Draft

PROJECT NEXUS

Initial Study/Mitigated Negative Declaration

Prepared for
Turlock Irrigation District

August 2022

ESA

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Acronyms and Other Abbreviations

°F	degrees Fahrenheit
AB	Assembly Bill
AC	alternating current
BAU	business-as-usual
BMP	best management practice
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CalEEMod	California Emissions Estimator Model
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CCaIC	Central California Information Center
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO	carbon monoxide
Construction General Permit	Construction General Permit for Discharges of Stormwater Associated with Construction Activities
dB	decibel(s)
DC	direct current
dBA	A-weighted decibel(s)
Delta	Sacramento–San Joaquin Delta
DOC	California Department of Conservation
DPM	diesel particulate matter
DWR	California Department of Water Resources
ESA	Environmental Science Associates
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
g	the acceleration speed of gravity
I-5	Interstate 5
in/sec	inches per second
LSA	Lake and Streambed Alteration
MBTA	Migratory Bird Treaty Act
MW	megawatt
Mw	moment magnitude
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NO_2	nitrogen dioxide

NO_X	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
PG&E	Pacific Gas and Electric Company
$PM_{2.5}$	particulate matter measuring 2.5 microns or less in diameter
PM_{10}	particulate matter measuring 10 microns or less in diameter
PPV	peak particle velocity
PRC	Public Resources Code
Project	Turlock Irrigation District Project Nexus
Project sites	locations of the Turlock Irrigation District Project Nexus sites, referred to in this document as Site 1 and Site 2
RMS	root mean square
ROG	reactive organic gases
SIP	California State Implementation Plan
SJVAB	San Joaquin Valley Air Basin
SJVAPCD	San Joaquin Valley Air Pollution Control District
SO_2	sulfur dioxide
SVP	Society of Vertebrate Paleontology
SWPPP	storm water pollution prevention plan
TAC	toxic air contaminant
TID	Turlock Irrigation District
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
VdB	vibration decibels
VMT	vehicle miles traveled

ENVIRONMENTAL CHECKLIST

Initial Study

1. **Project Title:** Turlock Irrigation District Project Nexus
2. **Lead Agency Name and Address:** Turlock Irrigation District
333 E. Canal Drive
Turlock, CA 95381
3. **Contact Person and Phone Number:** Bill Penney
(209) 883-8385
4. **Project Location:** Stanislaus County
5. **Project Sponsor's Name and Address:** Same as above
6. **General Plan Designation(s):** Agriculture
7. **Zoning:** General Agriculture
8. **Description of Project:** See Project Description
9. **Surrounding Land Uses and Setting:** See Project Description
10. **Other public agencies whose approval is required:** See Table 1-1
11. **Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.?** Yes

    Note: Conducting consultation early in the CEQA process allows tribal governments, lead agencies, and project proponents to discuss the level of environmental review, identify and address potential adverse impacts to tribal cultural resources, and reduce the potential for delay and conflict in the environmental review process. (See Public Resources Code section 21080.3.2.) Information may also be available from the California Native American Heritage Commission's Sacred Lands File per Public Resources Code section 5097.96 and the California Historical Resources Information System administered by the California Office of Historic Preservation. Please also note that Public Resources Code section 21082.3(c) contains provisions specific to confidentiality.

Environmental Factors Potentially Affected

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

☐ Aesthetics	☐ Agriculture and Forestry Resources	☐ Air Quality
☐ Biological Resources	☐ Cultural Resources	☐ Energy
☐ Geology/Soils	☐ Greenhouse Gas Emissions	☐ Hazards & Hazardous Materials
☐ Hydrology/Water Quality	☐ Land Use/Planning	☐ Mineral Resources
☐ Noise	☐ Population/Housing	☐ Public Services
☐ Recreation	☐ Transportation	☐ Tribal Cultural Resources
☐ Utilities/Service Systems	☐ Wildfire	☐ Mandatory Findings of Significance

DETERMINATION: (To be completed by the Lead Agency)

On the basis of this initial study:

☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Bill Penney
Name

Signature

07/29/22
Date

CHAPTER 1
Project Description

1.1 Introduction and Background

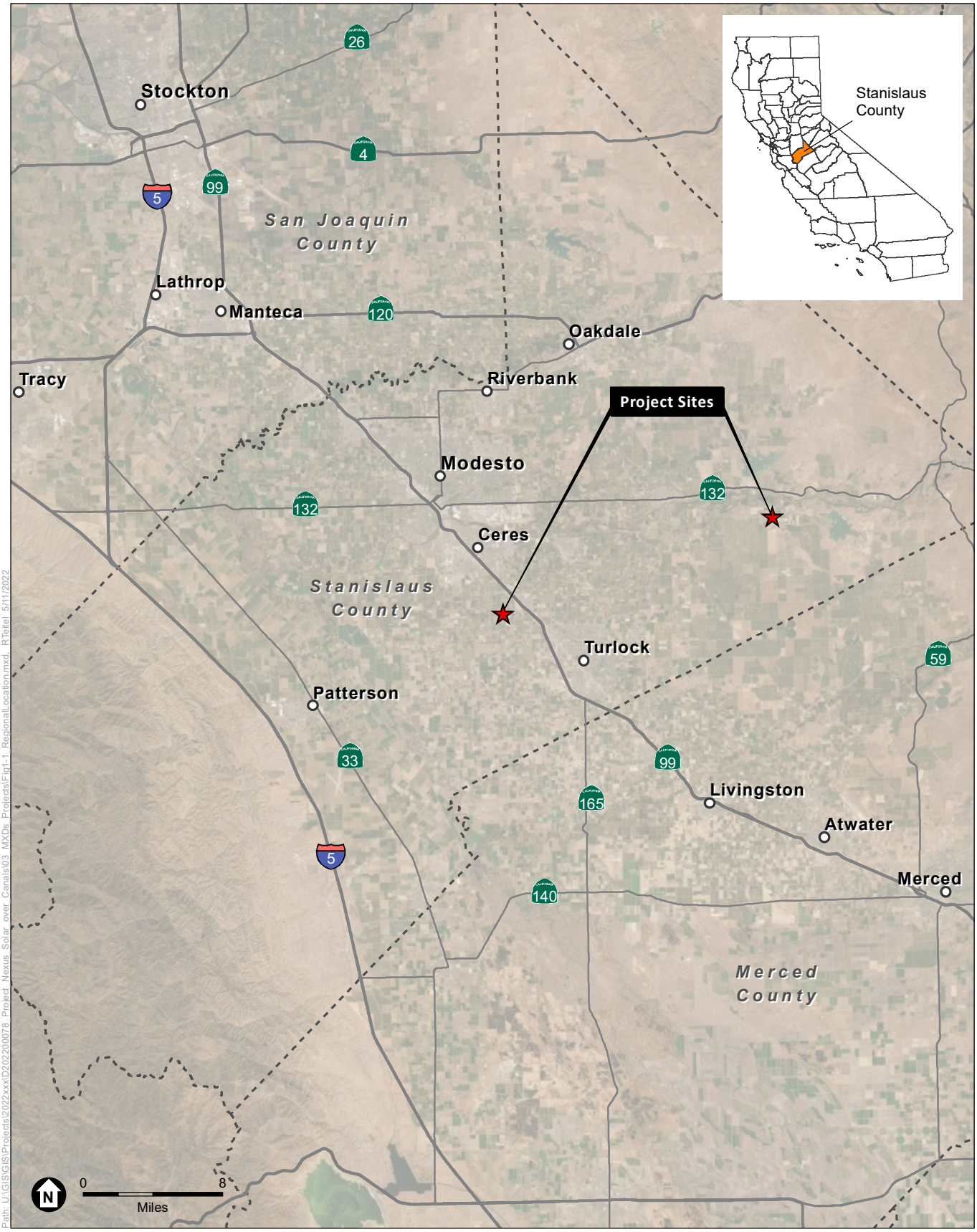
The Turlock Irrigation District (TID), in partnership with the California Department of Water Resources (DWR), Solar AquaGrid LLC, and the University of California (referred to in this document as *partners*), proposes to implement Project Nexus (Project Nexus, or Project), which includes installation of solar panels that would cover and span various sections of TID's existing irrigation canal system. Project Nexus would serve as a proof of concept to pilot, research, and study solar over canal designs and deployment on behalf of the State of California using TID land and electric grid access. It is expected that the Project would provide various co-benefits, including reduced water evaporation resulting from mid-day shade and wind reduction, water quality improvements through reduced vegetative growth, reduced canal maintenance through reduced vegetative growth, and renewable power generation, among other benefits. The Project also includes installation of energy storage facilities.

1.2 Project Description

1.2.1 Project Locations and Existing Facilities

The proposed Project sites (referred to in this document as S*ite 1 and Site 2*) are along existing canals in Stanislaus County that are owned by TID. Project Site 1 is between Ceres and Turlock, approximately 2 miles west of State Route 99, and Project Site 2 is approximately 19 miles east-southeast of Modesto, about 1.6 miles south of State Route 132 (also known as Yosemite Boulevard) (**Figure 1-1**).

Project Site 1 is a segment of the Ceres Main Canal/Upper Lateral 3 from Faith Home Road westward approximately 4,000 feet and the Ceres Main Canal/Lower Lateral 3 that would surround the recently approved future Ceres Main Reservoir Project on its north, east, and south sides with an extension from the reservoir to the north toward Keyes Road for approximately 5,000 feet (**Figure 1-2**). The subject segments of these canals have narrow spans that are approximately 20 to 25 feet wide, with dirt access roads that parallel immediately adjacent to each side of the canal and are between 12 to 15 feet wide. A high-voltage double-circuit power line with coupled conductors parallels the access road on the south side of Ceres Main Canal for approximately 0.5 miles of the segment. The land adjacent to Site 1 is zoned agricultural.

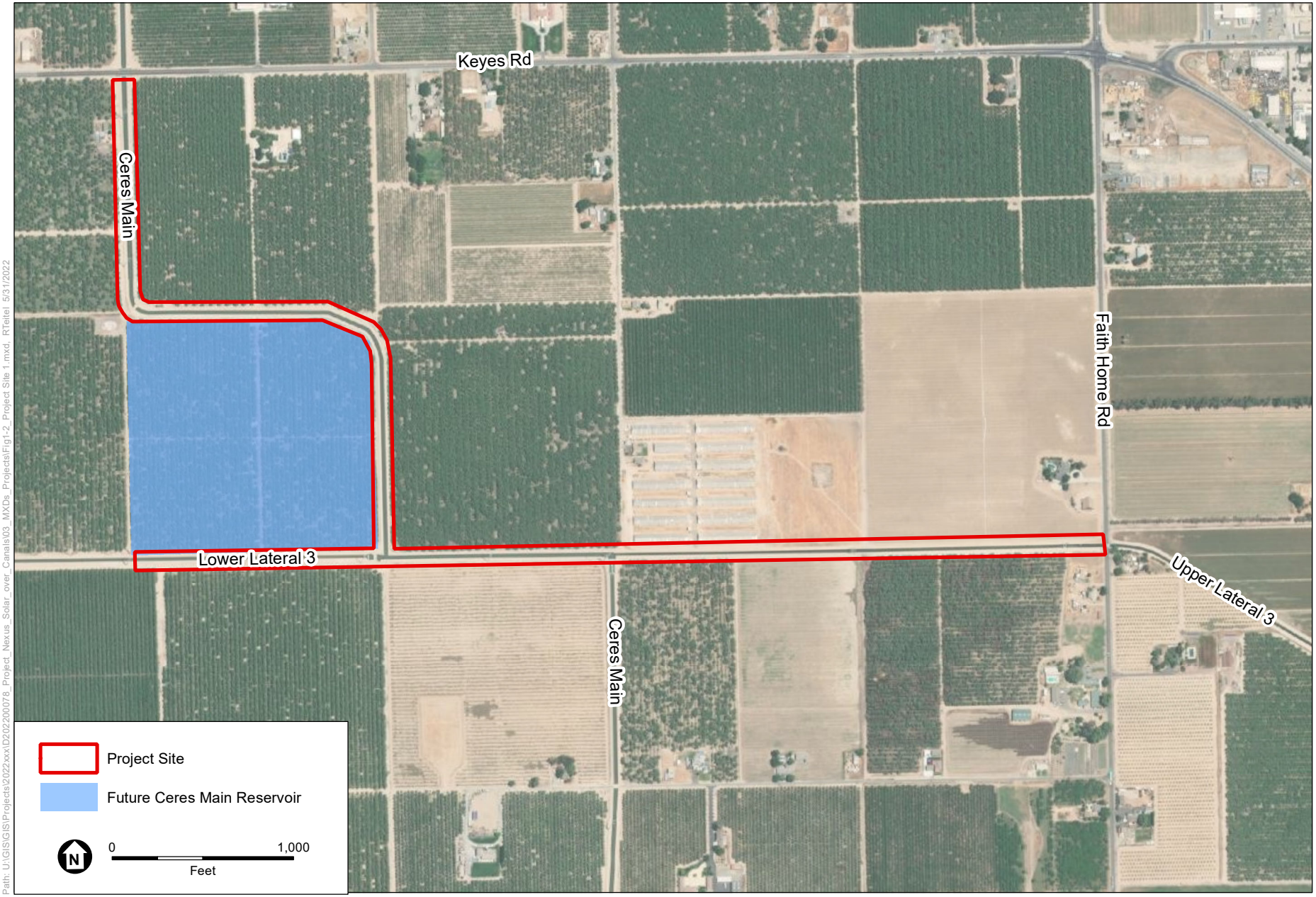


SOURCE: Esri, 2015; ESA, 2021

Project Nexus

Figure 1-1
Regional Location

ESA



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SOURCE: Esri Imagery, ESA, 2022

Project Nexus

Figure 1-2
Project Site 1

Project Site 2 would include approximately 500 linear feet of solar panels within an alignment of the Main Canal (**Figure 1-3**) with the western terminus of the segment approximately 1,000 feet northeast of the Lake Road and Hawkins Road intersection. This segment of Main Canal is an approximately 110-foot-wide span with 25- to 35-foot-wide dirt access roads that parallel immediately adjacent to each side of canal. The land adjacent to Site 2 is zoned agricultural.

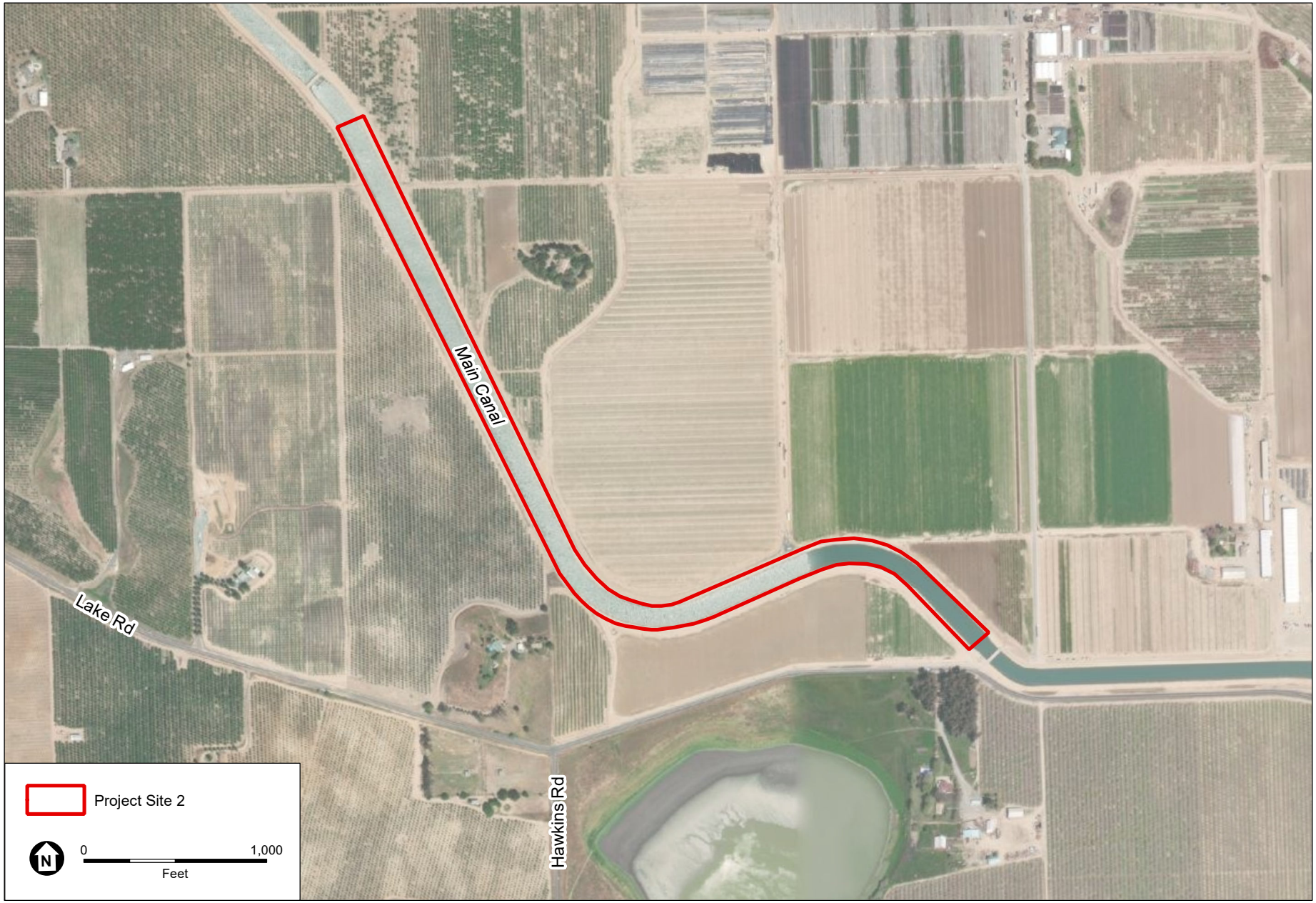
1.2.2 Project Components

Currently, TID and its partners are researching various types of solar panels to be installed for the Project. Multiple types of solar panels may ultimately be selected for implementation so that variations of performance over water can be studied, though design and supply chain constraints may dictate the ultimate decision. The structure for the solar panels would be based on various factors such as local geotechnical conditions, width of suspension over the canal, and the type of solar panel chosen for installation. Based on the current level of design, the structure for the solar panels on the narrow-span canals would generally include spaced vertical helical piles providing below-ground foundations, horizontal beams spanning the canal width, and tension cables running parallel to the canal providing support for the solar panel substructures. The solar support structure for the wide-span canals would also incorporate tension cables (though they would run perpendicular to the canal) and would vary in terms of dimensions of the members, spacing, and other structural characteristics.

