	4.4000e-004	0.0275		80.9469	80.9469	1.8900e-003	2.0300e-003	81.6000
Total	**0.0377**	**0.3918**	**0.3671**	**2.5700e-003**	**0.1582**	**4.1400e-003**	**0.1624**	**0.0425**	**3.9400e-003**	**0.0464**		**273.7321**	**273.7321**	**9.9800e-003**	**0.0326**	**283.6932**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Site Preparation - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.6492	6.2575	9.1933	0.0132		0.2831	0.2831		0.2619	0.2619		1,268.0073	1,268.0073	0.3969		1,277.9306
Total	**0.6492**	**6.2575**	**9.1933**	**0.0132**	**0.0000**	**0.2831**	**0.2831**	**0.0000**	**0.2619**	**0.2619**		**1,268.0073**	**1,268.0073**	**0.3969**		**1,277.9306**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0498	0.0318	0.4188	1.3000e-003	0.1661	7.8000e-004	0.1668	0.0440	7.1000e-004	0.0448		131.5388	131.5388	3.0600e-003	3.3000e-003	132.6000
Total	**0.0498**	**0.0318**	**0.4188**	**1.3000e-003**	**0.1661**	**7.8000e-004**	**0.1668**	**0.0440**	**7.1000e-004**	**0.0448**		**131.5388**	**131.5388**	**3.0600e-003**	**3.3000e-003**	**132.6000**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Site Preparation - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.6492	6.2575	9.1933	0.0132		0.2831	0.2831		0.2619	0.2619	0.0000	1,268.0073	1,268.0073	0.3969		1,277.9306
Total	**0.6492**	**6.2575**	**9.1933**	**0.0132**	**0.0000**	**0.2831**	**0.2831**	**0.0000**	**0.2619**	**0.2619**	**0.0000**	**1,268.0073**	**1,268.0073**	**0.3969**		**1,277.9306**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0498	0.0318	0.4188	1.3000e-003	0.1661	7.8000e-004	0.1668	0.0440	7.1000e-004	0.0448		131.5388	131.5388	3.0600e-003	3.3000e-003	132.6000
Total	**0.0498**	**0.0318**	**0.4188**	**1.3000e-003**	**0.1661**	**7.8000e-004**	**0.1668**	**0.0440**	**7.1000e-004**	**0.0448**		**131.5388**	**131.5388**	**3.0600e-003**	**3.3000e-003**	**132.6000**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Grading - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					9.7692	0.0000	9.7692	3.7148	0.0000	3.7148			0.0000			0.0000
Off-Road	1.6314	16.8707	7.3668	0.0242		0.6448	0.6448		0.5975	0.5975		2,298.8354	2,298.8354	0.7020		2,316.3856
Total	**1.6314**	**16.8707**	**7.3668**	**0.0242**	**9.7692**	**0.6448**	**10.4140**	**3.7148**	**0.5975**	**4.3123**		**2,298.8354**	**2,298.8354**	**0.7020**		**2,316.3856**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0689	0.0440	0.5799	1.8000e-003	0.2299	1.0700e-003	0.2310	0.0610	9.9000e-004	0.0620		182.1306	182.1306	4.2400e-003	4.5800e-003	183.6001
Total	**0.0689**	**0.0440**	**0.5799**	**1.8000e-003**	**0.2299**	**1.0700e-003**	**0.2310**	**0.0610**	**9.9000e-004**	**0.0620**		**182.1306**	**182.1306**	**4.2400e-003**	**4.5800e-003**	**183.6001**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Grading - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					3.8100	0.0000	3.8100	1.4488	0.0000	1.4488			0.0000			0.0000
Off-Road	1.6314	16.8707	7.3668	0.0242		0.6448	0.6448		0.5975	0.5975	0.0000	2,298.8354	2,298.8354	0.7020		2,316.3856
Total	**1.6314**	**16.8707**	**7.3668**	**0.0242**	**3.8100**	**0.6448**	**4.4547**	**1.4488**	**0.5975**	**2.0463**	**0.0000**	**2,298.8354**	**2,298.8354**	**0.7020**		**2,316.3856**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0689	0.0440	0.5799	1.8000e-003	0.2299	1.0700e-003	0.2310	0.0610	9.9000e-004	0.0620		182.1306	182.1306	4.2400e-003	4.5800e-003	183.6001
Total	**0.0689**	**0.0440**	**0.5799**	**1.8000e-003**	**0.2299**	**1.0700e-003**	**0.2310**	**0.0610**	**9.9000e-004**	**0.0620**		**182.1306**	**182.1306**	**4.2400e-003**	**4.5800e-003**	**183.6001**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.8705	17.0023	20.2428	0.0399		0.8368	0.8368		0.7726	0.7726		3,836.5625	3,836.5625	1.2145		3,866.9247
Total	**1.8705**	**17.0023**	**20.2428**	**0.0399**		**0.8368**	**0.8368**		**0.7726**	**0.7726**		**3,836.5625**	**3,836.5625**	**1.2145**		**3,866.9247**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.3951	13.7363	5.5792	0.0643	2.3169	0.0943	2.4112	0.6672	0.0903	0.7574		6,891.4513	6,891.4513	0.1752	1.0185	7,199.3544
Worker	3.7118	2.3728	31.2492	0.0971	12.3899	0.0579	12.4478	3.2857	0.0533	3.3390		9,814.8156	9,814.8156	0.2287	0.2466	9,894.0031
Total	**4.1069**	**16.1091**	**36.8283**	**0.1614**	**14.7067**	**0.1522**	**14.8590**	**3.9529**	**0.1435**	**4.0964**		**16,706.2669**	**16,706.2669**	**0.4039**	**1.2651**	**17,093.3574**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Building Construction - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.8705	17.0023	20.2428	0.0399		0.8368	0.8368		0.7726	0.7726	0.0000	3,836.5625	3,836.5625	1.2145		3,866.9247
Total	**1.8705**	**17.0023**	**20.2428**	**0.0399**		**0.8368**	**0.8368**		**0.7726**	**0.7726**	**0.0000**	**3,836.5625**	**3,836.5625**	**1.2145**		**3,866.9247**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.3951	13.7363	5.5792	0.0643	2.3169	0.0943	2.4112	0.6672	0.0903	0.7574		6,891.4513	6,891.4513	0.1752	1.0185	7,199.3544
Worker	3.7118	2.3728	31.2492	0.0971	12.3899	0.0579	12.4478	3.2857	0.0533	3.3390		9,814.8156	9,814.8156	0.2287	0.2466	9,894.0031
Total	**4.1069**	**16.1091**	**36.8283**	**0.1614**	**14.7067**	**0.1522**	**14.8590**	**3.9529**	**0.1435**	**4.0964**		**16,706.2669**	**16,706.2669**	**0.4039**	**1.2651**	**17,093.3574**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Non-Asphalt Surfaces	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Non-Asphalt Surfaces	0.540566	0.056059	0.172680	0.136494	0.026304	0.007104	0.011680	0.017449	0.000554	0.000251	0.025076	0.000954	0.004830

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.2580	5.0000e-005	5.4000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0116	0.0116	3.0000e-005		0.0124
Unmitigated	1.2580	5.0000e-005	5.4000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0116	0.0116	3.0000e-005		0.0124

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.4398					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.8177					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	5.0000e-004	5.0000e-005	5.4000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0116	0.0116	3.0000e-005		0.0124
Total	**1.2580**	**5.0000e-005**	**5.4000e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**		**0.0116**	**0.0116**	**3.0000e-005**		**0.0124**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.4398					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.8177					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	5.0000e-004	5.0000e-005	5.4000e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0116	0.0116	3.0000e-005		0.0124
Total	**1.2580**	**5.0000e-005**	**5.4000e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**		**0.0116**	**0.0116**	**3.0000e-005**		**0.0124**

7.0 Water Detail

7.1 Mitigation Measures Water

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Lockhart 2 Solar PV Project

San Bernardino-Mojave Desert County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	53.00	Acre	53.00	2,308,680.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.6	**Precipitation Freq (Days)**	32
Climate Zone	10			**Operational Year**	2024
Utility Company	Statewide Average				
CO2 Intensity (lb/MWhr)	453.21	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use -

Construction Phase - Construction scheduled per client info.