Direct current (DC) electricity from the solar arrays would be transmitted from the arrays to either string inverters or central inverters and to the interconnection points via underground conductors. Each interconnection point would incorporate a step-up transformer and all required safety switchgear and would be sited in close proximity to selected TID 19-kilovolt interconnection feeders along the alignment. Operational system monitoring and research data acquisition equipment would be included. Site and equipment security and safety elements would be incorporated on a site-by-site basis.

TID is also planning to incorporate battery energy storage into the Project. This storage would potentially be installed at both Project sites and sized as a pilot to enable the Project research team to assess the use of energy storage integrated with the intermittent generating solar panel resources. Depending on budget and the type of storage selected, it may be beneficial to run DC directly to the storage and convert to alternating current (AC) prior to the step-up transformer. The energy storage facilities would be connected either to TID's existing electrical grid or to local TID demand, such as pumps.

A major component of the Project would be research and monitoring, an effort that would be led by the University of California research team. The Project partners are currently developing a list of key performance indicators that would be tracked and reported. Several of these key performance indicators would be the change in evaporation rate from shading and wind mitigation of the solar panels, the impact on the structural system of different solar array weights, the impact on aquatic vegetation, changes in water quality, and the overall solar energy generation of various photovoltaic (PV) panel architectures.



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SOURCE: Esri Imagery, ESA, 2022

Project Nexus

Figure 1-3
Project Site 2

Project Site 1

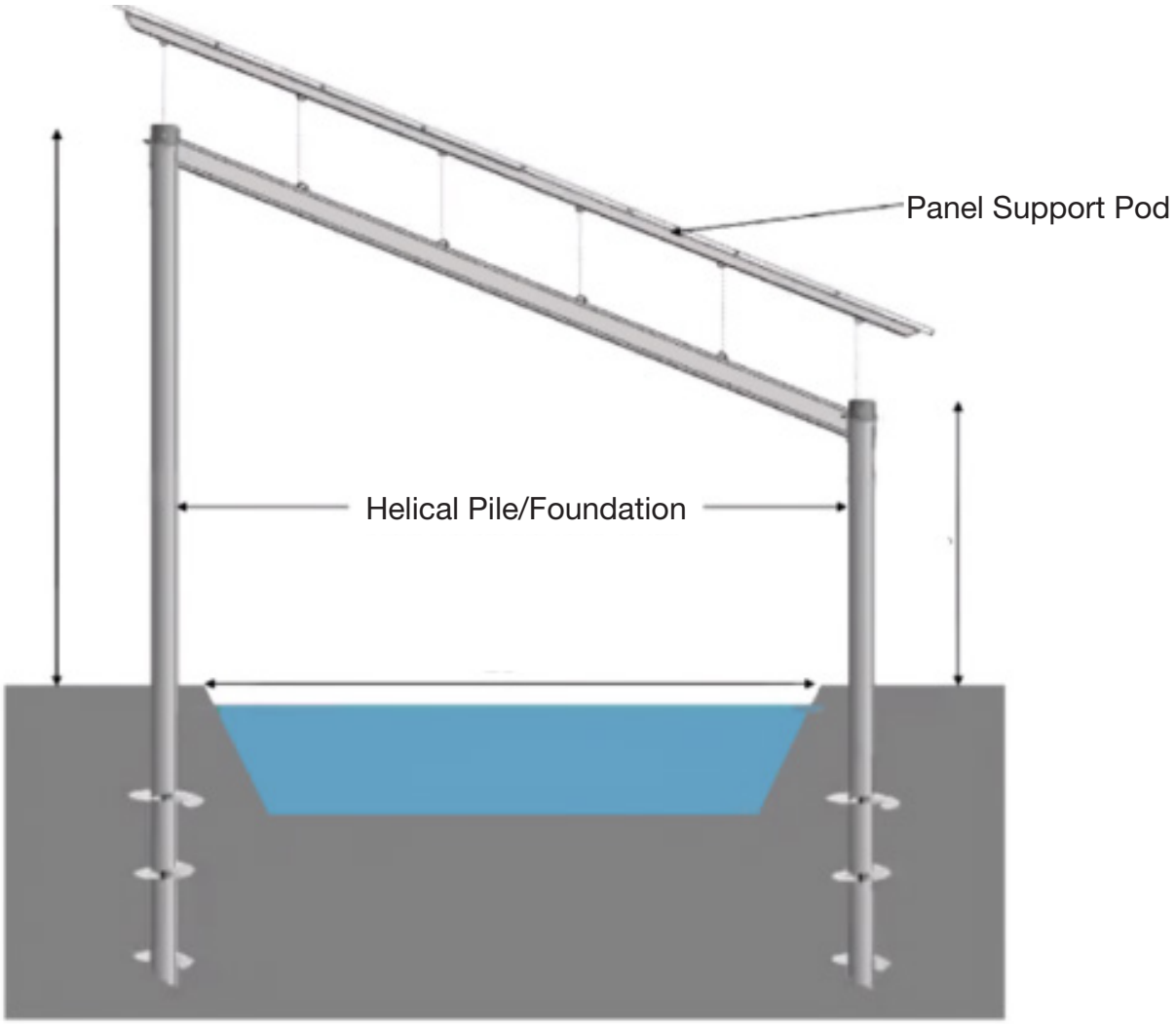
Project Site 1 would be built with a narrow-span canal conceptual design (**Figure 1-4**) that includes helical piles/foundations that would support the panel pod. Project Site 1 would include a combined estimated solar power generation capacity of 4 megawatts (MW). The height of the structures would fluctuate to help analyze one of the key performance indicators, which is reduced evaporation from shading and wind protection. Limiting factors of height are that the higher the panels are, the less evaporation would occur; however, if the panels would be installed too low, access could be restricted. In general, the solar panels would be installed between 2 and 14 feet above the top of the narrow-span canal. The proposed power line alignment to connect Site 1 to the nearest existing TID feeder line would be approximately 4,000 feet long and would follow an alignment parallel to the solar panels along Upper Lateral 3. The new line would be 19 kilovolts and consist of a single circuit (i.e., three conductor wires) that would be supported by wood poles. It is possible that the proposed power line to connect Site 1 to the nearest existing TID feeder line and the array interconnection conductors described above may be collocated together underground or on poles.

Site 1 would also include a battery storage facility near the southeastern corner of the future Ceres Main Reservoir. The battery storage facility would be completely contained within two approximately 50-foot by 8-foot enclosures that would be approximately 10 feet tall. The enclosures would be placed on a concrete pad or gravel. The battery storage facility may be connected to the TID power lines, or locally to TID pumps at the future Ceres Main Reservoir.

Project Site 2

Project Site 2 would be built with a wide-span canal conceptual design (**Figure 1-5**) that includes helical piles/foundations that would support the panel pod. Project Site 2 would include a combined estimated solar power generation capacity of 1 MW. In general, the solar panels would be between 5 and 18 feet above the wide-span canal. The proposed power line alignment to connect Site 2 to the nearest existing TID feeder line would originate from the intersection of Lake Road and Hawkins Road. The exact path of the proposed power line alignment is undetermined, but it would likely head east on Lake Road and either turn north to the site on a private farm road or continue east on Lake Road to the site. The power line may span up to approximately 2,500 feet. The new line would be 19 kilovolts and consist of a single circuit (i.e., three conductor wires) that would be supported by wood poles.

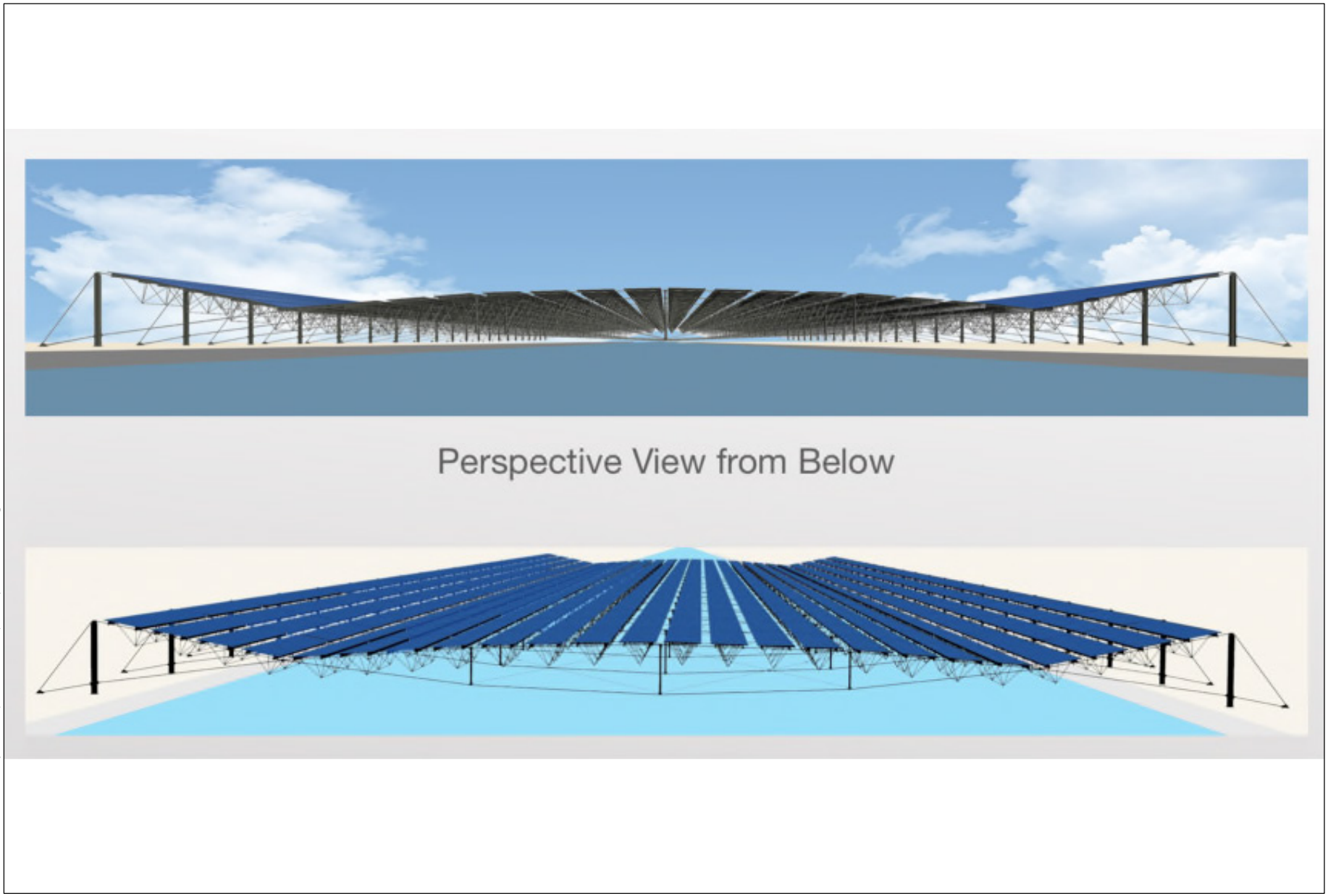
Site 2 could also include a battery storage facility in close proximity to the proposed solar panels. The battery storage facility would be completely contained within two approximately 50-foot by 8-foot enclosures that would be approximately 10 feet tall. The enclosures would be placed on a concrete pad or gravel. The battery storage facility would be connected to the TID power lines, or locally to an undetermined TID demand.



SOURCE: TID

Project Nexus

Figure 1-4
Conceptual Design for Site 1



2022/D202200078.00 - TID Project Nexus /Solar Over Canals/05 Graphics-GIS-Modeling/Illustrator

SOURCE: TID

Project Nexus

Figure 1-5
Conceptual Design for Site 2

ESA

1.2.3 Compounding Advantages

The main advantages of the Project are that local renewable clean energy would be generated with the added benefit of avoiding costs that would otherwise be required to purchase land not owned by TID for placement of solar panels. The solar panels would be placed on previously disturbed flat access roads that would require little to no site preparation, earthwork, or grading; this would result in less environmental impact than placing solar panels on previously undisturbed land. Shading of the canal caused by the solar panels would also have the expected added effect of causing less aquatic vegetation growth, which would reduce canal maintenance requirements and result in improved water quality. Another benefit for placing the solar panels over the canals is reduced water evaporation from the canals due to shading and wind resistance from the structures.

1.2.4 Project Objectives

The objectives of the proposed Project are to:

- Minimize impacts to water deliveries
- Construct renewable energy generation
- Avoid impacts to farmland
- Construct in existing TID right-of-way to avoid cost of land purchase
- Evaluate scalability of construction (cost/benefit)
- Evaluate water savings from reduced evaporation
- Measure reduced aquatic vegetation
- Evaluate impact on maintenance
- Evaluate integration of energy storage

1.2.5 Project Construction

All infrastructure that would be associated with the Project would be placed outside of the canals on existing canal access roads. Equipment and vehicles would gain access to the sites from public roadways, including Faith Home Road and/or Keyes Road for Project Site 1 and Lake Road for Project Site 2. The Project would not require extensive ground preparation or earthmoving activities and would not require the removal of existing agricultural crops or facilities. The Project would not involve in-water construction in any of the existing canal facilities. A staging/laydown area would be established in the vicinity of each of the Project sites. The staging areas would be sited in the existing TID right-of-way, or on an adjacent property. It is anticipated that staging areas would not need to be extensively prepared (e.g., grading, covering with crushed rock would not be required) for use.

1.2.6 Construction Equipment and Schedule

The majority of Project construction activities would begin in October 2022 and be completed by April 2023, lasting approximately 24 weeks; however, it is possible that some construction activities (e.g., for battery storage facilities) may occur outside of this period. It is anticipated that construction activities at the Project sites would occur between the hours of 7:00 a.m. and 7:00 p.m., 5 days a week (i.e., Monday through Friday) but there is a possibility that the construction contractor would request to begin work at 6:00 a.m. and end work by 8:00 p.m. Construction would likely occur sequentially, beginning at Site 1 and followed by construction activities at Site 2. It is assumed that the panels and associated infrastructure would be delivered via an average of two haul truck loads per day and the battery storage equipment would be delivered via an average of one haul truck load per day from the Port of Oakland. Power line poles, insulators, and conductor would be delivered to the site via an average of one haul truck load per day from a local TID yard. The following amounts and types of heavy construction equipment would be required:

- Two truck-mounted augers
- One excavator
- One dozer
- One backhoe
- Two cranes
- Two aerial lifts
- Three rough terrain forklifts
- Two generators
- One conductor tensioner

1.3 Project Operations and Maintenance

Project operations and maintenance would commence immediately following construction at each of the two sites in 2023 (1st Quarter for Site 1 and 2nd Quarter for Site 2) and would continue through 4th Quarter 2024. Routine maintenance of the Project would include panel cleaning. The exact process and equipment that would be used for panel cleaning has yet to be determined but may include a variety of methods, such as an electrically powered vacuum system installed on the panels and various forms of pressure washing. If water is used, it would be obtained from the canal and would run off back into the canal during the washing process. Part of the research that would be conducted associated with the Project would be to evaluate various tools and methods to clean the panels. Project operations, maintenance, and monitoring would consist of the following:

- **Water Supply:** evaluation of key performance indicators, such as water quality improvements and reduced water evaporation.

- **Electrical Distribution:** testing of various PV brands and manufacturers to determine system impacts from a variable generation source.

- **Power Supply:** seasonal and time-of-day solar energy generation would be measured in terms of energy generation from panel orientation, and scalability (constructability and feasibility) would be evaluated.

1.3.1 Responsible Agencies, Permits, and Approvals

Table 1-1 summarizes the permits and/or approvals that may be required before construction of the Project.

TABLE 1-1
REGULATORY REQUIREMENTS, PERMITS, AND AUTHORIZATIONS FOR PROJECT FACILITIES

Jurisdiction	Agency	Type of Approval
Federal Agencies	N/A	
State Agencies	Central Valley Regional Water Quality Control Board	NPDES General Permit for Stormwater Discharge Associated with Construction
	Cal/OSHA	Construction or Excavation Permit
Local Agencies	N/A	

NOTES: Cal/OSHA = California Division of Occupational Safety and Health; N/A = not applicable; NPDES = National Pollutant Discharge Elimination System

SOURCE: Data compiled by Environmental Science Associates in 2022

1.4 Resources Not Considered in Detail

1.4.1 Land Use and Planning

The Project sites are both located along existing canals in rural Stanislaus County on parcels zoned for agriculture. Project Site 1 is a segment of the Ceres Main Canal/Upper Lateral 3 from Faith Home Road westward approximately 4,000 feet and the Ceres Main Canal/Lower Lateral 3 that would surround the recently approved future Ceres Main Reservoir Project on its north, east, and south sides with an extension from the reservoir to the north towards Keyes Road for approximately 5,000 feet. Project Site 2 would include approximately 500 linear feet of solar panels along an alignment of the Main Canal with the western terminus of the segment approximately 1,000 feet northeast of the Lake Road and Hawkins Road intersection. The Project is not located in an incorporated city or community and would be consistent with existing land uses, plans, policies, and regulations. Therefore, no impacts related to land use and planning would occur.