Off-road Equipment - Per client info

Off-road Equipment - Per client info.

Off-road Equipment - Per client info

Off-road Equipment - per client info.

Demolition - Two structures as measured on google earth

Grading - Grading is the same as site acres.

Consumer Products - Per proposal, operational emissions are not being calculated

Area Coating - Per proposal, operational emissions are not being calculated

Landscape Equipment - Per proposal, operational emissions are not being calculated

Lockhart 2 Solar PV Project - San Bernardino-Mojave Desert County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Energy Use - Per proposal, operational emissions are not being calculated

Land Use Change -

Sequestration -

Construction Off-road Equipment Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	1,110.00	66.00
tblConstructionPhase	NumDays	70.00	5.00
tblConstructionPhase	NumDays	110.00	15.00
tblConstructionPhase	NumDays	40.00	5.00
tblConstructionPhase	PhaseEndDate	2/2/2029	5/6/2024
tblConstructionPhase	PhaseEndDate	4/5/2024	1/5/2024
tblConstructionPhase	PhaseEndDate	11/1/2024	2/2/2024
tblConstructionPhase	PhaseEndDate	5/31/2024	1/12/2024
tblConstructionPhase	PhaseStartDate	11/2/2024	2/5/2024
tblConstructionPhase	PhaseStartDate	6/1/2024	1/15/2024
tblConstructionPhase	PhaseStartDate	4/6/2024	1/8/2024
tblGrading	AcresOfGrading	22.50	53.00
tblOffRoadEquipment	LoadFactor	0.50	0.50
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.50	0.50
tblOffRoadEquipment	OffRoadEquipmentType		Dumpers/Tenders
tblOffRoadEquipment	OffRoadEquipmentType		Dumpers/Tenders
tblOffRoadEquipment	OffRoadEquipmentType		Bore/Drill Rigs
tblOffRoadEquipment	OffRoadEquipmentType		Plate Compactors
tblOffRoadEquipment	OffRoadEquipmentType		Dumpers/Tenders
tblOffRoadEquipment	OffRoadEquipmentType		Excavators
tblOffRoadEquipment	OffRoadEquipmentType		Dumpers/Tenders
tblOffRoadEquipment	OffRoadEquipmentType		Trenchers

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	2.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblOffRoadEquipment	UsageHours	7.00	8.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural

2.0 Emissions Summary

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2024	0.2063	1.2748	2.0319	6.9800e-003	0.5538	0.0398	0.5937	0.1570	0.0369	0.1939	0.0000	645.1123	645.1123	0.0555	0.0382	657.8818
Maximum	**0.2063**	**1.2748**	**2.0319**	**6.9800e-003**	**0.5538**	**0.0398**	**0.5937**	**0.1570**	**0.0369**	**0.1939**	**0.0000**	**645.1123**	**645.1123**	**0.0555**	**0.0382**	**657.8818**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2024	0.2063	1.2748	2.0319	6.9800e-003	0.5081	0.0398	0.5479	0.1399	0.0369	0.1768	0.0000	645.1121	645.1121	0.0555	0.0382	657.8816
Maximum	**0.2063**	**1.2748**	**2.0319**	**6.9800e-003**	**0.5081**	**0.0398**	**0.5479**	**0.1399**	**0.0369**	**0.1768**	**0.0000**	**645.1121**	**645.1121**	**0.0555**	**0.0382**	**657.8816**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**8.26**	**0.00**	**7.71**	**10.93**	**0.00**	**8.85**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-1-2024	3-31-2024	0.9502	0.9502
2	4-1-2024	6-30-2024	0.4933	0.4933
		Highest	0.9502	0.9502

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.2295	0.0000	4.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.5000e-004	9.5000e-004	0.0000	0.0000	1.0100e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.2295**	**0.0000**	**4.9000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**9.5000e-004**	**9.5000e-004**	**0.0000**	**0.0000**	**1.0100e-003**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.2295	0.0000	4.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.5000e-004	9.5000e-004	0.0000	0.0000	1.0100e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.2295**	**0.0000**	**4.9000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**9.5000e-004**	**9.5000e-004**	**0.0000**	**0.0000**	**1.0100e-003**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

2.3 Vegetation

Vegetation

	CO2e
Category	MT
Vegetation Land Change	0.0000
Total	**0.0000**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2024	1/5/2024	5	5	
2	Site Preparation	Site Preparation	1/8/2024	1/12/2024	5	5	
3	Grading	Grading	1/15/2024	2/2/2024	5	15	
4	Building Construction	Building Construction	2/5/2024	5/6/2024	5	66	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 53

Acres of Paving: 53

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Dumpers/Tenders	1	8.00	16	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Dumpers/Tenders	2	8.00	16	0.38
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Building Construction	Bore/Drill Rigs	1	8.00	221	0.50
Grading	Graders	2	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Plate Compactors	2	8.00	8	0.43
Building Construction	Cranes	1	8.00	231	0.29
Building Construction	Dumpers/Tenders	2	8.00	16	0.38
Building Construction	Excavators	2	8.00	158	0.38
Building Construction	Forklifts	2	8.00	89	0.20
Building Construction	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Demolition	Dumpers/Tenders	1	8.00	16	0.38
Building Construction	Trenchers	1	8.00	78	0.50