1.4.2 Mineral Resources

The Project is located on sites zoned for agriculture along existing canals. The Project would not result in the loss of availability of a known mineral resource and would not affect a locally important mineral resource recovery site delineated on a local General Plan, Specific Plan, or other land use plan. No impacts on mineral resources would occur.

1.4.3 Population and Housing

The Project would involve the installation of solar panels that would cover and span various sections of TID's existing irrigation canal system. Project Nexus would serve as a proof of concept to pilot, research, and study solar over canal designs and deployment on behalf of the

State of California using TID land and electric grid access. It is expected that the Project would provide various co-benefits, including reduced water evaporation resulting from mid-day shade and wind reduction, water quality improvements through reduced vegetative growth, reduced canal maintenance through reduced vegetative growth, and renewable power generation, among other benefits. The Project would not include new homes. Construction would be short-term and would not require a substantial number of additional workers outside of the existing work force. Existing TID staff and its partners would be responsible for operation of the Project. The Project sites are located on parcels zoned for agriculture and would not displace any housing or people. Therefore, no impacts related to population and housing would occur.

1.4.4 Public Services

The Project would not result in the construction of any new facilities or population growth that would generate a need for new or physically altered government facilities. Therefore, demand for police and fire protection and for community amenities such as schools and parks would not change relative to existing conditions, and no impacts would occur.

1.4.5 Recreation

The Project would not increase demand for recreation facilities as it includes installation of solar panels that would cover and span various sections of TID's existing irrigation canal system. Project Nexus would serve as a proof of concept to pilot, research, and study solar over canal designs and deployment on behalf of the State of California using TID land and electric grid access. The Project would not include recreational facilities or require the construction or expansion of recreational facilities. Therefore, no impacts on recreation would occur.

CHAPTER 2
Environmental Checklist

2.1 Aesthetics

Issues (and Supporting Information Sources):		*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
I.	**AESTHETICS —** Except as provided in Public Resources Code Section 21099, would the project:				
a)	Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒
b)	Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c)	In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☐	☐	☒	☐
d)	Create a new source of substantial light or glare which would adversely affect daytime or nighttime views in the area?	☐	☐	☒	☐

2.1.1 Environmental Setting

Aesthetic or visual resources include the "scenic character" of a particular region and site. Scenic features can be either natural (e.g., vegetation and topography) or man-made (e.g., historic structures). Areas that are more sensitive to potential effects are usually readily observable, such as land adjacent to major roadways and hilltops.

Visual Environment

The Project sites are located in unincorporated Stanislaus County. The areas are generally flat and used primarily for agriculture. Interstate 5 (I-5), the only officially designated scenic highway in Stanislaus County, is more than 14 miles to the west of Project Site 1 and more than 31 miles to the west of Project Site 2. Project Site 1 is surrounded by parcels with almond trees and has only minor visibility from local roadways. Project Site 2 is surrounded by agricultural lands and row crops.

2.1.2 Discussion

a) **No Impact.** No designated scenic vistas or notable geographic features have been identified near the Project sites in the Stanislaus County General Plan (Stanislaus County 2016). As a result, no impact on a designated scenic vista would occur.

b) **No Impact.** A review of the current California Department of Transportation (Caltrans) Map of Designated Scenic Routes indicates one officially designated state scenic highway exists in Stanislaus County, which is I-5 (Caltrans 2022). I-5 is officially designated as a scenic route in Stanislaus County from the San Joaquin County line to the Merced County line; however, the interstate is more than 14 miles to the west of Project Site 1 and more than 31 miles to the west of Project Site 2. The Project would not be visible to travelers on I-5 and would not affect the scenic quality of the landscape or intrude upon travelers' enjoyment of the view. Therefore, no impact on scenic resources would occur.

c) **Less than Significant.** Construction of the Project would result in the installation of solar panels that would cover and span various sections of TID's existing irrigation canal system and associated energy storage facilities. Although the Project would alter the existing visual conditions of the Project sites, the changes would not be easily visible to the public as public roads would not be adjacent to the majority of the Project sites. Therefore, the existing visual character or quality of public views of the sites and their surroundings would not be substantially degraded. This impact would be less than significant.

d) **Less than Significant.** Construction of the Project would occur during the daytime and would not require nighttime lighting. The Project would result in the installation of solar panels that would cover and span various sections of TID's existing irrigation canal system, which would result in reflective surfaces; however, the solar panels are in a rural agricultural area and would primarily not be visible from public viewpoints. Therefore, impacts from light or glare that would adversely affect daytime or nighttime views in the area would be less than significant.

2.1.3 References

California Department of Transportation (Caltrans), 2022. California State Scenic Highway System Map. Available at: https://caltrans.maps.arcgis.com/apps/webappviewer/index.html?id=465dfd3d807c46cc8e8057116f1aacaa. Accessed June 22, 2022.

Stanislaus County, 2016. *Stanislaus County General Plan 2015.* Adopted on August 23, 2016, by the Board of Supervisors.

2.2 Agriculture and Forestry Resources

Issues (and Supporting Information Sources):	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
II. AGRICULTURE AND FORESTRY RESOURCES — In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

2.2.1 Environmental Setting

Stanislaus County is one of California's leading agricultural counties, with approximately 85 percent of the county's total land acreage currently being used for agricultural purposes (Stanislaus County 2016). The gross value of agricultural production in Stanislaus County for 2020 was $3,476,093,000. This represents a three percent decrease from the 2019 value of $3,598,404,000 (Stanislaus County 2021). The top commodities include almonds, milk, and chickens (Stanislaus County 2021).

The California Department of Conservation (DOC) administers the Farmland Mapping and Monitoring Program, California's statewide agricultural land inventory. Through this mapping effort, DOC classifies farmland under four categories: Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance. Project Site 1 is primarily classified as Prime Farmland and the remaining portion is classified as Unique Farmland. Project Site 2 is primarily classified as Unique Farmland with a small portion classified as Prime Farmland (DOC 2022). There is no forest land in or adjacent to the Project sites. The Project sites are designated by the Stanislaus County General Plan as an Agriculture land use.

The Williamson Act enables governments to enter into contracts with private landowners to restrict specific land parcels to agricultural or related open space use. As of 2015, most of the parcels adjacent to Project Site 1 are enrolled under Williamson Act contract (Data Basin 2015). One parcel adjacent to Project Site 1 is not enrolled under Williamson Act contract. The parcels to the south of Project Site 2 are all enrolled under Williamson Act contract. One parcel to the north of Project Site 2 is enrolled under Williamson Act contract, and the rest of the adjacent parcels are not (Data Basin 2015). As discussed previously, the Project sites are along existing canals and this land is not enrolled under Williamson Act contract.

2.2.2 Discussion

a, b, e) **No Impact.** Project Site 1 is primarily classified as Prime Farmland and the remaining portion is classified as Unique Farmland. Project Site 2 is primarily classified as Unique Farmland with a small portion classified as Prime Farmland. The parcels adjacent to the Project sites are primarily enrolled under Williamson Act contracts; however, implementing the Project would result in the installation of solar panels that would cover and span various sections of TID's existing irrigation canal system as well as installation of associated power lines and battery storage facilities, and would not affect the uses of the farmland on the adjacent parcels. The Project would not result in the loss of Farmland or conflict with existing zoning for agricultural use, or a Williamson Act contract. Therefore, no impact would occur.

c, d) **No Impact.** The Project sites are not zoned as forest land or timberland or zoned for timberland production. Implementation of the Project would not conflict with existing zoning for, or cause rezoning of, forest land, timberland, or timberland zoned as Timberland Production, nor would it result in the loss of forest land or conversion of forest land to non-forest use. Therefore, no impact would occur.

2.2.3 References

California Department of Conservation (DOC), 2022. California Important Farmland Finder. Available: https://maps.conservation.ca.gov/DLRP/CIFF/. Accessed June 15, 2022.

Data Basin, 2015. Stanislaus County Williamson Act Parcels and Non-Renewals, 08/2015. Available at: https://databasin.org/datasets/30858ef6142d4cb38c2a3e4b228a7bdb/. Access June 27, 2022.

Stanislaus County, 2016. *Stanislaus County General Plan and Airport Land Use Compatibility Plan Update, Draft Program Environmental Impact Report*. April 2016.

———, 2021. *Stanislaus County Agricultural Report 2020*. Agricultural Commissioner's Office and Sealer of Weights & Measures, Modesto, CA.

2.3 Air Quality

Issues (and Supporting Information Sources):	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
III. AIR QUALITY — Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☐	☒	☐
c) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☐	☒	☐

2.3.1 Environmental Setting

General Climate and Meteorology

The Project sites are in unincorporated Stanislaus County in the northern portion of the San Joaquin Valley Air Basin (SJVAB). The SJVAB is defined by the Sierra Nevada in the east (8,000–14,000 feet in elevation), the Coast Ranges in the west (averaging 3,000 feet in elevation), and the Tehachapi Mountains in the south (6,000–8,000 feet in elevation). The valley is basically flat, with a slight downward gradient to the northwest. The valley opens to the sea at the Carquinez Strait, where the waters of the Sacramento–San Joaquin Delta empty into San Francisco Bay.

The SJVAB has an inland Mediterranean climate, averaging more than 260 sunny days per year. The valley floor experiences warm, dry summers and cool, wet winters. Summer high temperatures often exceed 100 degrees Fahrenheit (°F), averaging in the low 90s °F in the northern valley and high 90s °F in the south. In the entire SJVAB, high daily temperature readings in summer average 95 °F. Over the last 30 years, the SJVAB averaged 106 days per year of 90 °F or hotter and 40 days per year of 100 °F or hotter. The daily summer temperature variation can be as much as 30 °F.

In winter, as the cyclonic storm track moves southward, the storm systems moving in from the Pacific Ocean bring a maritime influence to the SJVAB. The high mountains to the east prevent the cold, continental air masses of the interior from influencing the valley. Winters are mild and humid. Temperatures below freezing are unusual. Average high temperatures in the winter are in the 50s °F, but highs in the 30s °F and 40s °F can occur on days with persistent fog and low cloudiness. The average daily winter low temperature is 45 °F.

Criteria Air Pollutants

Concentrations of criteria air pollutants are used as indicators of ambient air quality conditions. Source types, health effects, and future trends associated with each air pollutant are described below along with the most current attainment area designations for the Project area and vicinity.

Ozone

Short-term exposure to ozone can irritate the eyes and cause constriction of the airways. Besides causing shortness of breath, ozone can aggravate existing respiratory diseases such as asthma, bronchitis, and emphysema. Ozone is not emitted directly into the atmosphere but is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving reactive organic gases (ROG) and oxides of nitrogen (NO_X). ROG and NO_X are known as precursor compounds for ozone.

Significant ozone production generally requires ozone precursors to be present in a stable atmosphere with strong sunlight for approximately 3 hours. Ozone is considered both a secondary and regional air pollutant because it is not emitted directly by sources but is formed downwind of sources of ROG and NO_X under the influence of wind and sunlight. Ozone concentrations tend to be higher in the late spring, summer, and fall, when the long sunny days combine with regional subsidence inversions to create conditions conducive to the formation and accumulation of secondary photochemical compounds, like ozone.

Carbon Monoxide

Ambient carbon monoxide (CO) concentrations normally are considered a local effect and typically correspond closely to the spatial and temporal distributions of vehicular traffic. Wind speed and atmospheric mixing also influence CO concentrations. Under inversion conditions, CO concentrations may be distributed more uniformly over an area that may extend some distance from vehicular sources. When inhaled at high concentrations, CO combines with hemoglobin in the blood and reduces the blood's oxygen-carrying capacity. This reduces the amount of oxygen that can reach the brain, heart, and other body tissues. This condition is especially critical for people with cardiovascular diseases, chronic lung disease, or anemia, and for fetuses.

CO concentrations have declined dramatically in California as a result of existing controls and programs. Most areas of the state, including the region surrounding the Project sites, have no problem meeting the state and federal standards for CO. Measurements and modeling for CO were important in the early 1980s when CO levels were regularly exceeded throughout California. In more recent years, CO measurements and modeling results have not been a priority in most California air districts, given the retirement of older polluting vehicles, lower emissions from new vehicles, and improvements in fuels.

Nitrogen Dioxide

Nitrogen dioxide (NO_2) is a reddish-brown gas that is a byproduct of combustion processes. NO_2 may be visible as a coloring component of a brown cloud on high-pollution days, especially in conjunction with high ozone levels.

Vehicle internal combustion engines and industrial operations are the main sources of NO_2, which is an air quality concern because it acts as a respiratory irritant and is a precursor of ozone. NO_2 is a major component of the group of gaseous nitrogen compounds commonly referred to as NO_X, which are produced by fuel combustion in motor vehicles, industrial stationary sources, ships, aircraft, and rail transit. Typically, NO_X emitted from fuel combustion are in the form of nitric oxide (NO) and NO_2. NO is often converted to NO_2 when it reacts with ozone or undergoes photochemical reactions in the atmosphere. Therefore, NO_2 emissions from combustion sources are typically evaluated based on the amount of NO_X emitted from the source.

Sulfur Dioxide

Sulfur dioxide (SO_2) is a combustion product of sulfur or sulfur-containing fuels such as coal and diesel. SO_2 is also a precursor to the formation of atmospheric sulfate and particulate matter and contributes to the potential atmospheric formation of sulfuric acid that could precipitate downwind as acid rain. The concentration of SO_2, rather than the duration of exposure, is an important determinant of respiratory effects. Exposure to high SO_2 concentrations may result in edema of the lungs or the glottis and respiratory paralysis.

Particulate Matter

Respirable particulate matter (PM_{10}) and fine particulate matter ($PM_{2.5}$) are particulate matter measuring 10 microns or less in diameter and 2.5 microns or less in diameter, respectively. (A micron is one-millionth of a meter.) PM_{10} and $PM_{2.5}$ represent fractions of particulate matter that can be inhaled into the air passages and the lungs and can cause adverse health effects. Some sources of particulate matter, such as wood burning in fireplaces, demolition, and construction activities, are more local, while others, such as vehicular traffic, have a more regional effect. Very small particles of certain substances (e.g., sulfates and nitrates) can cause lung damage directly, or can contain adsorbed gases (e.g., chlorides or ammonium) that may be injurious to health. Particulates also can damage materials and reduce visibility.

Large dust particles (those with a diameter greater than 10 microns) settle out rapidly and are easily filtered by the human breathing passages. This large dust is of more concern as a soiling nuisance than as a health hazard. The remaining fraction, PM_{10} and $PM_{2.5}$, are a health concern, particularly when present at levels exceeding the federal and state ambient air quality standards. $PM_{2.5}$ (including diesel exhaust particles) is thought to have greater effects on health, because these particles are so small and thus can penetrate to the deepest parts of the lungs. Scientific studies have suggested links between fine particulate matter and numerous health problems including asthma, bronchitis, and acute and chronic respiratory symptoms such as shortness of breath and painful breathing. Diesel particulate is carcinogenic and considered a toxic as discussed below. Recent studies have shown an association between morbidity (suffering from a disease or medical condition) and mortality (premature deaths) and daily concentrations of particulate matter in the air. Children are more susceptible to the health risks of PM_{10} and $PM_{2.5}$ because their immune and respiratory systems are still developing.

Lead

Ambient lead concentrations meet both the federal and state standards in the proposed Project area. Lead has a range of adverse neurotoxin health effects and was formerly released into the atmosphere primarily via leaded gasoline products. The phase-out of leaded gasoline in California caused atmospheric lead levels to decrease.

The Project would not introduce any new sources of lead emissions; consequently, quantification of lead emissions is not required, and such emissions are not evaluated further in this analysis.

Attainment Status

Air basins that exceed either the National Ambient Air Quality Standards (NAAQS) or the California Ambient Air Quality Standards (CAAQS) for any criteria pollutants are designated as "non-attainment areas" for that pollutant. To address non-attainment areas, California created the California State Implementation Plan (SIP), which is designed to provide control measures needed to attain ambient air quality standards. The San Joaquin Valley Air Pollution Control District (SJVAPCD) is the jurisdictional entity in the SJVAB that is responsible for implementing the SIP. The SJVAPCD developed regional air quality management plans to implement control measures to try to achieve attainment status for ozone, PM_{10}, and $PM_{2.5}$ (see *Regulatory Setting* discussion below). The attainment status for criteria pollutants within the SJVAB is shown in **Table 2.3-1**.

TABLE 2.3-1
SAN JOAQUIN VALLEY ATTAINMENT STATUS BY POLLUTANT

Pollutant	Federal	State
Ozone (one-hour standard)	No Federal Standard	Non-attainment
Ozone (eight-hour standard)	Nonattainment/Extreme	Non-attainment
Carbon Monoxide (CO)	Attainment/Unclassified	Attainment
Nitrogen Dioxides (NO_2)	Attainment/Unclassified	Attainment
Sulfur Dioxide	Attainment/Unclassified	Attainment
Lead	Attainment/Unclassified	Attainment
Hydrogen Sulfide	No Federal Standard	Unclassified
Sulfates	No Federal Standard	Attainment
Visibility	No Federal Standard	Unclassified
Vinyl Chloride	No Federal Standard	Attainment
Fine Particulate Matter ($PM_{2.5}$)	Nonattainment	Non-attainment
Respirable Particulate Matter (PM_{10})	Attainment	Non-attainment

SOURCE: CARB 2020

Toxic Air Contaminants

Toxic air contaminants (TACs) are airborne substances that are capable of causing short-term (acute) and/or long-term (chronic or carcinogenic, i.e., cancer-causing) adverse effects on human health. TACs include both organic and inorganic chemical substances. They may be emitted by a

variety of common sources, including gasoline stations, automobiles, diesel engines, dry cleaners, industrial operations, and painting operations. TACs are regulated differently than criteria air pollutants at both the federal and state levels. At the federal level, these airborne substances are referred to as hazardous air pollutants. The state list of TACs identifies 243 substances and the federal list of hazardous air pollutants identifies 189 substances.

California Air Resources Board (CARB) identified diesel particulate matter (DPM) as a TAC in 1998, based primarily on evidence demonstrating cancer effects in humans. Exhaust from diesel engines includes hundreds of different gaseous and particulate components, many of which are toxic. Mobile sources such as trucks and buses are among the primary sources of diesel emissions, and DPM concentrations are higher near heavily traveled highways and rail lines with diesel locomotive operations.

Odorous Emissions

Odors are generally regarded as an annoyance rather than a health hazard. Manifestations of a person's reaction to odors can range from psychological (e.g., irritation, anger, or anxiety) to physiological (e.g., circulatory and respiratory effects, nausea, vomiting, and headache). The ability to detect odors varies considerably among the population and is quite subjective. People may have different reactions to the same odor. An odor that is offensive to one person may be perfectly acceptable to another (e.g., coffee roaster). An unfamiliar odor is more easily detected and is more likely to cause complaints than a familiar one. In a phenomenon known as odor fatigue, a person can become desensitized to almost any odor and recognition occurs only with an alteration in the intensity.

The occurrence and severity of odor impacts depend on the nature, frequency, and intensity of the source; wind speed and direction; and the sensitivity of receptors. Odor impacts should be considered for any proposed new odor sources located near existing receptors, and for any new sensitive receptors located near existing odor sources. Generally, increasing the distance between the receptor and the odor source will mitigate odor impacts.

Valley Fever

Valley Fever (also known as Coccidioidomycosis) is an infectious disease caused by the fungus *Coccidioides immitis*. Valley Fever is also known as San Joaquin Valley Fever, Desert Fever, or Cocci. Infection is caused by inhalation of *Coccidioides immitis* and *Coccidioides posadasii* spores that have become airborne when dry, dusty soil or dirt is disturbed by natural processes such as wind or earthquakes, or by human-induced ground-disturbing activities such as construction and farming.

The California Department of Public Health (CDPH) received reports of 9,004 incident cases of Valley Fever for 2019, which was an 18 percent increase from 2018 (CDPH 2020). Approximately 60 percent of Valley Fever cases are mild and display flu-like symptoms or no symptoms at all. Coccidioidomycosis is highly endemic in the San Joaquin Valley and remains an important public health problem in California. There is currently no vaccine; however, efforts to develop a vaccine are ongoing (CDPH 2020). In susceptible people and animals, infection occurs when a *Coccidioides*

immitis spore is inhaled. Fungal spores become airborne when soil is disturbed by natural processes such as wind or earthquakes, or by human-induced ground-disturbing activities such as construction and farming.

The Centers for Disease Control and Prevention (CDC) reports that outbreaks can occur particularly after events that disturb large amounts of soil. Past outbreaks have occurred in military trainees, archeological workers, solar farm workers, construction workers, and in people exposed to earthquakes and dust storms (CDC 2020, 2022). High winds can carry dust containing the spores long distances. Most people infected with Valley Fever have no symptoms, but if symptoms develop, they usually occur in the lung and initially resemble the flu or pneumonia (e.g., fatigue, cough, shortness of breath, chest pain, fever, rash, headache, and joint aches). Valley Fever is not contagious, and secondary infections are rare. On average, there were approximately 200 Valley Fever–associated deaths each year (deaths in which Valley Fever was listed as a primary or contributing cause on a death certificate) in the United States between 1999 and 2019 (CDC 2022). The number of cases of Valley Fever in Stanislaus County has varied over the past several years. Between 2014 and 2017, the total number of cases increased from 36 to 122. In 2018 and 2019, the number of total cases dropped to 76 and 80, respectively (CDPH 2020). Those most at risk of developing severe symptoms include Hispanics, African Americans, Filipinos, pregnant women, adults of older age groups, and people with weakened immune systems (CDC 2020).

Sensitive Receptors

Some receptors are considered more sensitive than others to air pollutants. The reasons for this greater sensitivity include preexisting health problems, proximity to an emissions source, or duration of exposure to air pollutants. Schools, hospitals, and convalescent homes are considered relatively sensitive to poor air quality because children, elderly people, and the infirm are more susceptible to respiratory infections and other air quality–related health problems than the general public. Residential areas are also sensitive to poor air quality because people usually stay home for extended periods of time.

Project Site 1. The closest sensitive receptors to Project Site 1 are residences approximately 70 feet and 750 feet to the west and east, respectively, of the northern extension of the Ceres Main segment of the site near Keyes Road; approximately 1,000 feet west-southwest of the western extent of the Lower Lateral 3 segment of the site; approximately 475 feet north of the Ceres Main; and approximately 330 feet north and 100 feet south of the segment adjacent to Faith Home Road.

Project Site 2. The closest sensitive receptors to Project Site 2 are residences approximately 550 feet northeast of the northern segment, approximately 300 feet southwest of the segment near the intersection of Lake Road and Hawkins Road, and approximately 675 feet south-southwest of the eastern segment.

Regulatory Setting

Air quality within the SJVAB is addressed through the efforts of various federal, state, and local government agencies. These agencies work jointly, as well as individually, to improve air quality through legislation, regulations, planning, policymaking, education, and a variety of programs.

The air pollutants of concern and agencies primarily responsible for improving the air quality within the SJVAB and the pertinent regulations are discussed below.

Criteria Air Pollutants

Regulation of air pollution is achieved through both CAAQS and NAAQS as well as emission limits for individual sources of air pollutants. As required by the federal Clean Air Act (CAA), the U.S. Environmental Protection Agency (USEPA) has identified criteria pollutants and has established NAAQS to protect public health and welfare. NAAQS have been established for ozone, CO, NO_2, SO_2, PM_{10}, $PM_{2.5}$, and lead. As discussed above, these pollutants are called "criteria" air pollutants because standards have been established for each of them to meet specific public health and welfare criteria.

To protect human health and the environment, the USEPA has set "primary" and "secondary" maximum ambient thresholds for all seven criteria pollutants. Primary thresholds were set to protect human health, particularly sensitive receptors such as children, the elderly, and individuals suffering from chronic lung conditions such as asthma and emphysema. Secondary standards were set to protect the natural environment and prevent further deterioration of animals, crops, vegetation, and buildings.

As discussed previously, the NAAQS are defined as the maximum acceptable concentrations that may be reached, but not exceeded more than once per year. California has adopted more stringent ambient air quality standards (i.e., CAAQS) for most of the criteria air pollutants. **Table 2.3-2** presents both sets of ambient air quality standards (i.e., national and state). California has also established state ambient air quality standards for sulfates, hydrogen sulfide, and vinyl chloride; however, air emissions of these pollutants are not expected to be generated under the Project and are not further discussed in this Initial Study/Mitigated Negative Declaration.

Federal

USEPA is responsible for implementing programs established under the federal CAA, such as establishing and reviewing the NAAQS and judging the adequacy of SIPs; however, USEPA has delegated the authority to implement many of the federal programs to the states while retaining an oversight role to ensure that the programs continue to be implemented.

State

The CARB is responsible for establishing and reviewing the state standards, compiling the California SIP and securing approval of that plan from USEPA, conducting research and planning, and identifying TACs. CARB also regulates mobile sources of emissions in California, such as construction equipment, trucks, and automobiles; and oversees the activities of California's air quality districts, which are organized at the county or regional level. County or regional air quality management districts are primarily responsible for regulating stationary sources at industrial and commercial facilities within their geographic areas and for preparing the air quality plans that are required under the federal CAA and California CAA.

TABLE 2.3-2
NATIONAL AND STATE AMBIENT AIR QUALITY STANDARDS

Criteria Pollutant	Averaging Time	State Standard	Federal Primary Standard
Ozone	8 Hour	0.070 ppm	0.070 ppm
	1 Hour	0.09 ppm	---
Carbon Monoxide	8 Hour	9.0 ppm	9 ppm
	1 Hour	20 ppm	35 ppm
Nitrogen Dioxide	Annual Average	0.030 ppm	0.053 ppm
	1 Hour	0.18 ppm	0.100 ppm
Sulfur Dioxide	Annual Average	---	0.030 ppm
	24 Hour	0.04 ppm	0.14 ppm
	1 Hour	0.25 ppm	0.075 ppm
Respirable Particulate Matter (PM_{10})	Annual Arithmetic Mean	20 mg/m^3	---
	24 Hour	50 mg/m^3	150 mg/m^3
Fine Particulate Matter ($PM_{2.5}$)	Annual Arithmetic Mean	12 mg/m^3	12.0 mg/m^3
	24 Hour	---	35 mg/m^3
Lead	3-Month Rolling Average	---	0.15 mg/m^3
Hydrogen Sulfide	1 Hour	0.03 ppm/42 $\mu g/m^3$	---
Sulfates	24 Hour	25 mg/m^3	---
Vinyl Chloride	24 Hour	0.01 ppm/26 $\mu g/m^3$	---

NOTES: ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter; mg/m^3 = milligrams per cubic meter; --- = no applicable standard

SOURCE: CARB 2016

California's Diesel Risk Reduction Plan/Diesel Fuel Regulations

As part of California's Diesel Risk Reduction Plan, CARB has issued numerous regulations to reduce diesel emissions from vehicles and equipment that are already in use. Combining these retrofit regulations with new engine standards for diesel-fueled vehicles and equipment, CARB intended to reduce DPM emissions by 85 percent from year 2000 levels by 2020. California Diesel Fuel Regulations (13 Cal. Code Regs. Sections 2281–2285; 17 Cal. Code Regs. Section 93114) provide standards for diesel motor vehicle fuel and non-vehicular diesel fuel.

CARB has also adopted a regulation for in-use off-road diesel vehicles that is designed to reduce emissions from diesel-powered construction and mining vehicles by imposing idling limitations on owners, operators, renters, or lessees of off-road diesel vehicles. The regulation requires an operator of applicable off-road vehicles (self-propelled diesel-fueled vehicles 25 horsepower and up that were not designed to be driven on-road) to limit idling to no more than 5 minutes.

Local

San Joaquin Valley Air Pollution Control District

The Project sites are located within the jurisdiction of the SJVAPCD, which regulates air pollutant emissions for all sources throughout the SJVAB other than motor vehicles. The SJVAPCD administers permits governing stationary sources. In addition to administering permits, SJVAPCD enforces the following rules, regulations, and plans that would apply to the Project.

Regulation VIII (Fugitive PM_{10} Prohibitions)

Regulation VIII contains rules developed pursuant to USEPA guidance for serious PM_{10} non-attainment areas. Rules included under this regulation limit fugitive dust PM_{10} emissions from the following sources: construction, demolition, excavation, extraction, and other earthmoving activities, bulk materials handling, carryout and track-out, open areas, paved and unpaved roads, unpaved vehicle/equipment traffic areas, and agricultural sources. **Tables 2.3-3** and **2.3-4** contain requirements to which the Project would be subject pursuant to Rule 8021, *Construction, Demolition, Excavation, Extraction, and Other Earthmoving Activities*.

Rule 9510 (Indirect Source Review)

Some projects are required to implement particulate matter and NO_x reduction measures as required under SJVAPCD Rule 9510, Indirect Source Review (ISR), which was adopted by the SJVAPCD's Governing Board in 2005 to reduce the impacts of growth in emissions resulting from new land development in the SJVAPCD. SJVAPCD Rule 9510 applies to new development projects that would equal or exceed specific size limits called "applicability thresholds" (SJVAPCD 2017). The applicability thresholds were established at levels intended to capture projects that emit at least 2 tons of NO_x or 2 tons of PM_{10} per year. As described in Section 2.3.2 a), Project emissions would not exceed the applicability thresholds; therefore, the Project would not be subject to Rule 9510.

Air Quality Management Plans

As required by the federal and California CAAs, air basins or portions thereof have been classified as either "attainment" or "non-attainment" for each criteria air pollutant, based on whether or not the standards have been achieved. Jurisdictions of non-attainment areas also are required to prepare an air quality management plan that includes strategies for achieving attainment. The SJVAPCD has approved air quality management plans demonstrating how the SJVAB will reach attainment with the federal 1-hour and 8-hour ozone, PM_{10}, and $PM_{2.5}$ standards, and the California CO standards.

Ozone Attainment Plans

The *Extreme 1-Hour Ozone Attainment Demonstration Plan*, adopted by the SJVAPCD Governing Board October 8, 2004, set forth measures and emission-reduction strategies designed to attain the federal 1-hour ozone standard by November 15, 2010. The 1-hour ozone standard was subsequently revoked by USEPA in June of 2005. The *2013 Plan for the Revoked 1-Hour Ozone Standard* was approved by the Governing Board on September 19, 2013 (SJVAPCD 2013) to attain the 1-hour ozone standard by 2017. On July 18, 2016, USEPA published in the Federal Register the final action to determine that the SJVAB has attained the 1-hour ozone standard.

The *2007 Ozone Plan,* approved by CARB on June 14, 2007, demonstrates how the SJVAB would meet the federal 8-hour ozone standard. The *2007 Ozone Plan* includes a comprehensive list of regulatory and incentive-based measures to reduce emissions of ozone and particulate matter precursors throughout the SJVAB. Additionally, this plan calls for major advancements in pollution control technologies for mobile and stationary sources of air pollution, and an increase in state and federal funding for incentive-based measures to create adequate reductions in emissions to bring the entire SJVAB into attainment with the federal 8-hour ozone standard (SJVAPCD 2007).

TABLE 2.3-3
SJVAPCD RULE 8021 NON-ADMINISTRATIVE MEASURES AND NOTIFICATION REQUIREMENTS

No.	Measure
5.2	A person shall control the fugitive dust emissions to meet the requirements in [SJVAPCD] Table 8021-1 [shown below as Table 2.3-4].
5.3.1	An owner/operator shall limit the speed of vehicles traveling on uncontrolled unpaved access/haul roads within construction sites to a maximum of 15 miles per hour.
5.3.2	An owner/operator shall post speed limit signs that meet state and federal Department of Transportation standards at each construction site's uncontrolled unpaved access/haul road entrance. At a minimum, speed limit signs shall also be posted at least every 500 feet and shall be readable in both directions of travel along uncontrolled unpaved access/haul roads.
5.4.1	Cease outdoor construction, excavation, extraction, and other earthmoving activities that disturb the soil whenever visible dust emissions exceeds 20 percent opacity. Indoor activities such as electrical, plumbing, dry wall installation, painting, and any other activity that does not cause any disturbances to the soil are not subject to this requirement.
5.4.2	Continue operation of water trucks/devices when outdoor construction excavation, extraction, and other earthmoving activities cease, unless unsafe to do so.
6.3.1	An owner/operator shall submit a Dust Control Plan to the Air Pollution Control Officer prior to the start of any construction activity on any site that will include 10 acres or more of disturbed surface area for residential developments, or 5 acres or more of disturbed surface area for non-residential development, or will include moving, depositing, or relocating more than 2,500 cubic yards per day of bulk materials on at least three days. Construction activities shall not commence until the Air Pollution Control Officer has approved or conditionally approved the Dust Control Plan. An owner/operator shall provide written notification to the Air Pollution Control Officer within 10 days prior to the commencement of earthmoving activities via fax or mail. The requirement to submit a dust control plan shall apply to all such activities conducted for residential and non-residential (e.g., commercial, industrial, or institutional) purposes or conducted by any governmental entity.
6.3.3	The Dust Control Plan shall describe all fugitive dust control measures to be implemented before, during, and after any dust generating activity.
6.3.4	A Dust Control Plan shall contain all the [administrative] information described in Section 6.3.6 of this rule. The Air Pollution Control Officer shall approve, disapprove, or conditionally approve the Dust Control Plan within 30 days of plan submittal. A Dust Control Plan is deemed automatically approved if, after 30 days following receipt by the District, the District does not provide any comments to the owner/operator regarding the Dust Control Plan.
6.3.6	A Dust Control Plan shall contain all of the following information: 6.3.6.1: Name(s), address(es), and phone number(s) of person(s) and owner(s)/operator(s) responsible for the preparation, submittal, and implementation of the Dust Control Plan and responsible for the dust generating operation and the application of dust control measures. 6.3.6.2: A plot plan which shows the type and location of each project. 6.3.6.3: The total area of land surface to be disturbed, daily throughput volume of earthmoving in cubic yards, and total area in acres of the entire project site. 6.3.6.4: The expected start and completion dates of dust generating and soil disturbance activities to be performed on the site. 6.3.6.5: The actual and potential sources of fugitive dust emissions on the site and the location of bulk material handling and storage areas, paved and unpaved roads; entrances and exits where carryout/trackout may occur; and traffic areas. 6.3.6.6: Dust suppressants to be applied, including: product specifications; manufacturer's usage instructions (method, frequency, and intensity of application); type, number, and capacity of application equipment; and information on environmental impacts and approvals or certifications related to appropriate and safe use for ground application. 6.3.6.7: Specific surface treatment(s) and/or control measures utilized to control material carryout, trackout, and sedimentation where unpaved and/or access points join paved public access roads. 6.3.6.8: At least one key individual representing the owner/operator or any person who prepares a Dust Control Plan must complete a Dust Control Training Class conducted by the District. The District will conduct Dust Control Training Classes on an as needed basis.