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	3	8.00	0.00	16.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	5	13.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Grading	7	18.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	11	970.00	378.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					1.7400e-003	0.0000	1.7400e-003	2.6000e-004	0.0000	2.6000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.6600e-003	0.0368	0.0163	4.0000e-005		1.6500e-003	1.6500e-003		1.5200e-003	1.5200e-003	0.0000	3.8893	3.8893	1.2300e-003	0.0000	3.9200
Total	**3.6600e-003**	**0.0368**	**0.0163**	**4.0000e-005**	**1.7400e-003**	**1.6500e-003**	**3.3900e-003**	**2.6000e-004**	**1.5200e-003**	**1.7800e-003**	**0.0000**	**3.8893**	**3.8893**	**1.2300e-003**	**0.0000**	**3.9200**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0000e-005	9.3000e-004	2.7000e-004	0.0000	1.4000e-004	1.0000e-005	1.5000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.4368	0.4368	2.0000e-005	7.0000e-005	0.4579
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.0000e-005	5.0000e-005	6.8000e-004	0.0000	2.5000e-004	0.0000	2.5000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.1872	0.1872	0.0000	0.0000	0.1888
Total	**9.0000e-005**	**9.8000e-004**	**9.5000e-004**	**0.0000**	**3.9000e-004**	**1.0000e-005**	**4.0000e-004**	**1.1000e-004**	**1.0000e-005**	**1.2000e-004**	**0.0000**	**0.6241**	**0.6241**	**2.0000e-005**	**7.0000e-005**	**0.6467**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.2 Demolition - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					6.8000e-004	0.0000	6.8000e-004	1.0000e-004	0.0000	1.0000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.6600e-003	0.0368	0.0163	4.0000e-005		1.6500e-003	1.6500e-003		1.5200e-003	1.5200e-003	0.0000	3.8893	3.8893	1.2300e-003	0.0000	3.9200
Total	**3.6600e-003**	**0.0368**	**0.0163**	**4.0000e-005**	**6.8000e-004**	**1.6500e-003**	**2.3300e-003**	**1.0000e-004**	**1.5200e-003**	**1.6200e-003**	**0.0000**	**3.8893**	**3.8893**	**1.2300e-003**	**0.0000**	**3.9200**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	2.0000e-005	9.3000e-004	2.7000e-004	0.0000	1.4000e-004	1.0000e-005	1.5000e-004	4.0000e-005	1.0000e-005	5.0000e-005	0.0000	0.4368	0.4368	2.0000e-005	7.0000e-005	0.4579
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	7.0000e-005	5.0000e-005	6.8000e-004	0.0000	2.5000e-004	0.0000	2.5000e-004	7.0000e-005	0.0000	7.0000e-005	0.0000	0.1872	0.1872	0.0000	0.0000	0.1888
Total	**9.0000e-005**	**9.8000e-004**	**9.5000e-004**	**0.0000**	**3.9000e-004**	**1.0000e-005**	**4.0000e-004**	**1.1000e-004**	**1.0000e-005**	**1.2000e-004**	**0.0000**	**0.6241**	**0.6241**	**2.0000e-005**	**7.0000e-005**	**0.6467**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Site Preparation - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.6200e-003	0.0156	0.0230	3.0000e-005		7.1000e-004	7.1000e-004		6.5000e-004	6.5000e-004	0.0000	2.8758	2.8758	9.0000e-004	0.0000	2.8983
Total	**1.6200e-003**	**0.0156**	**0.0230**	**3.0000e-005**	**0.0000**	**7.1000e-004**	**7.1000e-004**	**0.0000**	**6.5000e-004**	**6.5000e-004**	**0.0000**	**2.8758**	**2.8758**	**9.0000e-004**	**0.0000**	**2.8983**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1000e-004	8.0000e-005	1.1000e-003	0.0000	4.1000e-004	0.0000	4.1000e-004	1.1000e-004	0.0000	1.1000e-004	0.0000	0.3042	0.3042	1.0000e-005	1.0000e-005	0.3067
Total	**1.1000e-004**	**8.0000e-005**	**1.1000e-003**	**0.0000**	**4.1000e-004**	**0.0000**	**4.1000e-004**	**1.1000e-004**	**0.0000**	**1.1000e-004**	**0.0000**	**0.3042**	**0.3042**	**1.0000e-005**	**1.0000e-005**	**0.3067**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.3 Site Preparation - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.6200e-003	0.0156	0.0230	3.0000e-005		7.1000e-004	7.1000e-004		6.5000e-004	6.5000e-004	0.0000	2.8758	2.8758	9.0000e-004	0.0000	2.8983
Total	**1.6200e-003**	**0.0156**	**0.0230**	**3.0000e-005**	**0.0000**	**7.1000e-004**	**7.1000e-004**	**0.0000**	**6.5000e-004**	**6.5000e-004**	**0.0000**	**2.8758**	**2.8758**	**9.0000e-004**	**0.0000**	**2.8983**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.1000e-004	8.0000e-005	1.1000e-003	0.0000	4.1000e-004	0.0000	4.1000e-004	1.1000e-004	0.0000	1.1000e-004	0.0000	0.3042	0.3042	1.0000e-005	1.0000e-005	0.3067
Total	**1.1000e-004**	**8.0000e-005**	**1.1000e-003**	**0.0000**	**4.1000e-004**	**0.0000**	**4.1000e-004**	**1.1000e-004**	**0.0000**	**1.1000e-004**	**0.0000**	**0.3042**	**0.3042**	**1.0000e-005**	**1.0000e-005**	**0.3067**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Grading - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0733	0.0000	0.0733	0.0279	0.0000	0.0279	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0122	0.1265	0.0553	1.8000e-004		4.8400e-003	4.8400e-003		4.4800e-003	4.4800e-003	0.0000	15.6410	15.6410	4.7800e-003	0.0000	15.7604
Total	**0.0122**	**0.1265**	**0.0553**	**1.8000e-004**	**0.0733**	**4.8400e-003**	**0.0781**	**0.0279**	**4.4800e-003**	**0.0323**	**0.0000**	**15.6410**	**15.6410**	**4.7800e-003**	**0.0000**	**15.7604**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.8000e-004	3.5000e-004	4.5600e-003	1.0000e-005	1.6900e-003	1.0000e-005	1.7000e-003	4.5000e-004	1.0000e-005	4.6000e-004	0.0000	1.2638	1.2638	3.0000e-005	3.0000e-005	1.2741
Total	**4.8000e-004**	**3.5000e-004**	**4.5600e-003**	**1.0000e-005**	**1.6900e-003**	**1.0000e-005**	**1.7000e-003**	**4.5000e-004**	**1.0000e-005**	**4.6000e-004**	**0.0000**	**1.2638**	**1.2638**	**3.0000e-005**	**3.0000e-005**	**1.2741**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.4 Grading - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0286	0.0000	0.0286	0.0109	0.0000	0.0109	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0122	0.1265	0.0553	1.8000e-004		4.8400e-003	4.8400e-003		4.4800e-003	4.4800e-003	0.0000	15.6410	15.6410	4.7800e-003	0.0000	15.7604
Total	**0.0122**	**0.1265**	**0.0553**	**1.8000e-004**	**0.0286**	**4.8400e-003**	**0.0334**	**0.0109**	**4.4800e-003**	**0.0154**	**0.0000**	**15.6410**	**15.6410**	**4.7800e-003**	**0.0000**	**15.7604**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.8000e-004	3.5000e-004	4.5600e-003	1.0000e-005	1.6900e-003	1.0000e-005	1.7000e-003	4.5000e-004	1.0000e-005	4.6000e-004	0.0000	1.2638	1.2638	3.0000e-005	3.0000e-005	1.2741
Total	**4.8000e-004**	**3.5000e-004**	**4.5600e-003**	**1.0000e-005**	**1.6900e-003**	**1.0000e-005**	**1.7000e-003**	**4.5000e-004**	**1.0000e-005**	**4.6000e-004**	**0.0000**	**1.2638**	**1.2638**	**3.0000e-005**	**3.0000e-005**	**1.2741**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0617	0.5611	0.6680	1.3200e-003		0.0276	0.0276		0.0255	0.0255	0.0000	114.8555	114.8555	0.0364	0.0000	115.7645
Total	**0.0617**	**0.5611**	**0.6680**	**1.3200e-003**		**0.0276**	**0.0276**		**0.0255**	**0.0255**	**0.0000**	**114.8555**	**114.8555**	**0.0364**	**0.0000**	**115.7645**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0135	0.4512	0.1812	2.1200e-003	0.0753	3.1100e-003	0.0784	0.0217	2.9700e-003	0.0247	0.0000	206.0070	206.0070	5.2700e-003	0.0305	215.2124
Worker	0.1128	0.0821	1.0816	3.2700e-003	0.4011	1.9100e-003	0.4030	0.1065	1.7600e-003	0.1083	0.0000	299.6515	299.6515	6.9400e-003	7.6300e-003	302.0986
Total	**0.1264**	**0.5334**	**1.2628**	**5.3900e-003**	**0.4763**	**5.0200e-003**	**0.4814**	**0.1282**	**4.7300e-003**	**0.1330**	**0.0000**	**505.6585**	**505.6585**	**0.0122**	**0.0381**	**517.3110**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

3.5 Building Construction - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0617	0.5611	0.6680	1.3200e-003		0.0276	0.0276		0.0255	0.0255	0.0000	114.8554	114.8554	0.0364	0.0000	115.7644
Total	**0.0617**	**0.5611**	**0.6680**	**1.3200e-003**		**0.0276**	**0.0276**		**0.0255**	**0.0255**	**0.0000**	**114.8554**	**114.8554**	**0.0364**	**0.0000**	**115.7644**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0135	0.4512	0.1812	2.1200e-003	0.0753	3.1100e-003	0.0784	0.0217	2.9700e-003	0.0247	0.0000	206.0070	206.0070	5.2700e-003	0.0305	215.2124
Worker	0.1128	0.0821	1.0816	3.2700e-003	0.4011	1.9100e-003	0.4030	0.1065	1.7600e-003	0.1083	0.0000	299.6515	299.6515	6.9400e-003	7.6300e-003	302.0986
Total	**0.1264**	**0.5334**	**1.2628**	**5.3900e-003**	**0.4763**	**5.0200e-003**	**0.4814**	**0.1282**	**4.7300e-003**	**0.1330**	**0.0000**	**505.6585**	**505.6585**	**0.0122**	**0.0381**	**517.3110**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Non-Asphalt Surfaces	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Non-Asphalt Surfaces	0.540566	0.056059	0.172680	0.136494	0.026304	0.007104	0.011680	0.017449	0.000554	0.000251	0.025076	0.000954	0.004830