SOURCE: SJVAPCD 2004

TABLE 2.3-4
SJVAPCD CONTROL MEASURE OPTIONS FOR CONSTRUCTION, EXCAVATION, EXTRACTION, AND OTHER EARTHMOVING ACTIVITIES

Letter/No.	Measure
A	**Pre-Activity**
A1	Pre-water site sufficient to limit visible dust emissions to 20 percent opacity.
A2	Phase work to reduce the amount of disturbed surface area at any one time.
B	**During Active Operations**
B1	Apply water or chemical/organic stabilizers/suppressants sufficient to limit visible dust emissions to 20 percent opacity; or
B2	Construct and maintain wind barriers sufficient to limit visible dust emissions to 20 percent opacity. If using wind barriers, control measure B1 above shall also be implemented.
B3	Apply water or chemical/organic stabilizers/suppressants to unpaved haul/access roads and unpaved vehicle/equipment traffic areas sufficient to limit visible dust emissions to 20 percent opacity and meet the conditions of a stabilized unpaved road surface.
C	**Temporary Stabilization During Periods of Inactivity**
C.1	Restrict vehicular access to the area.
C.2	Apply water or chemical/organic stabilizers/suppressants, sufficient to comply with the conditions of a stabilized surface. If an area having 0.5 acre or more of disturbed surface area remains unused for seven or more days, the area must comply with the conditions for a stabilized surface area as defined in section 3.58 of Rule 8011.

SOURCE: SJVAPCD 2004, Table 8021-1

On April 16, 2009, the SJVAPCD Governing Board adopted the *Reasonably Available Control Technology Demonstration for Ozone State Implementation Plans* (SJVAPCD 2009). With respect to the 8-hour standard, the plan assesses the SJVAPCD's rules based on the adjusted major source definition of 10 tons per year (due to the SJVAB's designation as an extreme ozone non-attainment area), evaluates SJVAPCD rules against new Control Techniques Guidelines promulgated since August 2006, and reviews additional rules and amendments adopted by the Governing Board since August 17, 2006, for reasonably available control technology consistency.

SJVAPCD adopted the *2016 Plan for the 2008 8-Hour Ozone Standard* in June 2016. This plan satisfies CAA requirements and ensures expeditious attainment of the 75 parts per billion 8-hour ozone standard (SJVAPCD 2016). On May 19, 2020, the Governing Board adopted the *2020 Reasonably Available Control Technology Demonstration for the 8-Hour Ozone Standard* (SJVAPCD 2020) that includes a demonstration that the SJVAPCD rules implement Reasonably Available Control Technology (RACT). The plan reviews each of the NO_x reduction rules and concludes that they satisfy requirements for stringency, applicability, and enforceability, and meet or exceed RACT.

Particulate Matter Attainment Plans

Effective November 12, 2008, USEPA re-designated the SJVAB as an attainment area with respect to the PM_{10} NAAQS and approved the *2007 PM_{10} Maintenance Plan* (USEPA 2008). In April 2008, the SJVAPCD Board adopted the *2008 $PM_{2.5}$ Plan* (SJVAPCD 2008) and subsequently approved amendments on June 17, 2010. This plan was designed to addresses

USEPA's annual $PM_{2.5}$ standard of 15 µg/m³, which was established by USEPA in 1997. In April 2015, the SJVAPCD Board adopted the *2015 Plan for the 1997 $PM_{2.5}$ Standard* that addresses the USEPA's annual and 24-hour $PM_{2.5}$ standards established in 1997 after the SJVAB experienced higher $PM_{2.5}$ levels during the 2013/2014 winter due to the extreme drought, stagnation, strong inversions, and historically dry conditions, and the SJVAPCD was unable to meet the initial attainment date of December 31, 2015 (SJVAPCD 2015c).

SJVAPCD adopted the *2016 Moderate Area Plan for the 2012 $PM_{2.5}$ Standard* on September 15, 2016. This plan addresses the updated USEPA federal annual $PM_{2.5}$ standard of 12 µg/m^3, established in 2012. This plan includes an attainment impracticability demonstration and request for reclassification of the SJVAB from Moderate non-attainment to Serious non-attainment.

The *2018 Plan for the 1997, 2006, and 2012 $PM_{2.5}$ Standards* was adopted on November 15, 2018, and utilizes extensive science and research, state-of-the-art air quality modeling, and the best available information in developing a strategy to attain the federal health-based 1997, 2006, and 2012 standards for $PM_{2.5}$. The Plan consists of a combination of innovative regulatory and non-regulatory measures including aggressive incentive-based control measures that achieve the emissions reductions needed to bring the area into attainment (SJVAPCD 2018).

2.3.2 Discussion

a) **Less than Significant**. As discussed above, the SJVAB is currently designated as a non-attainment area for federal and state standards with regard to $PM_{2.5}$ and ozone and is also designated as a non-attainment area for state PM_{10} standards. The SJVAPCD is responsible for implementing programs and regulations required by the federal CAA and the California CAA within the SJVAB. In this capacity, SJVAPCD has prepared plans to attain federal and state ambient air quality standards for which it has been designated as non-attainment. Current air quality plans for the SJVAB include:

- 2018 Plan for the 1997, 2006, and 2012 $PM_{2.5}$ Standards
- 2007 PM_{10} Maintenance Plan and Request for Redesignation
- 2020 Reasonably Available Control Technology Demonstration for the 8-Hour Ozone State Implementation Plan
- 2014 Reasonably Available Control Technology demonstration for the 8-Hour Ozone State Implementation Plan

The air quality plans include emissions inventories that identify sources of air pollutants, evaluations for feasibility of implementing potential opportunities to reduce emissions, sophisticated computer modeling to estimate future levels of pollution, and a strategy for how air pollution will be further reduced. In addition, the SJVAPCD has adopted a guidance document, *Guidance for Assessing and Mitigating Air Quality Impacts* (Guidance), to assist in the evaluation of air quality impacts of projects proposed within its jurisdiction (SJVAPCD 2015b). The Guidance provides recommended procedures for evaluating potential air quality impacts during the environmental review process consistent with CEQA requirements and includes recommended thresholds of

significance, mitigation measures, and background air quality information. It also includes recommended assessment methodologies for air toxics, odors, and GHG emissions.

Based on the Guidance, the Project's air quality impacts during construction or operations would be considered significant if emissions generated exceed the thresholds presented in **Table 2.3-5**. These thresholds of significance are based on the SJVAPCD's New Source Review offset requirements and are applied to evaluate regional impacts of project-specific emissions of air pollutants and their impact on the region's ability to reach attainment (SJVAPCD 2015b). The SJVAPCD's attainment plans demonstrate that project specific emissions below the offset thresholds would have a less-than-significant impact on air quality (SJVAPCD 2015b). Thus, the SJVAPCD concludes that use of New Source Review offset thresholds as its thresholds of significance for criteria pollutants is an appropriate and effective means of promoting consistency in significance determinations within the environmental review process. Therefore, projects with emissions below the thresholds of significance for criteria pollutants would be determined to not conflict or obstruct implementation of the SJVAPCD's air quality plans.

TABLE 2.3-5
PROJECT CONSTRUCTION EMISSIONS SUMMARY

Construction Year/ Significance Criteria	Construction Emissions (tons)					
	CO	NOx	ROG	SOx	PM_{10}	$PM_{2.5}$
2022	0.58	0.69	0.07	<0.01	0.78	0.12
2023	0.70	0.72	0.07	<0.01	0.83	0.11
Total Project Emissions	1.28	1.41	0.13	<0.01	1.61	0.23
SJVAPCD Threshold	100	10	10	27	15	15
Significant?	No	No	No	No	No	No

NOTES: SJVAPCD guidance requires analysis of a 12-month rolling average of emissions. Therefore, the 2022 and 2023 emissions are combined and used to represent the 12-month rolling average.

SOURCE: Appendix A

Air pollutant emissions that would be associated with Project construction were estimated using the California Emissions Estimator Model (CalEEMod) version 2020.4.0. CalEEMod contains default data specific to each California air basin and quantifies direct emissions from construction and operation (including off-road equipment and on-road vehicle use). CalEEMod uses EMFAC and OFFROAD emission factors to estimate emissions from on-road vehicles and off-road equipment, respectively. The construction module in CalEEMod was used to calculate the emissions associated with Project construction. The CalEEMod output file is included as Appendix A, *Air Quality and GHG Emissions Modeling*.

Construction Emissions

On-site construction activities associated with the Project would primarily include auguring for installation of panel support helical piles and wood poles for the power lines. Once the helical piles and wood poles are installed, cranes and aerial lifts would be

used to install the panel facilities, power line insulators and conductors, and associated facilities (e.g., step-up transformers, switchgear). Construction of the Project would require a small amount of ground clearing, estimated to be approximately 2 acres, using a dozer and backhoe or similar equipment to prepare for installation of the battery storage containers and associated facilities. A trench would also be prepared using an excavator along the Project site alignments for installation of the interconnection feeder conductors that would be connected to step-up transformers and switchgear.

The Project would also require daily vehicle trips, including one-way averages of up to 40 worker automobile trips, 22 vendor (medium- to heavy-duty) trips, and 8 haul (heavy-duty) trips during the peak of construction activities. It is assumed that most of materials required for the battery storage and solar array facilities would be shipped from Port of Oakland, and the power line materials would be shipped from TID yards in the general vicinity of the Project sites. Construction of the Project was modelled over a 130-workday period beginning in October 2022 and ending in April 2023. Construction is assumed to occur 5 days per week. CalEEMod incorporates the tier status of equipment by default based on the equipment inventory mixture for the given construction year. The Project would be required to control fugitive dust emissions pursuant to SJVAPCD Rule 8021, such as limiting vehicle speed along the Project dirt canal access roads to 15 miles per hour. Therefore, the CalEEMod construction "mitigation" scenario was modelled to reflect the SJVAPCD Rule 8021 requirements on the proposed Project to limit fugitive dust. The estimated construction emissions are presented in Table 2.3-5.

As shown in Table 2.3-5, total construction emissions of the Project over the approximately 6-month period would be below the SJVAPCD significance thresholds. In addition, emissions of PM_{10}, which is the criteria pollutant or precursor that would be generated in the greatest amount by the Project, would be approximately 34 pounds per workday; and according to SJVAPCD guidance, it should be concluded that the Project's emissions would not contribute significantly to an existing violation of the CAAQS or NAAQS. Therefore, the Project would not conflict or obstruct implementation of the SJVAPCD's air quality plans, and the associated impact would be less than significant.

In addition, it should be noted that construction NO_x and PM_{10} emissions would not exceed the SJVAPCD Rule 9510 applicability threshold for NO_x or PM_{10} of 2 tons per year. Therefore, equipment emission controls are not likely to be required for the Project to comply with SJVAPCD Rule 9510.

Operational Emissions

Project operations would begin in 2023. Once operational, the Project would generate minimal air quality emissions. Anticipated operations emissions would primarily be limited to sources such as periodic maintenance and research worker trips as well as potential pressure washing emissions from periodic PV panel washing. Project operations and maintenance would result in negligible criteria pollutant emissions that would be substantially less than the construction phase of the Project and would be well below the applicable significance thresholds. Therefore, the Project operations would not conflict

with any air quality management plans, and operations related impacts would be less than significant.

b) **Less than Significant.** CEQA defines cumulative impacts as two or more individual impacts which, when considered together, are either significant or "cumulatively considerable," meaning they add considerably to a significant environmental impact. An adequate cumulative impact analysis considers a project over time and in conjunction with other past, present, and reasonably foreseeable future projects whose impacts might compound those of the project being assessed.

By its very nature, air pollution is largely a cumulative impact. No single project would likely be sufficient in size, by itself, to result in non-attainment of the regional air quality standards. Instead, a project's emissions may be individually limited, but cumulatively considerable when taken in combination with past, present, and future development within the SJVAB. The non-attainment status of the SJVAB with respect to regional pollutants is a result of past and present development. Future attainment of state and federal ambient air quality standards is a function of successful implementation of SJVAPCD's attainment plans. Consequently, the SJVAPCD's application of thresholds of significance for criteria pollutants is a relevant way to determine whether a project's individual emissions would have a cumulatively significant impact on air quality.

Per CEQA Guidelines Section 15064(h)(3), a lead agency may determine that a project's incremental contribution to a cumulative effect is not cumulatively considerable if the project would comply with the requirements in a previously approved plan or mitigation program, including, but not limited to an air quality attainment or maintenance plan that provides specific requirements that would avoid or substantially lessen the cumulative problem within the geographic area in which the project is located (SJVAPCD, 2015b). The SJVAPCD has established thresholds of significance for criteria pollutant and precursor emissions, which are based on New Source Review offset requirements for stationary sources. Emission reductions achieved through implementation of offset requirements are a major component of the SJVAPCD's air quality plans. Thus, projects with emissions below the thresholds of significance for criteria pollutants would be determined to comply with the SJVAPCD's air quality plans and would not contribute a cumulatively considerable increase for these criteria pollutants (SJVAPCD 2015a).

As discussed under criterion a), Project construction and operational emissions would be less than the SJVAPCD recommended thresholds of significance. Therefore, the Project would not result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is in non-attainment status under an applicable federal or state ambient air quality standard. The cumulative impact with respect to criteria air pollutant emissions would be less than significant.

c) **Less than Significant.** The nearest sensitive receptor to the Project site is located 1.8 miles to the northeast. Potential harmful airborne pollutants that could be generated by the Project are DPM, criteria pollutants, and Valley Fever contaminated dust. Therefore, each of these is addressed under this criterion with respect to the Project.

Diesel Particulate Matter

DPM was identified as a TAC by CARB in 1998. Construction of the Project would result in temporary, short-term generation of DPM emissions from the use of off-road diesel equipment and from deliveries of construction materials and equipment using on road heavy-duty trucks.

The dose to which receptors are exposed is the primary factor affecting health risk from TACs. Dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance. According to the California Office of Environmental Health Hazard Assessment (part of the California Environmental Protection Agency), health risk assessments, which determine the exposure of sensitive receptors to TAC emissions, should be based on 9-year, 30-year, and/or 70-year exposure periods when assessing TACs (such as DPM) that have only cancer or chronic non-cancer health effects. However, such health risk assessments should be limited to the duration of the emissions-producing activities associated with the project, unless the activities occur for less than 6 months. Activities that would last more than 2 months but less than 6 months should be evaluated as if they would last for 6 months. The Office of Environmental Health Hazard Assessment does not recommend assessing cancer risk for projects lasting less than 2 months at the maximum exposed individual resident (OEHHA 2015).

Rural residences are at distances as close as 70 feet from the Project sites, and construction activities would last for a total of approximately 6 months. However, construction along the Project site alignments would proceed at a linear pace and would be expected to expose any one receptor along the segments for less than 2 months. The total emissions and duration of exposure at any one sensitive receptor location along the Project site alignments would be relatively minor compared to the exposure periods used in health risk assessments. Therefore, the health risk impact from the short-term DPM emissions associated with construction of the Project components would be less than significant.

Normal operation and maintenance of the proposed Project would consist of periodic facility inspections, data monitoring, and potential panel washing. However, the only potential source of DPM emissions associated with operation and maintenance would be light-duty trucks used for worker vehicle trips to conduct routine annual visual inspections of the system components and to wash panels. These DPM emissions would be dispersed along roadways in Stanislaus County and would result in a minor exposure risk at nearby sensitive receptors. The impact would be less than significant.

Criteria Pollutants

The health effects that are associated with emissions of criteria pollutants are described above under the Criteria Air Pollutants discussions in Section 2.3.1, *Environmental Setting*. As described above, compliance with the ambient air quality standards indicates that regional air quality can be considered protective of public health.

As discussed under impact criterion a), construction and operation of the Project would not result in emissions that exceed the SJVAPCD's annual emissions thresholds for any of the air pollutants. Further, the SJVAPCD recommends that the Project be evaluated for potential health impacts to surrounding receptors (on-site and off-site) that would result from operational and multi-year construction if emissions exceed 100 pounds per day of any pollutant, which would require an ambient air quality analysis (AAQA) (SJVAPCD 2015b). Because the maximum daily emissions would be below the screening threshold for an AAQA, the Project would not contribute to local exceedances of the NAAQS or the CAAQS. As mentioned, these standards are established at health protective levels and include an adequate margin of safety. Therefore, the Project construction and operations would not be anticipated to result in an adverse health effect with respect to emissions of criteria air pollutants. The impact would be less than significant.

Valley Fever

Valley Fever is a disease that typically affects the respiratory system and is communicated by fungal spores within soil and airborne dust. Therefore, at-risk activities include those that either create high levels of dust, require workers to be in close contact with soils and dusts, or both. The Project is located within unincorporated Stanislaus County, which is in California's Central Valley. The Central Valley is the region of California considered to be of high risk for the development of Valley Fever (CDPH 2020); therefore, Valley Fever is a health risk of concern in relation to the Project. As discussed above, there would be little ground disturbance associated with the Project. While Valley Fever is a risk for anyone living or working in the Project vicinity, the addition of the Project would not increase this risk for the existing residences. However, for the construction workers and other Project personnel who would be on-site during times of dust transport, risk to their health is a concern.