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.2295	0.0000	4.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.5000e-004	9.5000e-004	0.0000	0.0000	1.0100e-003
Unmitigated	0.2295	0.0000	4.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.5000e-004	9.5000e-004	0.0000	0.0000	1.0100e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0803					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1492					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.0000e-005	0.0000	4.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.5000e-004	9.5000e-004	0.0000	0.0000	1.0100e-003
Total	**0.2295**	**0.0000**	**4.9000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**9.5000e-004**	**9.5000e-004**	**0.0000**	**0.0000**	**1.0100e-003**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0803					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1492					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.0000e-005	0.0000	4.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	9.5000e-004	9.5000e-004	0.0000	0.0000	1.0100e-003
Total	**0.2295**	**0.0000**	**4.9000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**9.5000e-004**	**9.5000e-004**	**0.0000**	**0.0000**	**1.0100e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

	Total CO2	CH4	N2O	CO2e
Category	MT			
Unmitigated	0.0000	0.0000	0.0000	0.0000

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Not Applied

11.1 Vegetation Land Change

Vegetation Type

	Initial/Final	Total CO2	CH4	N2O	CO2e
	Acres	MT			
Others	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

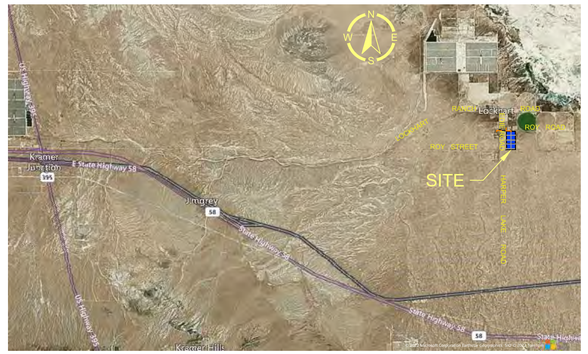
APPENDIX I

Construction Management Plan, dated February 16, 2023,
Partners Engineering and Science, Inc.

- FOR OFFICIAL USE -

NOTES:

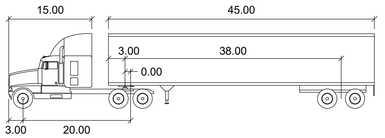
1. MAXIMUM HEIGHT OF SOLAR ARRAY APPROXIMATELY 14± FEET.
2. MAXIMUM HEIGHT OF BATTERY STORAGE/ELECTROLYTE STORAGE TANKS APPROXIMATELY 8± FEET.
3. EXISTING ACCESS DRIVES TO/FROM ROY ROAD TO BE ELIMINATED.
4. EXISTING ONSITE STRUCTURES TO BE DEMOLISHED AND REMOVED.
5. BOUNDARY AND TOPOGRAPHIC INFORMATION SHOWN HEREON TAKEN FROM ALTA SURVEY PREPARED BY RPLS, LLC (KEVIN BRONSON, PLS), DATED 03/16/2022 (DATE OF FIELD SURVEY 03/03/2021).
6. PROPERTY LOCATED AT 315 ROY STREET, HINKLEY, CA 92347.
7. PROPERTY DESCRIBED AS THE EAST 1/2 OF THE SOUTHWEST 1/4 OF SECTION 32, TOWNSHIP 11 NORTH, RANGE 4 WEST, SAN BERNARDINO BASE AND MERIDIAN, IN THE COUNTY OF SAN BERNARDINO, STATE OF CALIFORNIA, APN: 0490-171-01-0-000.
8. HORIZONTAL DATUM: NAD 83
   VERTICAL DATUM: NAVD 88



0 5000 10000 20000 Feet
1:10,000

LOCATION MAP

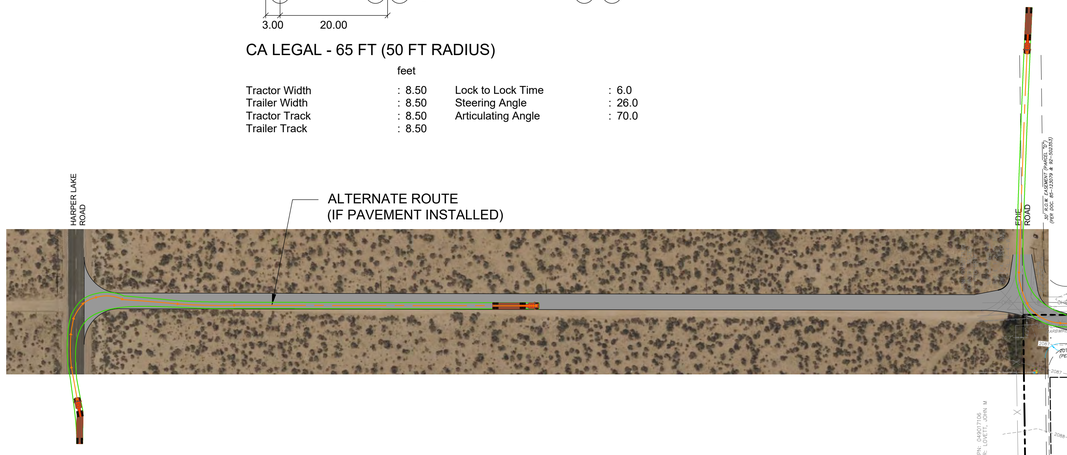
SOURCE: © 2022 MICROSOFT CORPORATION © 2022 MAXAR © CNES (2022)



CA LEGAL - 65 FT (50 FT RADIUS)

feet

Tractor Width	: 8.50	Lock to Lock Time	: 6.0
Trailer Width	: 8.50	Steering Angle	: 26.0
Tractor Track	: 8.50	Articulating Angle	: 70.0
Trailer Track	: 8.50		



ANTICIPATED CONSTRUCTION INFORMATION

		NOTES
ANTICIPATED TRUCK ROUTE(S)	CA-91 I-215 I-15 CA-15 NATIONAL TRAILS HIGHWAY [VISTA RD] HELENDALE RD HARPER LAKE RD LOCKHART RANCH RD EDIE RD	ASSUMES CONSTRUCTION ACCESS AND DELIVERIES FROM POINTS SOUTH [NAME] - DENOTES ROADWAY MAINTAINED BY SB COUNTY
TRUCK TYPE (AASHTO)	WB-65	
TRUCK TYPE (CALTRANS)	CA LEGAL 65	
MAXIMUM TRUCK LENGTH (FT)	73.50	
MAXIMUM TRUCK WEIGHT (TONS)	40	
ESTIMATED DURATION OF CONSTRUCTION (MONTHS)	8 ±	ASSUMES AVERAGE 2 DELIVERIES PER WEEK
EQUIV. SINGLE-AXLE LOAD (ESAL)	16	ASSUMES AVERAGE 2 DELIVERIES PER WEEK

NORTH

PARTNER Engineering and Science, Inc.®
(a DBA of Partner Assessment Corp. a NJ Engineering firm)
Tel.: 732.380.1709
Fax: 732.380.1701
http://www.partnereis.com
631 Industrial Way West
Eatontown, NJ 07724
NJ Certification of Authorization No. 24GA28222900

NO.	DATE	REVISION	DRWN	CHKD
0	02/16/2023	ISSUED FOR PERMIT	JS	PR
			PR	JB

SITE INFORMATION
OWNER/APPLICANT: JUNIPER ENERGY, LLC
PHONE: (650) 288-6810
APPLICATION TYPE: CONDITIONAL USE PERMIT & GENERAL PLAN AMENDMENT
SYSTEM INFORMATION (APPROX.)
GENERATION SIZE: 8MW ac
BATTERY STORAGE CAPACITY: 6MW
HOURS OF OPERATION: CONTINUOUS

Drawing Name:
CONSTRUCTION MGT.dwg

SOLAR PV GROUND MOUNT FOR JUNIPER ENERGY - PROJECT LOCKHART 1 & 2

Job No. 22-358548	
Scale:(H) AS NOTED (V) N/A	
Drawn JS	Designed JS
Checked PR	Released JB
Date 02/16/2023	Drawer Number 000-000