The Project activities that would result in the greatest risk would be those involving the excavation and transport of soils, such as grading and trenching. These activities, although limited for the Project, along with localized wind conditions, create the work conditions with the highest risk. According to the CDPH and the CDC, avoiding working in soils and dusty conditions is the best preventative measure. Since some construction workers cannot avoid participating in soil disturbance activities, minimizing fugitive dust as well as other engineering controls become the primary preventative measures. With respect to dust suppression, SJVAPCD Rule 8021 would require the Project to reduce visible dust emissions to less than 20 percent opacity (SJVAPCD 2014). Compliance with Rule 8021 would ensure that the potential impacts from Valley Fever would be less than significant.

d) **Less than Significant.** Construction of the Project would last for approximately 6 months total and would occur for up to approximately 12 hours per day. The use of on-site diesel-powered equipment can produce odorous exhaust; however, equipment use at the Project sites would be temporary, and potential odors would not affect a substantial number of people in the vicinity given the rural nature of the Project sites. Therefore, construction of the Project would not create objectionable odors that would affect a substantial number of people, and odor impacts would be less than significant.

As a general matter, the types of land use development that pose potential odor problems include wastewater treatment plants, refineries, landfills, composting facilities, and transfer stations. Because the Project would consist of operation of solar panels, battery storage facilities, and other associated infrastructure with no uses known to pose potential odor problems, operation of the Project would not create objectionable odors that would affect a substantial number of people. This impact would be less than significant.

2.3.3 References

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2.4 Biological Resources

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
IV. BIOLOGICAL RESOURCES — Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☒
c) Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☒	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

2.4.1 Environmental Setting

Data Sources/Methodology

Biological resources within the proposed Project site were identified by an Environmental Science Associates (ESA) biologist through field reconnaissance conducted on May 16, 2022, and June 10, 2022 (**Appendix B**). Before the survey, the biologist reviewed pertinent literature and conducted database queries for the Project sites and surrounding areas. The surveys consisted of traveling throughout proposed construction work areas, staging areas, and along the proposed access roads. The surveys also consisted of surveying areas within 250 feet of the Project sites with a 40 by 60 monocular scope as well as driving within publicly accessible routes within a 0.5-mile survey radius to identify potential raptor nests. The biological resources survey focused on identifying habitat for special-status plant and wildlife species, although general habitat conditions were noted and incidental species observations were recorded. The survey also included an inventory of all plants observed within the Project sites.

Landcover observed on the Project sites were compared to the habitat requirements of the regionally occurring special-status species and used to determine which of these species have the

potential to occur on or adjacent to the sites. Plant nomenclature follows *The Jepson Manual: Vascular Plants of California (Second Edition)* (Baldwin et al. 2012).

The following primary data sources were referenced for this section:

- U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) list (v6.74.1- rc3) (USFWS, 2022).
- California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB) (CDFW 2022).
- California Native Plant Society (CNPS) Inventory of Rare Plants and Endangered Plants known to occur within Ceres, CA in USGS 7.5-minute topographic quadrangle code 3712058, 3712066, 3712056 (CNPS 2022).

Project Site Setting

The study area for biological resources encompasses the Project sites plus 250-foot buffers, except for raptors' nests, for which the survey buffer extends to a 0.5-mile radius of the Project sites. The study area consists of irrigation canals; disturbed lands, including levee roads; agricultural fields; and non-native annual grassland vegetation around the perimeter of the agricultural fields. Examples of agricultural fields consisted of aging almond trees, grapes, and other consumer fruits and vegetables. The areas surrounding the farms consist of native and nonnative annual grasslands.

Herbaceous vegetation observed within the Project sites included the following: common fiddleneck (*Amsinckia menziesii*), cheeseweed mallow (*Malva parviflora*), red clover (*Trifolium pratense*), common groundsel (*Senecio vulgaris*), common stork's bill (*Erodium cicutarium*), cutleaf evening primrose (*Oenothera laciniata*), fat hen (*Atriplex prostrata*), foxtail barley (*Hordeum murinum*), horseweed (*Erigeron canadensis*), Italian rye grass (*Festuca perennis*), jimsonweed (*Datura sp.*), panic veldt grass (*Erhardta erecta*), scarlet pimpernel (*Lysimachia arvensis*), wild mustard (*Sinapis sp.*), and wild oats (*Avena fatua*).

Wildlife species incidentally observed during site visit included: American kestrel (Falco sparverius), California scrub-jay (*Aphelocoma californica*), cliff swallow (*Petrochelidon pyrrhonota*), common ground squirrel (*Otospermophilus beecheyi*), killdeer (*Charadrius vociferus*), mourning dove (*Zenaida macroura*), red-tailed hawk (*Buteo jamaicensis*), turkey vulture (*Cathartes aura*), and western kingbird (*Tyrannus verticalis*).

Sensitive Natural Communities including Waters of the United States and Waters of the State

Sensitive natural communities are vegetation communities of limited distribution statewide or within a county or region and are often vulnerable to the environmental impacts of projects. Sensitive natural communities include those that are of special concern to resource agencies, such as CDFW, the U.S. Army Corps of Engineers (USACE), or USFWS, or are afforded specific consideration through the California Environmental Quality Act (CEQA), Section 1602 of the

California Fish and Game Code, Section 404 of the federal Clean Water Act, and the Porter-Cologne Water Quality Control Act.

The man-made, Main Canal, Ceres Main Canal, and Upper Lateral 3 Canal are aquatic features that were constructed in uplands to transfer irrigation water to the Project sites and surrounding orchards. These canals are not likely considered waters of the United States. CDFW may request that projects impacting modified or channelized portions of previously natural streams and rivers such as canals, aqueducts, and water conveyance ditches prepare and submit a Lake and Streambed Alteration (LSA) notification. However, features that were created in uplands and are hydrologically disconnected from downstream rivers, streams, or lakes generally do not require an LSA notification. The cement-lined ditches bordering the Project sites were constructed in uplands, experience artificial hydrology as a result of controlled transport of irrigation water to agricultural land throughout the region, do not appear to drain to downstream rivers based on a review of aerial imagery, and lack emergent vegetation and a riparian corridor. Therefore, installing solar panels that would cover and span various sections of TID's existing irrigation canal system is not expected to require an LSA Notification.

Wildlife Movement Corridors

Wildlife movement corridors are considered an important ecological resource by various agencies (CDFW and USFWS) and under CEQA. Movement corridors may provide favorable locations for wildlife to travel between different habitat areas such as foraging sites, breeding sites, cover areas, and preferred summer and winter range locations. They may also function as dispersal corridors, allowing animals to move between various locations within their range.

Topography and other natural factors, in combination with urbanization, can fragment or separate large open-space areas. Areas of human disturbance or urban development can fragment wildlife habitats and impede wildlife movement between areas of suitable habitat. This fragmentation creates isolated "islands" of vegetation that may not provide sufficient area to accommodate sustainable populations and can adversely affect genetic and species diversity. Movement corridors mitigate the effects of this fragmentation by allowing animals to move between remaining habitats, which in turn allows depleted populations to be replenished and promotes genetic exchange between separate populations. The Ceres Main Canal, Upper Lateral 3, and the Main Canal may serve as wildlife corridors for wildlife to access habitat areas within the region.

Special-Status Species

Special-status species are regulated under the federal and California Endangered Species Acts or other regulations or are species that are considered sufficiently rare by the scientific community to qualify for such listing. These species are classified under the following categories:

1. Species listed or proposed for listing as threatened or endangered under the federal Endangered Species Act (Code of Federal Regulations Title 50, Section 17.12 [listed plants] and Section 17.11 [listed animals], and various notices in the Federal Register [proposed species]).

2. Species that are candidates for possible future listing as threatened or endangered under the federal Endangered Species Act (Federal Register Title 61, Number 40, February 28, 1996).
3. Species listed or proposed for listing by the State of California as threatened or endangered under the California Endangered Species Act (California Code of Regulations Title 14, Section 670.5).
4. Plants listed as rare or endangered under the California Native Plant Protection Act (California Fish and Game Code, Section 1900 et seq.).
5. Animal species of special concern to CDFW.
6. Animals fully protected under the California Fish and Game Code (Sections 3511 [birds], 4700 [mammals], and 5050 [reptiles and amphibians]).
7. Species that meet the definitions of rare and endangered under CEQA. CEQA Section 15380 provides that a plant or animal species may be treated as "rare or endangered" even if not on one of the official lists (State CEQA Guidelines, Section 15380).
8. Plants considered by CNPS and CDFW to be "rare, threatened or endangered in California" (California Rare Plant Rank 1A, 1B, and 2 in CNPS 2022).

A list of regionally occurring special-status species in the vicinity of the Project sites was compiled based on data identified in the California Natural Diversity Database (CDFW 2022) and the USFWS (2022) and CNPS (2022) databases. Analysis regarding habitat suitability and species occurrence are based on the assessment of existing literature and databases described previously, and the previously described field reconnaissance conducted on May 16, 2022, and June 10, 2022.

As described in Appendix B, no special-status plants have the potential to occur within the Project sites because of a lack of suitable habitat due to regular mowing and disking. Nesting birds regulated by the federal Migratory Bird Treaty Act (MBTA) or California Fish and Game Code have the potential to occur at the Project sites. Two active Swainson's hawks (*Buteo swainsoni*) were observed in a stand of eucalyptus trees south of Lake Road, south of Site 2. Swainson's hawk is listed by CDFW as threatened. The reconnaissance survey also identified multiple burrows along the Main Canal and surrounding area that are potentially suitable as upland refugia habitat for California tiger salamander (*Ambystoma californiense*) and/or for use by San Joaquin kit fox (*Vulpes macrotis mutica*) for denning. California tiger salamander is a native terrestrial amphibian classified as a threatened species by CDFW in Stanislaus County, California (CDFW 2022; USFWS 2022); the Central California Distinct Population Segment (DPS) for California tiger salamander is listed by USFWS as threatened. San Joaquin kit fox is the smallest fox in North America and is listed as endangered species by the CDFW and USFWS wherever it is found (CDFW 2022; USFWS 2022). Based on the reconnaissance survey, no other special-status species were identified with a potential to occur within the Project sites.

Critical Habitat

Critical habitat is defined in Section 3(5)A of the federal Endangered Species Act as the specific portions of the geographic area occupied by the species in which physical or biological features essential to the conservation of the species are found, and that may require special management considerations or protection. Specific areas outside of the geographic area occupied by the species

may also be included in critical habitat designations upon a determination that such areas are essential for the conservation of the species.

The Project site does not occur within designated critical habitat for any federally listed species. Critical habitat for Colusa grass (*Neostapfia colusana*) is present just south of Main Canal but does not overlap with the Project site.

Pacific Gas and Electric Company San Joaquin Valley Operation and Maintenance Habitat Conservation Plan

The Pacific Gas and Electric Company (PG&E) San Joaquin Valley Operation and Maintenance Habitat Conservation Plan (O&M HCP) protects 23 wildlife and 42 plant species within nine counties of the San Joaquin Valley. This HCP covers routine operations and maintenance activities, as well as minor new construction, on any PG&E gas and electrical transmission and distribution facilities, easements, private access routes, or lands owned by PG&E (PG&E 2006). The HCP covers the Project area for PG&E activities but is not applicable to TID's Project.

Stanislaus County General Plan

The Stanislaus County General Plan (2015) includes goals and policies to identify, protect, and enhance Stanislaus County's important biological resources. Below is a summary of the key policies identified in the Stanislaus County General Plan Conservation and Open Space Element relevant to implementation of the Project (Stanislaus County 2016).

- ***Policy 3*****:** Areas of sensitive wildlife habitat and plant life (e.g., vernal pools, riparian habitats, flyways and other waterfowl habitats, etc.) including those habitats and plant species listed by state or federal agencies shall be protected from development and/or disturbance.
- ***Policy 4*****:** Protect and enhance oak woodlands and other native hardwood habitat.
- ***Policy 6*****:** Preserve natural vegetation to protect waterways from bank erosion and siltation.
- ***Policy 29*****:** Habitats of rare and endangered fish and wildlife species, including special status wildlife and plants, shall be protected.

2.4.2 Discussion

a) **Less than Significant with Mitigation Incorporated.** Nesting birds regulated by the MBTA and the California Fish and Game Code may be affected either directly or indirectly by implementation of the Project. Under the MBTA, most bird species and their nests and eggs are protected from injury or death. California Fish and Game Code Sections 3503, 3503.5, and 3800 prohibit the possession, incidental take, or needless destruction of birds and their nests and eggs.

Areas in immediate vicinity of the Project sites have the potential to support nesting birds. As described previously, two active Swainson's hawks were observed in a stand of eucalyptus trees south of Lake Road. Nesting birds, including Swainson's hawks, could be adversely affected if active nesting, roosting, or foraging sites are exposed to a

substantial increase in noise or human presence during Project activities. The impact would be less than significant if construction activities were to occur during the non-breeding season (i.e., from September 1 through January 31). However, construction activities conducted during the breeding season between February 1 and August 31 could adversely affect nesting birds. Therefore, this impact would be potentially significant. Implementation of Mitigation Measure BIO-1 would reduce this potentially significant impact to nesting birds to a less-than-significant level.

The biological reconnaissance survey observed resources that meet the size classes identified by CDFW and USFWS as representing potential upland refugia for California tiger salamander and/or potential dens for San Joaquin kit fox (Appendix B). Based on the 2020 assessment report for San Joaquin kit fox, the Project sites do not occur within the current known distribution range of the species, which is currently more restricted to the western and southern portions of San Joaquin Valley (USFWS 2020). As such, while burrows were present at Project Site 2 that were greater than 4 inches in diameter, a size class suitable for potential use by San Joaquin kit fox for denning, the species is not expected to be present at the Project site.

California tiger salamanders have the potential to occur at Project Site 2. There is a CNDDB record observation (record occurrence 26) of the species located west of Turlock Lake, approximately 0.62 mile southeast of Project Site 2; the most recent observation at this particular location was in 2003 (CDFW 2022). Aerial imagery shows that Project Site 2 is within the potential upland distribution range from suitable aquatic breeding habitat (e.g., emergent wetland habitat). Construction of the Project is expected to have limited potential impacts to California tiger salamander, since the Project would not result in direct conversion of any potentially suitable breeding habitat for the species, and it would result in a minimal extent of ground disturbance in potentially suitable upland dispersal habitat for California tiger salamander. Nevertheless, the construction of the Project would result in potential ground-disturbing activities (e.g., deployment of heavy construction equipment along the canals) that could result in the collapse of small mammal burrows, leading to potential entrapment of California tiger salamander. Implementation of Mitigation Measure BIO-2 would reduce the impact to California tiger salamander to a less-than-significant level.

Mitigation Measures

Mitigation Measure BIO-1: Protect Special-Status Birds and Nesting Birds Regulated by the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code. For construction activities occurring during the nesting season (February 1 to August 31), a qualified biologist shall conduct a preconstruction pedestrian-level survey for active nests within 500 feet of the Project site. The survey shall be conducted using binoculars, from publicly accessible areas outside of the Project site, no more than 14 days before the start of construction.

If no active MBTA-protected avian nests are identified during the preconstruction survey, the biologist shall submit a letter report to Turlock Irrigation District (TID) for its records, and no further mitigation is necessary. If construction activities are to

begin before February 1, it is assumed that no birds will nest on the Project site during active construction activities and no preconstruction surveys are required. If construction stops for a period of 2 weeks or longer at any time during the nesting season, preconstruction surveys shall be conducted before construction resumes.

If active MTBA-protected avian nests are found within 500 feet of the Project site, TID shall wait until the nests are not active to start construction, or, if construction must occur while the nest is active, a qualified biologist shall prepare a plan for avoidance of impacts on active nests. The plan shall identify measures to avoid disturbance of the active nests. Depending on the conditions specific to each nest, and the relative location and rate of construction activities, it may be feasible for construction to occur as planned. Appropriate measures may include restricting construction activities, establishing appropriate buffers based on the species nesting, or having a qualified biologist with stop-work authority monitor the nest for evidence that parental behavior has changed during construction. The biologist would have the authority to stop work in the event that the birds are exhibiting unusual nesting behavior based on the construction activities. If construction activities are halted because of adverse effects on breeding efforts, construction shall not resume until a qualified biologist has determined that the birds have fledged and are no longer reliant upon the nest or parental care for survival.

If active Swainson's hawk nests are located within 0.25 mile of proposed construction activities, construction shall not begin, or shall be discontinued, until TID has consulted with the California Department of Fish and Wildlife (CDFW) to determine the appropriate course of action, consistent with the guidance provided in the 1994 Staff Report Regarding Mitigation for Impacts to Swainson's Hawks in the Central Valley of California (CDFG 1994), to reduce potential impacts on nesting Swainson's hawks and to determine under which circumstances construction activities can occur. Possible measures to reduce potential impacts could include establishment of buffers, limits on the timing or location of use of construction equipment, and limits on the types of equipment used to reduce noise intensity. If ground-disturbing activities are delayed, then additional pre-disturbance surveys shall be conducted such that no more than 14 days elapse between the survey and ground-disturbing activities. The qualified biologist shall serve as a construction monitor during those periods when construction activities are to occur near active nest areas to avoid inadvertent impacts to these nests.

Mitigation Measure BIO-2: Avoidance of California Tiger Salamander. No more than 14 days before the start of construction, a qualified biologist shall conduct a preconstruction survey to identify all small mammal burrows within Project Site 2 and identify any potential or known breeding habitat for California tiger salamander within Project Site 2 or within a 250-foot buffer of Project Site 2. A 50-foot no-disturbance buffer shall be delineated around all small mammal burrows in suitable upland refugia habitat at Project Site 2; within the no disturbance buffer, TID shall avoid any active ground disturbance (i.e., grading, excavation, and stockpiling of delivered construction materials) that could potentially result in entombment of a California tiger salamander occupying small mammal burrows. For small mammal burrows located within designated access routes, the qualified biologist shall mark these resources with pin flags so they can be avoided by passing construction equipment and personnel. Vehicles shall observe a 15 mile-per-hour speed limit within work areas to minimize accidental harm to any California tiger salamanders.

Further, any potential or known breeding habitat within and/or adjacent to Project Site 2 shall be delineated with a 250-foot no-disturbance buffer. Both upland burrow and wetland breeding no-disturbance buffers are intended to minimize impacts to California tiger salamander habitat and avoid take of individuals. If the above listed buffer distances are not feasible, they may be reduced in size upon consultation with the California Department of Fish and Wildlife (CDFW).

If avoidance of California tiger salamander is not feasible through burrow and breeding habitat avoidance, Turlock Irrigation District (TID) shall consult with CDFW to determine if avoidance of take of California tiger salamander is feasible through additional measures. If take will result from Project implementation, a State Incidental Take Permit (ITP) for California tiger salamander in accordance with Fish and Game Code Section 2081 subdivision (b), shall be acquired.

b) **No Impact.** The Project sites do not contain riparian habitat or other sensitive natural communities. Therefore, no impact on sensitive natural communities would occur.

c) **No Impact.** The Project sites do not contain state or federally protected wetlands. Therefore, no impact on wetlands would occur.

d) **Less than Significant.** The Ceres Main Canal, Upper Lateral 3, and the Main Canal likely serve as wildlife corridors for wildlife to access habitat areas within the nearby orchards. Project construction in the channels would be of limited duration and conducted during daytime hours and would not have a substantial impact on the use of these canals as wildlife movement corridors. The placement of solar panels that would cover and span various sections of the canals is not expected to interfere with the movement of wildlife as they can continue to move beneath the panels. Therefore, the impact would be less than significant.

e) **No Impact.** Stanislaus County does not have a tree ordinance. The Project is consistent with policies in the Conservation/Open Space Element of the *Stanislaus County General Plan* (Stanislaus County 2016) that generally promote the conservation and improvement of fish and wildlife habitat. Therefore, no impact related to a conflict with local policies or ordinances for biological resources would occur.

f) **No Impact.** The PG&E San Joaquin Valley Operation & Maintenance Habitat Conservation Plan (O&M HCP) (PG&E 2006) covers specific PG&E activities throughout nine counties in the San Joaquin Valley, including Stanislaus County. It outlines steps on minimizing, avoiding, and compensating for possible direct, indirect, and cumulative adverse effects on threatened and endangered species and critical habitat that could result from PG&E operation and maintenance activities in the San Joaquin Valley. The Project lies within the PG&E O&M HCP boundaries, but implementation of the Project is not a covered activity under the PG&E O&M HCP, which is applicable only to PG&E facilities. Therefore, implementation of the Project would not conflict with implementation of this HCP. No impact would occur.

2.4.3 References

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2.5 Cultural Resources

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
V. CULTURAL RESOURCES — Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☒	☐	☐
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	☒	☐	☐

2.5.1 Environmental Setting

Background Research

The results of a records search at the Central California Information Center (CCaIC) of the California Historical Resources Information System were received on May 10, 2022 (File No. 12184N). The review included the Project sites and associated 0.5-mile radii.

The CCaIC (2022) records search indicated that two previously recorded cultural resources have been recorded at the Project sites (P-50-000072 and P-50-000073) and no other resources have been previously recorded within 0.5 miles of the Project sites. Both of the previously recorded resources at the Project sites are historic-era built environment canals. The records search results indicated that none of the Project sites have been previously surveyed for cultural resources.

Cultural Resources Survey

An Environmental Science Associates archaeologist completed a pedestrian surface survey of the Project sites on May 16, 2022. No archaeological resources or other evidence of past pre-contact or indigenous use or occupation of the Project sites was identified during the survey. The two historic-era architectural resources were relocated and documented on Department of Parks and Recreation (DPR) 523 Continuation Sheet site record forms and are discussed below.

Archaeological Sensitivity Assessment

The underlying geology at the Project sites consists primarily of Modesto Formation deposits, and the northern end of Site 2 is within a small portion of Turlock Lake Formation (Wagner et al. 1991). The Modesto Formation is estimated to be dated between 14,000 and 42,000 years old and the Turlock Lake Formation dates to 450,000 to 600,000 years ago (Wagner et al. 1991).

Based on the age of the soils and bedrock at the Project sites, the potential for buried pre-contact archaeological deposits in undisturbed areas is very low (Rosenthal et al. 2004). In addition, soils at the Project sites have been significantly disturbed by construction of the canals. Evidence of historic-era settlement and land-reclamation activities have been documented near and within the

Project sites; however, a historic aerial and map imagery review did not identify any structures or features previously constructed at the Project sites besides the recorded canals. Therefore, this analysis concludes that the Project's sensitivity for disturbance of pre-contact and historic-era archaeological resources is low.

Architectural Resources

As described above, two cultural resources, TID Lateral No. 3 (P-50-000072) and TID System/Turlock Main Canal/Ceres Main Canal (P-50-000073) are within Project Site 1 and TID System/Turlock Main Canal/Ceres Main Canal (P-50-000073) is also within Project Site 2. Both resources were recorded during the pedestrian survey.

P-50-000072 – TID Lateral No. 3

P-50-000072, TID Lateral No. 3 Canal, is a 16.4-mile-long concrete-lined canal that connects from the Turlock Main Canal just north of Denair and travels west between Keyes and Turlock and terminates just west of San Joaquin River where it connects to the Westport Drain. The lateral was completed as an open earth canal in 1899 as part of TID's irrigation system. Segments of the canal were lined with concrete between in the 1950s and 1990s (Lawson 2009). Several additional modifications, including widening, deepening, and the installation and upgrade of check dams and flow controls have occurred as part of TID's maintenance of the canal (Lawson 2009; Marvin 2000).

P-50-000072 within Site 1 is a 20-foot-wide, concrete-lined, trapezoidal-shaped canal that is oriented east/west. The canal is flanked on either side by unimproved single-lane access roads. The Project includes covering the approximately 1-mile-long segment of P-50-000072 within Site 1 with solar panels.

Evaluation

Previous evaluations of P-50-000072 in the DPR forms have been conducted that recommended that the resource is not eligible for inclusion in the National Register (Lawson 2009; Marvin 2000). The period of significance for the resource was identified as the years between 1900 and 1920 as this was the period between when the construction of the canals began and when the original concrete lining was installed (Lawson 2009). It was recommended that TID Lateral No. 3 does not meet any criterion for inclusion in the National Register and was stated that P-50-000072 does not retain integrity of setting, materials, workmanship, or feeling to convey any potential significance (Lawson 2009). The entire TID irrigation system may be significant under Criterion A for its "role in the history of Stanislaus County and the San Joaquin Valley, for its historical associations with the economics and politics of western water issues and hydroelectric development of California;" however, Lateral No. 3 has been significantly modified since its construction in 1899 and therefore does not retain sufficient integrity to convey any potential significance (Marvin 2000).

While these evaluations focused on the National Register, their argument regarding integrity is transferable to a California Register evaluation. Although the TID Lateral No. 3 Canal is associated with TID, an important utility agency in Stanislaus County, it does not possess

exceptional significance through this association and therefore is not eligible under California Register Criterion 1. There are no persons significantly associated with Lateral No. 3 under Criterion 2. Nor does the canal represent the distinctive characteristics of a type, period, or method of construction under Criterion 3, and any data potential has already been captured by its repeated recordings under Criterion 4. Following the conclusions of the previous evaluations described above, the canal has been upgraded to modern standards and lacks sufficient integrity of setting, materials, workmanship, or feeling to convey any potential significance. As such, P-50-000072 is not eligible for listing in the California Register.

P-50-000073 – TID System/Turlock Main Canal/Ceres Main Canal

P-50-000073, TID/Turlock Main Canal/Ceres Main Canal, consists of 38 miles of canals as part of the TID system. The Turlock Main Canal begins in the east at Turlock Lake and continues west until just south of Hickman through Project Site 2. At Hickman, the Turlock Main Canal turns south and meets the eastern end of P-50-000072, Lateral No. 3, northeast of Denair, and continues south to the intersection of the canal with Harding Road, where it terminates at the intersection with Lateral No. 5. The Ceres Main Canal connects to the Turlock Main Canal southwest of Hickman and continues west before turning south just east of Ceres. The Ceres Main Canal continues south through Project Site 1 until it terminates at Lateral No. 5 at Harding Road. These two canals make up P-50-000073, TID System/Turlock Main Canal/Ceres Main Canal.

Construction began on the open earth canals that make up P-50-000073 in 1898 and was completed in 1900 (Daly 2009). Segments of the canals were lined with concrete or gunite over chicken wire beginning in 1917 (Daly 2009). Several additional modifications, including widening, deepening, and the installation and upgrade of check dams and flow controls have occurred as part of TID's maintenance of the canal, as well as the installation of an automatic regulator and waste gates and additional bridges (Daly 2009).

P-50-000073, is a 20- to 30-foot-wide, concrete-lined, trapezoidal-shaped canal. At Site 1 the canal is oriented in a stair-step pattern that trends northwest/southeast. At Site 2, P-50-00073 trends generally northwest/southeast but has two curves at the southern end of the site. P-50-000073, at both Sites 1 and 2, is flanked on either side by unimproved single-lane access roads. The Project includes covering an approximately 0.75-mile-long segment of P-50-000073 at Site 1 with solar panels and a 500-foot-long segment of P-50-000073 at Site 2 with solar panels.

Evaluation

Previous evaluations of P-50-000073 in the DPR forms have been conducted that recommended that the resource is not eligible for inclusion in the National Register (Daly 2009; Marvin 2009, 2015 Patrick 2016). The period of significance for the resource was identified as the years between 1887 and 1925 as this was the period between when the construction of the canals began and when the original concrete lining was installed (Daly 2009). It was recommended that while the resource appeared to be eligible for the National Register under Criterion A for its association with the development of the first public owned irrigation district in California, the resource did not retain sufficient integrity of workmanship, setting, materials, or feeling to convey any potential significance (Daly 2009). This recommendation was followed by subsequent

evaluations based on a lack of integrity due to modifications of the resource during maintenance and modernization of the system (Marvin 2015, 2009; Patrick 2016).

While all these evaluations focus on the National Register, their argument regarding integrity is transferable to a California Register evaluation. Although P-50-000073 is associated with TID, an important utility agency in Stanislaus County, it does not possess exceptional significance through this association and therefore is not eligible under California Register Criterion 1. There are no persons significantly associated with P-50-000073 under Criterion 2. Nor does the canal represent the distinctive characteristics of a type, period, or method of construction under Criterion 3, and any data potential has already been captured by its repeated recordings under Criterion 4. Following the conclusions of previous evaluations, the canals have been upgraded to modern standards and lacks sufficient integrity of setting, materials, workmanship, or feeling to convey any potential significance (Daly 2009; Marvin 2009, 2015; Patrick 2016). As such, P-50-000073 is not eligible for listing in the California Register.

Evaluations Summary

Both P-50-000072 and P-50-000073 are not eligible for listing in the California Register as they lack integrity to convey their potential significance under Criterion 1 with their association with TID. Therefore, these resources are not considered historical resources and there are no historical resources within the Project sites.

2.5.2 Discussion

a) **No Impact.** A significant impact would occur if the Project would cause a substantial adverse change to a historical resource through physical demolition, destruction, relocation, or alteration of the resource. As used in this analysis, *historical resources* refers to historic-era architectural resources or the built environment, including buildings, structures, and objects.

Based on the results of the records search, background research, surface survey, and resource evaluations, two potential historical resources, TID Lateral No. 3 (P-50-000072) and TID System/Turlock Main Canal/Ceres Main Canal (P-50-000073), were identified at Project Site 1 and TID System/Turlock Main Canal/Ceres Main Canal (P-50-000073) was also identified at Project Site 2. On behalf of TID, Environmental Science Associates evaluated these potential resources and recommended that they are not eligible for the California Register and are therefore not historical resources. Therefore, there are no historical resources at the Project sites and no impact on historical resources of the built environment would occur.

b) **Less than Significant with Mitigation Incorporated.** This section discusses archaeological resources, both as historical resources according to CEQA Guidelines Section 15064.5, as well as unique archaeological resources, as defined in California Public Resources Code (PRC) (CEQA) Section 21083.2(g). A significant impact would occur if the Project would cause a substantial adverse change to an archaeological resource through physical demolition, destruction, relocation, or alteration of the resource.

Based on the results of the records search, background research, and archaeological sensitivity assessment, no archaeological resources have been identified at the Project sites. The archaeological sensitivity analysis found that the Project sites have low potential for pre-contact and historic-era archaeological resources and a low potential to encounter archaeological resources during ground disturbing activities.

Despite the low sensitivity, there is still the potential for the discovery of buried archaeological resources during ground-disturbing activities. If any previously unrecorded archaeological resources are identified during Project ground-disturbing activities and were found to qualify as a historical resource per CEQA Guidelines Section 15064.5 or a unique archaeological resource, as defined in PRC (CEQA) Section 21083.2(g), any impacts to the resource resulting from the Project could be potentially significant. The potential significant impact would be reduced to a less-than-significant level with implementation of Mitigation Measure CUL-1 and Mitigation Measure CUL-2.

Mitigation Measures

Mitigation Measure CUL-1: Cultural Resources Awareness Training. Before any ground-disturbing and/or construction activities, an archaeologist meeting, or under the supervision of an archaeologist meeting, the Secretary of the Interior Standards for Archeology shall conduct a training program for all construction and field personnel involved in ground disturbance. If a Native American tribe has expressed interest in the Project via tribal consultation during consultation, they will be invited to participate in the training program. On-site personnel shall attend a mandatory pre-project training that shall outline the general archaeological sensitivity of the area and the procedures to follow in the event an archaeological resource and/or human remains are inadvertently discovered. A training program shall be established for new project personnel before they begin project work.

Mitigation Measure CUL-2: Inadvertent Discovery of Cultural Resources. If pre-contact or historic-era archaeological resources are encountered during Project implementation, all construction activities within 100 feet shall halt, and a qualified archaeologist, defined as an archaeologist meeting the U.S. Secretary of the Interior's Professional Qualification Standards for Archeology, shall inspect the find within 24 hours of discovery and notify Turlock Irrigation District (TID) of their initial assessment. Pre-contact archaeological materials might include obsidian and chert flaked-stone tools (e.g., projectile points, knives, scrapers) or toolmaking debris; culturally darkened soil ("midden") containing heat-affected rocks, artifacts, or shellfish remains; stone milling equipment (e.g., mortars, pestles, handstones, or milling slabs); and battered stone tools, such as hammerstones and pitted stones. Historic-era materials might include building or structure footings and walls, and deposits of metal, glass, and/or ceramic refuse.

If TID determines, based on recommendations from a qualified archaeologist and a Native American representative (if the resource is pre-contact), that the resource may qualify as a historical resource or unique archaeological resource (as defined in CEQA Guidelines Section 15064.5) or a tribal cultural resource (as defined in PRC Section 21080.3), the resource shall be avoided, if feasible. Consistent with Section

15126.4(b)(3), this may be accomplished through planning construction to avoid the resource; incorporating the resource within open space; capping and covering the resource; or deeding the site into a permanent conservation easement.

If avoidance is not feasible, TID shall consult with appropriate Native American tribes (if the resource is pre-contact), and other appropriate interested parties to determine treatment measures to avoid, minimize, or mitigate any potential impacts to the resource pursuant to PRC Section 21083.2, and CEQA Guidelines Section 15126.4. This shall include documentation of the resource and may include data recovery (according to PRC Section 21083.2), if deemed appropriate, or other actions such as treating the resource with culturally appropriate dignity and protecting the cultural character and integrity of the resource (according to PRC Section 21084.3).

c) **Less than Significant with Mitigation.** Based on the records search and survey results, no human remains are known to exist at the Project sites. While unlikely, it is possible that human remains could be encountered during construction of the Project, which could be a significant impact. The potential significant impact would be reduced to a less-than-significant level with implementation of Mitigation Measure CUL-3.

Mitigation Measure

Mitigation Measure CUL-3: Inadvertent Discovery of Human Remains. In the event of discovery or recognition of any human remains during construction activities, such activities within 100 feet of the find shall cease until the appropriate County Coroner has been contacted to determine that no investigation of the cause of death is required. The California Native American Heritage Commission (NAHC) shall be contacted within 24 hours if it is determined that the remains are Native American. The NAHC will then identify the person or persons it believes to be the most likely descendant from the deceased Native American, who in turn would make recommendations to the lead agency for the appropriate means of treating the human remains and any grave goods.

2.5.3 References

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Wagner, D.L., E.J. Bortugno, and R.D. McJunkin, 1991. *Geologic map of San Francisco-San Jose quadrangle, California*. Prepared by California Division of Mines and Geology. Available online at https://ngmdb.usgs.gov/Prodesc/proddesc_519.htm.