SHEET No.
CM1.01

Plotted: 02/17/23 — 8:10 PM, By: jsnider
File Name: C:\Users\jsnider\Partner Assessment Corporation\RE Group - Kellogg, Gage's files\2022\22-358548 Project Lockhart Drawings and Surveys — Juniper Energy\Design\Civil Design\Lockhart_Consolidated\CONSTRUCTION MGT.dwg, ---> CON MGT

APPENDIX J

Agency Consultation

385 N. Arrowhead Ave, First Floor, San Bernardino, CA 92415 | Phone: 909.387.8311 Fax: 909.387.3223
www.SBCounty.gov

SAN BERNARDINO COUNTY

Land Use Services Department
Planning

Director

December 13, 2022

Juniper Energy, LLC
818 Crystal Strings Rd
Hillsborough, CA 94010
kmcdaniels@junipersolar.com

RE: COMPLETENESS: GENERAL PLAN AMENDMENT (GPA) TO CHANGE THE CURRENT LAND USE DESIGNATION OF RURAL LIVING TO RESOURCE LAND MANAGEMENT (RLM), ZONE CHANGE (ZC) TO CHANGE THE EXISTING ZONING FROM RURAL LIVING (RL) TO RESOURCE CONSERVATION AND A CONDITIONAL USE PERMIT (CUP) TO ALLOW FOR THE CONSTRUCTION AND OPERATION OF A SOLAR PV GENERATION AND STORAGE SYSTEM WITHIN THE UNINCORPORATED COMMUNITY OF HINKLEY, APN: 0490-171-01; 1ST SUPERVISORIAL DISTRICT; PROJECT NUMBER: PROJ-2022-00066

Dear Applicant:

As of December 13, 2022, the Planning Division has accepted the above referenced application as complete for processing. A copy of the application will be sent to all reviewing agencies for review and comment. Upon completion of the 10-day departmental comment period, staff will either notify you to request additional information and/or revisions to the plans and move forward with review of the project. If you have any questions or concerns regarding this matter, please contact me at (909) 387-4739 or via email at natalie.patty@lus.sbcounty.gov. Please be advised that additional comments may be forthcoming upon receipt and review of the additional information requested.

Please be aware that future processing of the project will require a CEQA Initial Study to evaluate potential impacts of the proposed project. The project will also require the following documents/reports:

a. Phase 1 Cultural Resources Report – Identifying the presence or absence of cultural resources on the property and/or in the vicinity of the project.
b. Hydrology/Drainage Study – evaluating changes to drainage on-site and the handling of storm water flows.
c. Air Quality/Greenhouse gas report – evaluating construction emissions and compliance with Mojave Desert Air Quality Management District's and San Bernardino County emission thresholds.
d. Aesthetic Analysis – evaluating the visual impacts of the project within the surrounding environment.
e. Preliminary geotechnical/soils report – evaluating on-site conditions and availability to support the project.
f. Biological Resources Report – evaluating potential habitat at the Project Site and within the vicinity. As stated in the incompleteness letter dated August 24, 2022, due to the

presence of jurisdictional waters on-site and if impacts to potentially jurisdictional areas is unavoidable, then a Streambed Alteration Agreement from the California Department of Fish & Wildlife (CDFW) and a Waste Discharge Requirement from the Regional Water Quality Control Board (RWQCB) will be required.

If you have any questions or concerns regarding this matter, please contact me at (909) 890-1818 or via email at natalie.patty@lus.sbcounty.gov. County staff will hold this application in abeyance until the requested information has been submitted. Please be advised that additional comments may be forthcoming upon receipt and review of the additional information requested.

Sincerely,

Natalie Patty, Contract Planner

Project Notice

An application has been filed with County Planning

PROJECT NUMBER: PROJ-2022-00066

ASSESSOR PARCEL NO (APN): 0490-171-01

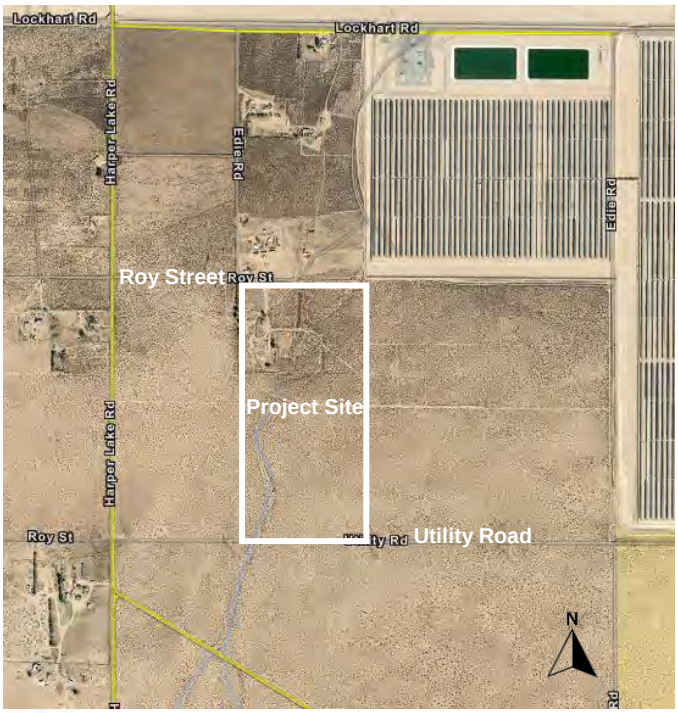
APPLICANT: Juniper Energy, LLC

LOCATION: **315 Rox Road**
Hinkley, CA 92347

COMMUNITY: Hinkley

LUC/ ZONING: Rural Living (RL)
Rural Living (RL)

Proposed Project Site



Natalie Patty, Contract Planner
Phone: 909.890-1818
E-mail: natalie.patty@lus.sbcounty.gov
Fax: 909.890.1809

Project Proposal

GENERAL PLAN AMENDMENT (GPA) TO CHANGE THE CURRENT LAND USE DESIGNATION OF RURAL LIVING TO RESOURCE LAND MANAGEMENT (RLM), ZONE CHANGE (ZC) TO CHANGE THE EXISTING ZONING FROM RURAL LIVING (RL) TO RESOURCE CONSERVATION AND A CONDITIONAL USE PERMIT (CUP) TO ALLOW FOR THE CONSTRUCTION AND OPERATION OF A SOLAR GENERATION AND STORAGE SYSTEM

We'd love to hear from you….

Please submit comments by January 4, 2023, to be sure that they get considered in the review process. However, comments will be taken up to the time of the project decision. Please refer to this project by the Project Number and the Assessor Parcel Number (APN). If you have no comment, a reply is not necessary.

Name:

E-mail Address:

Mailing Address:

Project Decision

If you would like to be notified of the decision rendered for this project, please provide your contact information in the section below and mail this notice back to one of the addresses listed below.

PLANNING NOTICE REFERRAL LIST

Rev. 3/16/2021

■ Applicant/Representative
■ Surrounding Property Owners: 700 fe # of notices mailed

PROJECT #: PROJ-2022-00066

COUNTY AGENCIES (Send to BOS for ALL projects within district)

■ Supervisorial District:
- ■ 1st District
- ☐ 2nd District – Phil Paule (ALL 2nd District Projects)
- ☐ 3rd District
- ☐ 4th District
- ☐ 5th District

■ Planning Commissioner: Jonathan Weldy
☐ LUSD – B&S County Geologist: Frank Jordan
☐ LUSD – Mining Geologist: George Kenline
☐ Special Districts (CSA): Erin Oplinger
☐ Special Districts (SL-1 Street Lights): Erin Oplinger
☐ Special Districts (Franchise): _____
☐ ISD (Cell Towers): Tim Trager (via email)
☐ Airports Dept: Erin Oplinger
☐ Agricultural Commissioner: _____
☐ Real Estate Services: _____
☐ Sheriff's Office: _____
☐ Museum (Archeological): South Central Coastal Info Center
☐ Museum (Paleontological) Eric Scott
☐ Preventative Vet Services: Megan Starbeck
■ EDA (Renewable Energy Projects): Soua Vang
☐ LAFCO: Samuel Martinez

LOCAL AGENCIES

☐ City Sphere: _____
☐ Local Fire Protection: _____
☐ Water District: _____
☐ Water Agency: _____
☐ Sewer Agency: _____
☐ School District: _____
☐ Renewable Energy Email Distribution List

STATE AGENCIES

☐ Water Quality Control Board: _____
☐ Air Quality District: _____
☐ Fish & Wildlife California: _____
☐ Caltrans: _____
☐ CHP: _____
☐ Integrated Waste Management: _____
☐ Dept of Toxic Substance Control: _____
☐ Dept. of Conservation (Mines): _____
☐ Inland Empire W. Resources Conservation District
☐ East Valley Resources Conservation District

FEDERAL AGENCIES

☐ Army Corp of Engineers: _____
☐ Bureau of Land Management: _____
☐ Fish & Wildlife US: _____
☐ US Forest Service: _____
■ Military Base: Erin.adams@usmc.mil & Kristina.Brown@usmc.mil
☐ US Post Office: _____
☐ National Resource Cons. Svc.: _____

ENVIRONMENTAL GROUPS

☐ Audubon Society: _____
☐ Save Our Forest Association: _____
☐ Sierra Club: _____

MISCELLANEOUS AGENCIES & ORGANIZATIONS

☐ Advisory Council:
- ☐ Lucerne/Johnson Valley: Richard Selby & Roger Peterson
- ☐ _____

☐ Architectural Committee: _____
☐ Chamber of Commerce: _____
☐ Indian Tribes: _____

- ☐ Fort Mojave Indian Tribe
- ☐ Gabrieleno Tongva – San Gabriel Band of Mission Indians
- ☐ Colorado River Indian Tribes
- ☐ Twenty-Nine Palms Band of Mission Indians
- ☐ Morongo Band of Mission Indians
- ☐ San Manuel Band of Mission Indians
- ☐ Soboba Band of Luiseno Indians
- ☐ Gabrieleno Band of Mission Indians – Kizh Nation

☐ Property Owner Association: _____
- ☐ Oak Hills – Dave Blevins

☐ Railroads: _____
☐ Phone Company: _____
☐ Utility Company: _____

PLANNING NOTICE REFERRAL LIST

Rev. 01/05/2021

PROJECT NOTICES BY SPECIAL REQUEST

ALL Public Hearings

☐ Lozeau Drury LLP
Attn: Richard Drury/Komal Preet/Stacey Oborne
1939 Harrison St., Ste 150, Oakland, CA 94612

CEQA Related Documents

Please send any CEQA document notices for the availability of any EIR, ND, MND, or Scoping Meeting to:

☐ Kevin Johnston
2288 Buena Vista Ave., Livermore, CA 94550

☐ Lozeau Drury LLP
Attn: Richard Drury/Komalpreet Toor/Stacey Oborne
1939 Harrison St., Ste 150, Oakland, CA 94612
(or email: Richard@lozeaudrury.com/ komal@lozeaudrury.com / stacey@lozeaudrury.com)

Geothermal Projects

ALL notices re: geothermal projects over 5mw please notice the following:

■ Shiela Sannadan
Adams Broadwell Joseph & Cardozo
601 Gateway Blvd, Ste. 1000
South San Francisco, CA 94080
(or email: ssannadan@adamsbroadwell.com)

***View original request re: specific notifications requested.**

PROJECT NOTICES BY COMMUNITY

BIG BEAR (Send notices for ALL projects within community)

☐ Jim Miller, Community Development Director
P.O. Box 1000
Big Bear Lake, CA 92315

☐ Bennett Rossell, Southern California Mountains Foundation
P.O. Box 69
Fawnskin, CA 92333

HELENDALE (Send notices for ALL projects within community)

☐ Silver Lakes Association, Attn: General Manager
P.O. Box 179
Helendale, CA 92342-0179

☐ Helendale Community Services District, Attn: Kimberly Cox
P.O. Box 359
Helendale, CA 92342

JOSHUA TREE (Send notices for ALL projects within community)

☐ Stephanie Smith (histephaniesmith@gmail.com)
P.O. Box 1307
Joshua Tree, CA 92252

LUCERNE VALLEY (Send notices for ALL projects within community)

☐ LVEDA, Attn: Chuck Bell
P.O. Box 193
Lucerne Valley, CA 92356

MORONGO VALLEY (Send notices for ALL projects within community)

☐ Morongo Valley CSD

OAK HILLS (Send notices for ALL projects within community)

☐ Oak Hills Property Owner's Association

PHELAN/PINON HILLS (Send notices for ALL projects within community)

☐ Helendale Community Services District
Attn: Kimberly Cox
P.O. Box 359
Helendale, CA 92342

☐ Phelan/Pinon Hills CSD
Attn: George Cardenas
4176 Warbler Rd.
Phelan, CA 92371

PIONEERTOWN (Send notices for ALL projects within community)

☐ info@friendsofpioneertown.org
☐ davesmiller09@gmail.com
☐ steve@infinityranch.net
☐ sarah@infinityranch.net
☐ bernadetteingalls@gmail.com
☐ jill@endicottenterprises.com
☐ jsdpitown@gmail.com
☐ sarafairchild@yahoo.com
☐ dannysall@gmail.com

PLANNING NOTICE REFERRAL LIST

Rev. 01/05/2021

SPECIAL INSTRUCTIONS:

Please mail Project Notice to surrounding property owners within 700 feet of the project parcel,

(APN:0490-171-01) as well as any agencies, or persons indicated on this list. Thank You

COUNTY OF SAN BERNARDINO
NOTICE OF OPPORTUNITY TO CONSULT

In accordance with Assembly Bill 52 (AB 52), we are responding to your request to be notified of projects in the geographic area that is traditionally and culturally affiliated with your Tribe and that will be reviewed by this entity under CEQA.

Project Title: Juniper Energy

Project No.: PROJ-2022-00066

Project Location: 315 Roy Road, Hinkley, CA 92347 (APN 0490-171-01)

Project Description: A REQUEST FOR A GENERAL PLAN AMENDMENT (GPA) TO CHANGE THE CURRENT LAND USE DESIGNATION OF RURAL LIVING TO RESOURCE LAND MANAGEMENT (RLM), ZONE CHANGE (ZC) TO CHANGE THE EXISTING ZONING FROM RURAL LIVING (RL) TO RESOURCE CONSERVATION AND A CONDITIONAL USE PERMIT (CUP) TO ALLOW FOR THE CONSTRUCTION AND OPERATION OF A 8-MEGAWATT SOLAR GENERATION AND STORAGE SYSTEM ON AN 80-ACRE SITE.

Notice of Opportunity to Consult: In accordance with Section 21080.3.1(d) of the PRC, you have 30 days from the receipt of this letter to request consultation in writing for this project. Please send written request to:

San Bernardino County

Land Use Services Department - Planning Division
385 N. Arrowhead Avenue
San Bernardino, CA 92415

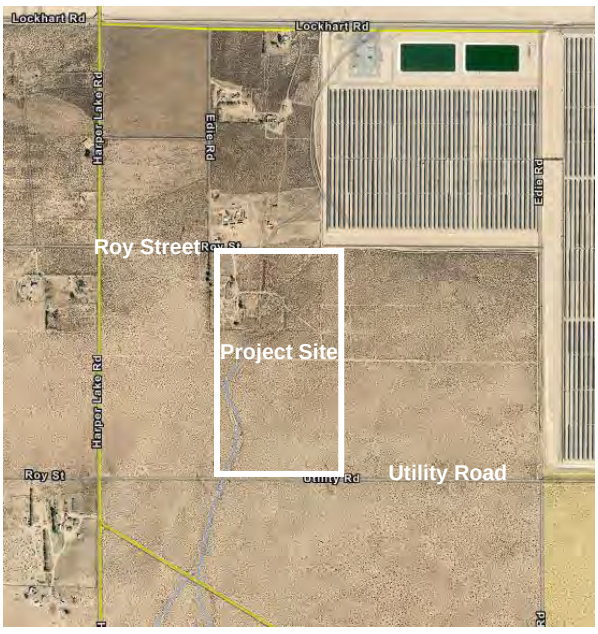
You may obtain more information about the project or request consultation by contacting the Planner directly at (909) 387-4739 or via email at Natalie.Patty@lus.sbcounty.gov. In your request, please reference the project name and number as indicated above.

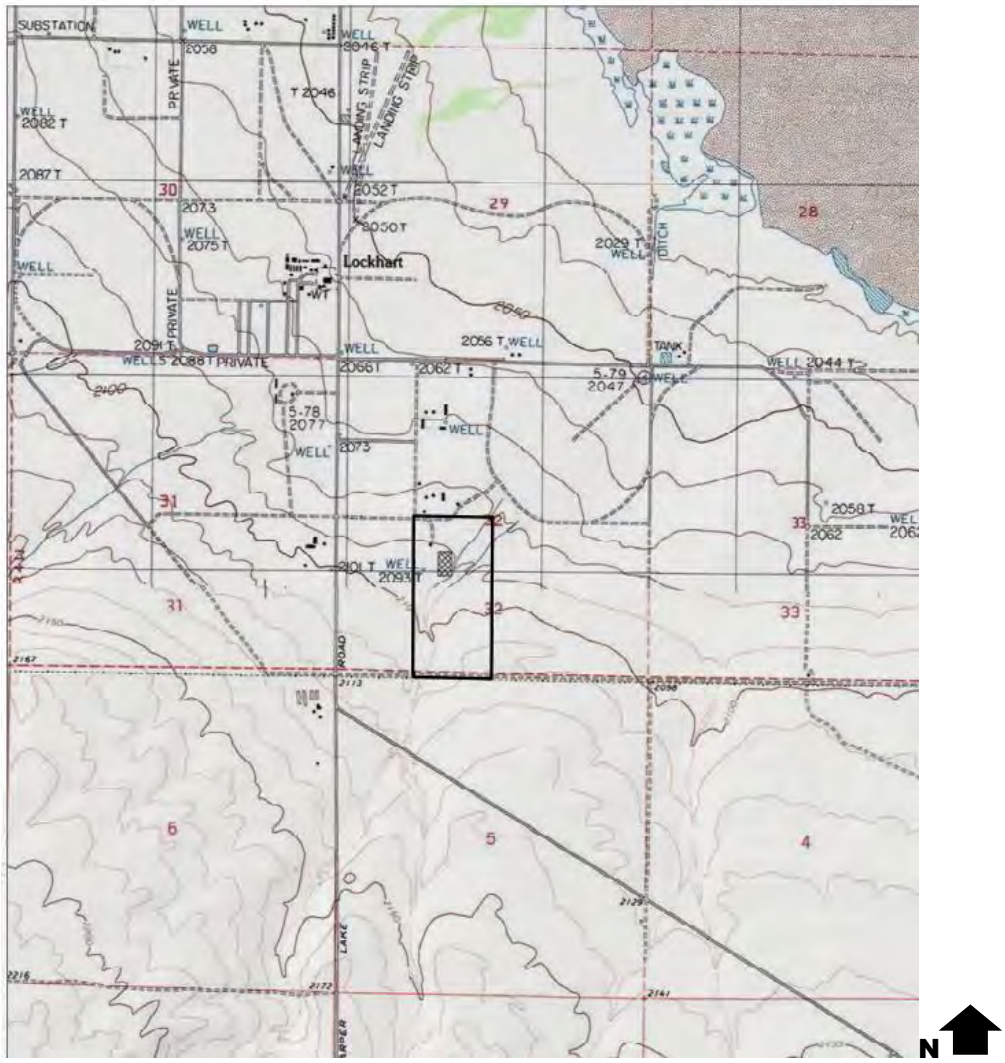
If we do not receive a request within 30 days of your receipt of this letter, we will proceed forward in the CEQA review process without consultation.

Natalie P. Patty, Contract Planner

County of San Bernardino
Land Use Services Department - Planning Division
385 N. Arrowhead Avenue
San Bernardino, CA 92415

Vicinity Map





Lockhart and Twelve Gauge Lake Quadrangles
California-San Bernardino Co.
7.5 Minute Series (Topographic)
Project Site is located in T11N, R4W, Section 32

Juniper Energy LLC

Memorandum

From: Keith McDaniels

To: File

Date: August 19, 2022

Subject: Meeting with Representatives of U.S. Fish and Wildlife Service, California Department of Fish and Wildlife, and Dudek

Danielle Mullen, a biologist at Dudek arranged a telephonic meeting with representatives from the U.S. Fish and Wildlife Service, California Department of Fish and Wildlife. The call occurred on Friday, at 11:30 am on August 19, 2022.

The following representatives participated on the call,

USFWS:

- Rook Su
- Ray Bransfield

CDFW:

- Rose Banks

Dudek:

- Danielle Mullen
- Megan Enright
- David Wickens

Juniper Energy

- Keith McDaniels

The agenda for the meeting was as follows,

- Project Background/Surveys
- Project Impacts
- Proposed Survey Strategy
- Schedule

We described the conditions of the site and the proposed solar generation project. Dudek summarized their findings from an initial survey of the project site conducted earlier in the year. Dudek outlined their plan to conduct protocol level surveys of the Desert Tortoise in the Fall and the Mohave Ground Squirrel in May 2023. Also, they summarized that other surveys would be conducted as part of a pre-construction survey process, including for the nesting birds, the Burrowing Owl, the American Badger, and the Desert Kit Fox. Receiving no objections or material concerns with the proposed survey strategy, the meeting was adjourned.

USDA United States Department of Agriculture

9/20/2023

Rural Development
Rural Utilities Service
1400 Independence Ave SW, Room 4018
Stop 1570,
Washington, DC, 20250
Voice 202.604.9943

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

Subject: USDA RD RUS Finding of No Historic Properties Affected
Lockhart Solar & Harper Solar Projects
San Bernardino County, California

Dear Ms. Polanco:

Juniper Energy LLC (Juniper Energy) is seeking financial assistance from the USDA Rural Development (RD), Rural Utilities Service (RUS) under its Electric Program for Lockhart Solar and Harper Solar projects (Projects). These Projects will not be using the NPA.[1]

Juniper Energy proposes to construct and operate two 4-megawatt community solar photovoltaic power generating systems with battery storage capabilities on 83 acres of land northwest of Hinkley. The proposed Projects would generate electricity using solar photovoltaic modules mounted on single-axis trackers, which rotate to follow the sun's movement throughout the day. The modules would be arranged in north-south arrays spanning the Project sites. The systems would store electrical production in long-duration batteries, which would be located next to the solar arrays on less than 1 acre of the Project sites. The battery storage systems would employ technology requiring no cooling system, would have no risk of fires, and would use no hazardous materials. Switchgear, a weather station, and inverters and transformers located next to the batteries would manage the system and convert power for distribution to the nearby transmission grid. Electrical conduit and transmission and collection lines would be installed primarily underground. Roy Road, which is currently a dirt road, would be paved from Harper Lake Road to the entrance of the Project located on its northern border. A new 33kV line would be installed along Roy Road from the northwestern corner of the Project site to an interconnection point next to Harper Lake Road. Interior perimeter all-weather unpaved roads would provide access to the system. Security fencing would be installed along the perimeter of the Project site.

[1] *Nationwide Programmatic Agreement among the U.S. Department of Agriculture Rural Development Programs, National Conference of State Historic Preservation Officers, Tribal Signatories, and The Advisory Council on Historic Preservation for Sequencing Section 106* (NPA).

If RUS elects to fund the Projects, they will become undertakings subject to review under Section 106 of the National Historic Preservation Act, 54 U.S.C. 306108, and its implementing regulations, 36 CFR Part 800.

RUS defines the area of potential effect (APE), as an area that includes all Project construction and excavation activity required to construct, modify, improve, or maintain any facilities; any right-of-way or easement areas necessary for the construction, operation, and maintenance of the Project; all areas used for excavation of borrow material and habitat creation; all construction staging areas, access routes, utilities, spoil areas, and stockpiling areas. Impacts that come from the undertaking at the same time and place with no intervening causes, are considered "direct" regardless of its specific type (e.g., whether it is visual, physical, auditory, etc.). "Indirect" effects to historic properties are those caused by the undertaking that are later in time or farther removed in distance but are still reasonably foreseeable.

The APE for the referenced Projects consists of the parcels being disturbed by construction activities totaling approximately 84.5 acres. Additionally, The APE does not include any federal and/or tribal lands as defined pursuant to 36 CFR § 800.16(x).

On 8/11/2022 the following Indian tribes were notified about the Projects to seek information on cultural resources: Kern Valley Indian Community; Morongo Band of Mission Indians; Quechan Tribe of the Fort Yuma Reservation; San Fernando Band of Mission Indians; San Manuel Band of Mission Indians; Serrano Nation of Mission Indians; and Twenty-Nine Palms Band of Mission Indians. The Quechan Tribe of the Fort Yuma Reservation responded with no comments on the Projects. The San Manuel Band of Mission Indians responded with knowledge of cultural resources in the vicinity, including three resources which are also documented with the South Central Coastal Information Center as P-36-061690, P-36-061693, and P-36-061694.

Per Juniper Energy's application for a conditional use permit with the County of San Bernardino, the County, pursuant to AB 52, contacted the following Indian tribes on April 23, 2023: Colorado River Indian Tribes, Serrano Nation of Mission Indians, Morongo Band of Mission Indians (MBMI), Fort Mohave Indian Tribe, San Manuel Band of Mission Indians (SMBMI), Soboba Band of Luiseno Indians, and the Twentynine Palms Band of Mission Indians. The Morongo Band of Mission Indians and the San Manuel Band of Mission Indians requested formal consultation under AB 52, which is being conducted by the County.

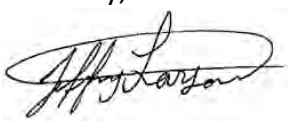
For Section 106 Consultation, the following consulting parties are receiving this finding of effect: California State Historic Preservation Office; Chemehuevi Indian Tribe of the Chemehuevi Reservation, California; Colorado River Indian Tribes; Fort McDowell Yavapai Nation, Arizona; Fort Mohave Indian Tribe of Arizona, California & Nevada; Kaibab Band of Paiute Indians of the Kaibab Indian Reservation, Arizona; Kern Valley Indian Community;

Morongo Band of Mission Indians; Las Vegas Tribe of Paiute Indians of the Las Vegas Indian Colony, Nevada; Los Coyotes Band of Cahuilla and Cupeno Indians, California; Moapa Band of Paiute Indians of the Moapa River Indian Reservation, Nevada; Paiute Indian Tribe of Utah; Quechan Tribe of the Fort Yuma Reservation; San Fernando Band of Mission Indians; San Manuel Band of Mission Indians; Serrano Nation of Mission Indians; Soboba Band of Luiseno Indians; and Twenty-Nine Palms Band of Mission Indians.

The enclosed reports titled, *Cultural Resources Inventory and Evaluation Report for the Juniper Energy Project – Hinkley, San Bernardino County, California*, August 2023 and *Built Environment Inventory and Evaluation Report: Juniper Energy Project 315 Roy Street, Hinkley, San Bernardino County*, November 2022 describe the results of the surveys of the APE. Five archaeological resources were identified during research and fieldwork including three previously documented isolated finds – P-36-061690, P-36-061693, and P-36-061694 – and two newly documented cultural resources – an isolated precontact flake (JP-I-01) and a historic-era refuse scatter (JP-I-02). As isolates, P-36-061690, P-36-061693, P-36-061694, and JP-I-01 lack research potential and are recommended not eligible for listing on the National Register of Historic Places (NRHP). The historic refuse scatter appears to be a common domestic refuse scatter which lacks significance under the NRHP criteria and, therefore, are recommended not eligible for the NRHP. Four historic-era structures were identified in the APE, and all were found to lack significance under the NRHP criteria and, therefore, are recommended not eligible for the NRHP. Due to potential for cultural resources to be inadvertently discovered during construction activities, Juniper Energy will have archaeological and tribal monitors present during ground-disturbing activities within the proposed project areas. Based on the findings of these reports, a finding of no historic properties affected in accordance with 36 CFR § 800.4(d)(1) is appropriate for the referenced Projects.

Accordingly, the RUS is submitting a finding of no historic properties affected in accordance with 36 CFR § 800.4(d)(1) and supporting documentation for your review and consideration. Please provide your concurrence or objection, **electronically** within 30 days of your receipt of this finding. In accordance with 36 CFR § 800.3(c)(4), RUS will proceed to the next step in review if we do not receive a response from you within thirty days. Please direct any questions you may have to Jeffrey D. Larson at jeffrey.larson@usda.gov or 202-604-9943.

Sincerely,



Jeffrey D. Larson, MSc., RPA
Archaeologist & Historian
Environmental & Historic Preservation Division
Rural Utilities Service, Rural Development
United States Department of Agriculture

Enclosure(s): *Cultural Resources Inventory and Evaluation Report: Juniper Energy Project – Hinkley, San Bernardino County, California*, August 2023

Built Environment Inventory and Evaluation Report: Juniper Energy Project 315 Roy Street, Hinkley, San Bernardino County, November 2022

CC: Keith McDaniels, Juniper Energy, LLC

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

12/15/2023 In reply refer to: USDA_2023_0920_001

SENT VIA ELECTRONIC MAIL

Jeffrey D. Larson
Archaeologist & Historian
Environmental & Historic Preservation Division
Rural Utilities Service, Rural Development
United States Department of Agriculture
1400 Independence Ave SW, Room 4018, Stop 1570
Washington, DC 20250

RE: USDA RD RUS Finding of No Historic Properties Affected, Lockhart Solar and Harper Solar Projects, 315 East Roy Street, Hinkley, San Bernardino County, California

Dear Mr. Larson:

The United States Department of Agriculture, Rural Utilities Service (USDA) is consulting with the State Historic Preservation Officer (SHPO) pursuant to 36 CFR Part 800 (as amended) regulations implementing Section 106 of the National Historic Preservation Act, regarding the above-referenced undertaking. In addition to your letter, you have provided the following studies in support of your Finding of Effect:

- *Cultural Resources Inventory and Evaluation Report, Juniper Energy Project-Hinkley, San Bernardino County, California* (Dudek: November 2022)
- *Built Environment Inventory and Evaluation Report, Juniper Energy Project, 315 East Roy Street, Hinkley, San Bernardino County* (Dudek: November 2022)

Juniper Energy is applying for USDA funding to build and operate two 4-megawatt community solar photovoltaic power generating systems with battery storage capabilities on 83 acres of land, as described in your September 20th letter. The Area of Potential Effects (APE) for the undertaking is defined as 84.5 acres of land to be disturbed by construction activities.

In addition to conducting Native American consultation, qualified cultural resources professionals conducted a records search and performed a pedestrian survey of the APE. No historic properties were identified. Due to the potential for historic resources

to be inadvertently discovered during constriction activities, Juniper Energy will have archaeological and tribal monitors present during ground-disturbing activities.

Based on the on the findings of the above-referenced cultural resources studies, the USDA is of the opinion a finding of no historic properties affected, in accordance with 36 CFR § 800.4(d)(1), is appropriate for the undertaking.

Having reviewed your submittal and supporting documentation, SHPO offers the following comments:

1) The APE appears adequately delineated to account for direct and indirect effects to historic properties;

2) SHPO does not object to a finding of no historic properties affected;

Please be reminded that in the event of a post review discovery or change in the scale or scope of the undertaking, the USDA may have additional consultation responsibilities under 36 CFR Part 800. If you have any questions or concerns, please contact Tristan Tozer at (916) 894-5499 or Tristan.Tozer@parks.ca.gov.

Sincerely,

Julianne Polanco
State Historic Preservation Officer