2.6 Energy

Issues (and Supporting Information Sources):		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
VI.	**ENERGY —** Would the project:				
a)	Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☒	☐
b)	Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☒	☐

2.6.1 Discussion

Consistent with Public Resources Code Section 21100(b)(3), this impact analysis evaluates the potential for construction, operation, and maintenance of the Project to result in a substantial increase in energy demand and wasteful use of energy. The impact analysis is informed by Appendix G of the State CEQA Guidelines. The potential impacts are analyzed based on an evaluation of whether construction energy use estimates for the Project would be considered excessive, wasteful, or inefficient.

a) **Less than Significant.** During construction of the Project, fuel consumption would result from the use of heavy-duty equipment at the sites, as well as off-site trucks to haul materials and equipment and light-duty trucks and automobiles used for construction workers' commutes to and from the Project sites. Construction of the Project is anticipated to last for approximately 6 months.

Construction activities and corresponding fuel energy consumption would be temporary and localized, as the consumption of diesel fuel and heavy-duty equipment would not be a long-term condition of the Project. In addition, the Project has no unusual characteristics that would require using construction equipment or haul vehicles that would be less energy efficient than equipment and vehicles used at similar construction sites elsewhere in California. In conclusion, construction-related fuel consumption by the Project would not result in inefficient, wasteful, or unnecessary energy use compared with other construction sites in the region. This impact would be less than significant.

Once construction is complete, operational fuel consumption would be minimal and related to periodic facility inspection and maintenance, such as PV panel cleaning. These activities would not result in inefficient, wasteful, or unnecessary use of energy. This impact would be less than significant.

b) **Less than Significant.** The transportation sector is a major end user of energy in California, accounting for approximately 34 percent of the state's total energy consumption in 2020 (U.S. Energy Information Administration 2022). Energy is also consumed in connection with construction and maintenance of transportation infrastructure, such as streets, highways, freeways, rail lines, and airport runways.

Gasoline is the most used transportation fuel in California, with 97 percent of all gasoline being consumed by light-duty cars, pickup trucks, and sport utility vehicles. In 2021, 13.8 billion gallons of gasoline were sold in California (CEC 2022a). Diesel fuel is the second largest transportation fuel used in California, representing 17 percent of total fuel sales behind gasoline. In 2015, 4.2 billion gallons of diesel, including offroad diesel, was sold in California (CEC 2022b).

Existing standards for transportation energy that the Project would be subject to are promulgated through the regulation of fuel refineries and products, such as the Low Carbon Fuel Standard, which mandated a 10 percent reduction in the non-biogenic carbon content of vehicle fuels by 2020. In 2018, the State approved amendments to the regulation, which included strengthening and smoothing the carbon intensity benchmarks through 2030 in-line with California's 2030 GHG emission reduction target enacted through Senate Bill 32, adding new crediting opportunities to promote zero emission vehicle adoption, alternative jet fuel, carbon capture and sequestration, and advanced technologies to achieve deep decarbonization in the transportation sector. Other regulatory programs with emissions and fuel efficiency standards have been established by the U.S. Environmental Protection Agency and CARB, such as Pavley II/Low Emission Vehicle III from California's Advanced Clean Cars Program and the Heavy-Duty (Tractor-Trailer) Greenhouse Gas Regulation.

CARB's Zero-Emission Vehicle (ZEV) program is part of its Advanced Clean Cars package of coordinated standards for passenger vehicles in California. The ZEV regulation is designed to achieve the State's long-term emission reduction goals by requiring auto manufacturers to offer for sale specific numbers of full battery-electric, hydrogen fuel cell, and plug-in hybrid-electric vehicles (CARB 2022). Further, construction of the Project would need to comply with state requirements designed to minimize idling and associated emissions, which also minimizes fuel use. Specifically, idling of commercial vehicles and off-road equipment that would occur under the Project would be limited to 5 minutes in accordance with the Commercial Motor Vehicle Idling Regulation and the Off-Road Regulation (California Code of Regulations Title 13, Section 2485).

Stanislaus County has not implemented renewable energy or energy efficiency plans; however, the Project would produce a new renewable source of energy in Stanislaus County. The Project would supply solar energy to TID's electrical grid and/or to power its existing electrical infrastructure, such as pumps, and would be available to reduce the potential demand of nonrenewable generated power. Therefore, the Project would be consistent with California's Renewable Portfolio Standard goal of increasing the percentage of electricity procured from renewable sources to 100 percent by 2045. In addition, the Project's energy storage components would be consistent with a key initiative of the State's for enhance the optimization, dispatch, and settlement of energy storage and other similarly-situated resources (ISO 2022). The proposed energy storage system also would assist California utilities in meeting their obligations under State energy storage targets and the CPUC's energy storage program. Therefore, the Project

would be consistent with the state goals and would not impede progress toward achieving these goals.

The Project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency or impede progress toward achieving any goals and targets. This impact would be **less than significant**.

2.6.2 References

California Air Resources Board (CARB), 2022. *Zero Emission Vehicle Program*. Available: https://ww2.arb.ca.gov/our-work/programs/zero-emission-vehicle-program/about. Accessed July 1, 2022.

California Energy Commission (CEC), 2022a. California Gasoline Data, Facts, and Statistics. Available:https://www.energy.ca.gov/data-reports/energy-almanac/transportation-energy/california-gasoline-data-facts-and-statistics Accessed July 1, 2022.

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California Independent System Operator (ISO), 2022. Initiative: Energy storage enhancements. Accessed: https://stakeholdercenter.caiso.com/StakeholderInitiatives/Energy-storage-enhancements. Accessed July 1, 2022.

U.S. Energy Information Administration, 2022. California State Profile and Energy Estimates: California Energy Consumption by End-Use Sector, 2020. Available: https://www.eia.gov/state/?sid=CA#tabs-2. Last updated March 17, 2022. Accessed July 1, 2022.

2.7 Geology and Soils

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
VII. GEOLOGY AND SOILS — Would the project:				
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☐	☒
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	☒
iv) Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☒	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?	☐	☐	☒	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒
f) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐

2.7.1 Environmental Setting

The Project sites are located within the Great Valley Geomorphic province. The province includes the area known as the Great Central Valley of California, which extends approximately 400 miles north to south and 50 miles east to west. The Great Central Valley is encompassed by the Coast Ranges (metamorphic), the Klamath Ranges (metamorphic), the Cascade Range (volcanic), and the Sierra Nevada (granitic and metamorphic). The majority of rocks and deposits found within the province are sedimentary. According to the U.S. Geological Survey, sedimentary rocks are formed from preexisting rocks or pieces of once-living organisms. They form from deposits that accumulate on the Earth's surface. Sedimentary rocks often have distinctive layering or bedding.

Several known faults cross Stanislaus County. These faults are located in the western part of the county and in the Diablo Range west of Interstate 5. Surface fault rupture (or disruption at the ground surface as a result of fault activity) and seismic ground shaking are considered primary

seismic hazards by the State of California (Stanislaus County 2016a). The Ortigalita Fault crosses the southwest corner of Stanislaus County. Other nearby active faults outside of the county are the Greenville Fault Zone and the Corral Hollow–Carnegie Fault Zone, located east of Livermore in the Coast Ranges. The Marsh Creek–Greenville Fault Zone is a northwest-trending strike-slip fault zone along the western side of the Diablo Range that is approximately 55 miles long (Stanislaus County 2016a). The Corral Hollow–Carnegie Fault Zone is a relatively short fault segment, subparallel to and east of the Greenville Fault Zone.

The Ortigalita Fault Zone is situated approximately 26 miles southwest of Project Site 1 and approximately 42 miles southwest of Project Site 2. The region of the Ortigalita Fault closest to the Project sites is estimated to have an approximately 1.89 percent chance of a moment magnitude (Mw) 6.7 or greater earthquake over the next 30 years (WGCEP 2015). The Marsh Creek–Greenville Fault Zone is situated approximately 32 miles west of Project Site 1 and approximately 49 miles west of Project Site 2. The region of the Marsh Creek–Greenville Fault closest to the Project sites is estimated to have an approximately 3.56 percent chance of an Mw 6.7 or greater earthquake over the next 30 years (WGCEP 2015). The designation of "active" means the fault has shown movement in the last 11,700 years (during the Holocene) and is sufficiently well defined. The Project sites are not located within and do not cross a delineated Alquist-Priolo earthquake fault zone (CGS 2010).

The nearest historically active fault (with movement in the last 700,000 years) is the Great Valley (Orestimba) Fault, located approximately 16 miles southwest of Project Site 1 and approximately 32 miles southwest of Project Site 2. The region of the Great Valley Fault closest to the Project sites is estimated to have an approximately 0.26 percent chance of a Mw 6.7 or greater earthquake over the next 30 years (WGCEP 2015).

Unlike surface rupture, ground shaking is not confined to the trace of a fault, but rather propagates into the surrounding areas during an earthquake. The intensity of ground shaking typically diminishes with distance from the fault, but ground shaking may be locally amplified and/or prolonged by some types of substrate materials.

The ground-shaking hazard in Stanislaus County ranges from low to moderate. The hazard is highest on the west side of the county, which is closest to active faults as described previously. The ground-shaking hazard progressively decreases across the east side of the county as the distance from the active faults increases (Stanislaus County 2016a).

The Project sites are located in areas distant from known, active faults and experience lower levels of shaking less frequently. During most earthquakes, only weaker masonry buildings would be damaged. However, very infrequent earthquakes could cause strong shaking. Based on a probabilistic seismic hazard map that depicts the peak horizontal ground-acceleration values exceeded at a 10 percent probability in 50 years, the probabilistic peak horizontal ground-acceleration value for Project Site 1 is approximately 0.25 *g* (where *g* equals the acceleration speed of gravity) and 0.15 *g* to 0.25 *g* for Project Site 2 (Stanislaus County 2016b). As a point of comparison, probabilistic peak horizontal ground-acceleration values for the San Francisco Bay Area range from 0.4 *g* to more than 0.8 *g*.

The soil at Project Site 1 is composed primarily of Dinuba sandy loam with smaller portions of Hanford sandy loam and Fresno sandy loam (NRCS 2022). Dinuba sandy loam soils are moderately well drained with slow permeability, very slow runoff, and slight erosion hazard. Fresno sandy loam soils are imperfectly drained with slow to very slow permeability, very slow runoff, and slight erosion hazard. Hanford sandy loams are soils that are well drained with rapid permeability, very slow runoff, and slight erosion hazard.

Slope failures, commonly referred to as landslides, include many phenomena that involve the downslope displacement and movement of material, triggered by either static forces (i.e., gravity) or dynamic forces (i.e., earthquakes). Exposed rock slopes undergo rockfalls, rockslides, or rock avalanches, while soil slopes experience shallow soil slides, rapid debris flows, and deep-seated rotational slides. The California Geological Survey has not designated any part of Stanislaus County as a Zone of Required Investigation for landslide hazard (Stanislaus County 2016a). The greatest risk for landslides is in the western portion of the county within the Coast Ranges.

Liquefaction is the process in which the soil is transformed to a fluid form during intense and prolonged ground shaking. The areas most prone to liquefaction are those that are water saturated and consist of relatively uniform sands that are of loose to medium density. As with landslides, the potential for liquefaction is highest in the western part of Stanislaus County (Stanislaus County 2016a).

Expansive soils can undergo significant volume change (shrink and swell) as their soil moisture content varies. Soil moisture content can change as a result of many factors, including perched groundwater, landscape irrigation, rainfall, and utility leakage. The soils at the Project sites have a slight shrink-swell potential.

Subsidence occurs when a large land area settles as a result of oversaturation or extensive withdrawal of groundwater, oil, or natural gas. No areas of substantial subsidence have been identified in Stanislaus County (Stanislaus County 2016a).

2.7.2 Discussion

a.i) **No Impact.** The Project sites are not located within an Alquist-Priolo earthquake fault zone. Therefore, no impact related to rupture of a known earthquake fault would occur.

a.ii) **Less than Significant.** Earthquakes associated with the active faults in the Project area may cause strong ground shaking at the Project sites. Movement on the Ortigalita Fault could result in a maximum credible earthquake of 7.0 (WGCEP 2015). The region of the Great Valley Fault closest to the Project sites is estimated to have an approximately 0.26 percent chance of a Mw 6.7 or greater earthquake over the next 30 years (WGCEP 2015). Based on a probabilistic seismic hazard map that depicts the peak horizontal ground-acceleration values exceeded at a 10 percent probability in 50 years, the probabilistic peak horizontal ground-acceleration value for Project Site 1 is approximately 0.25 *g* (where *g* equals the acceleration speed of gravity) and 0.15 *g* to 0.25 *g* for Project Site 2 (Stanislaus County 2016a).

The Project would be constructed to industry standards to protect against potential adverse geological impacts of seismic activity and other site-specific soils and geology constraints, including compliance with the American Society of Civil Engineers standards. With compliance with these standards, the impact related to seismic shaking would be less than significant.

a.iii, iv) **No Impact.** As discussed in Section 2.7.1, *Environmental Setting*, the Project area is not known to be susceptible to landslides or liquefaction. In addition, the Project would be subject to compliance with the American Society of Civil Engineers standards. Therefore, no impact would occur.

b) **Less than Significant.** Soils in the Project area have low potential for erosion; however, earthmoving activities during construction of the Project has the potential to cause erosion. Routine Project operations and maintenance and research and monitoring activities are not anticipated to result in substantial soil erosion or loss of topsoil. Construction would be required to adhere to best management practices (BMPs) associated with the National Pollutant Discharge Elimination System (NPDES) Construction General Permit for Discharges of Stormwater Associated with Construction Activities, also known as the Construction General Permit, to control sediment in stormwater runoff from the Project area (see checklist item a in Section 2.10, *Hydrology and Water Quality*). Therefore, impacts of Project construction related to soil erosion would be less than significant.

c, d) **Less than Significant.** As described previously, the soils in the Project area are not known to have liquefaction potential, and they have a slight shrink-swell potential. In addition, no new habitable structures or buildings would be constructed as part of the Project. Therefore, the impact on life or property would be less than significant.

e) **No Impact.** The Project would not include the use of septic tanks or alternative wastewater disposal systems. Therefore, no impact would occur.

f) **Less than Significant with Mitigation Incorporated.** Paleontological resources are the fossilized evidence of past life found in the geologic record. Despite the tremendous volume of sedimentary rock deposits preserved worldwide, and the enormous number of organisms that have lived through time, the preservation of plant or animal remains as fossils is extremely rare. Because of the infrequency of fossil preservation, fossils—particularly vertebrate fossils—are considered nonrenewable resources. Because of their rarity and the scientific information they can provide, fossils are highly significant records of ancient life.

Rock formations that are considered paleontologically sensitive are those rock units that have yielded significant vertebrate or invertebrate fossil remains (SVP 2010). Stanislaus County has high potential for containing paleontological resources (Stanislaus County 2016a). The Project would not include a substantial amount of ground disturbance; however, if any previously unrecorded paleontological resources were encountered during project construction and any were found to be a unique paleontological resource,

the impact of the Project on the resource could be potentially significant. Any such potentially significant impacts would be reduced to a less-than-significant level by implementing Mitigation Measures GEO-1 and GEO-2.

Mitigation Measures

Mitigation Measure GEO-1: Train Construction Workers Regarding Paleontological Resources. A qualified paleontologist, defined as one meeting the Society of Vertebrate Paleontology (SVP) Standards (SVP 2010), shall present a paleontological resources sensitivity training to Project construction workers before the start of ground-disturbing activities (e.g., vegetation removal, pavement removal). The training session shall focus on recognition of the types of paleontological resources that could be encountered at the Project sites and the procedures to follow if they are found. The Turlock Irrigation District shall retain documentation demonstrating that construction personnel have attended the training.

Mitigation Measure GEO-2: Implement Appropriate Treatment Measures in Case of a Potential Fossil Discovery. If construction or other Project personnel discover any potential fossils during construction, regardless of the depth of work or location, work at the discovery location shall cease within a 50-foot radius of the discovery until the qualified paleontologist has assessed the discovery and recommended the appropriate treatment. If the find is deemed significant, it shall be salvaged following the standards of the SVP (SVP 2010) and curated with a certified repository.

2.7.3 References

California Geological Survey (CGS), 2010. 2010 Fault Activity Map of California. California Geological Survey, Geologic Data Map No. 6. Compilation and Interpretation by Charles W. Jennings and William A. Bryant. Graphics by: M. Patel, E. Sander, J. Thompson, B. Wanish, and M. Fonseca. Available: https://maps.conservation.ca.gov/cgs/fam/. Accessed June 22, 2022.

Society of Vertebrate Paleontology (SVP), 2010. *Assessment and Mitigation of Adverse Impacts to Nonrenewable Paleontologic Resources: Standard Guidelines.* Society of Vertebrate Paleontology News Bulletin, 2010.

Stanislaus County, 2016a. *Stanislaus County General Plan 2015*. Adopted on August 23, 2016, by the Board of Supervisors.

———, 2016b. *Stanislaus County General Plan and Airport Land Use Compatibility Plan Update, Draft Program Environmental Impact Report*. April 2016.

U.S. Natural Resources Conservation Service (NRCS), 2022. Web Soil Survey. Available: https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx. Accessed June 22, 2022.

Working Group on California Earthquake Probabilities (WGCEP), 2015. The Third California Earthquake Rupture Forecast (UCERF3): Output from Google Earth file with fault probabilities.

2.8 Greenhouse Gas Emissions

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
VIII. GREENHOUSE GAS EMISSIONS — Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

2.8.1 Discussion

a, b) **Less than Significant.** The San Joaquin Valley Air Pollution Control District's (SVJAPCD's) greenhouse gas (GHG) emissions guidance is intended to streamline CEQA review by pre-quantifying emissions reductions that would be achieved through the implementation of Best Performance Standards. A project is considered to have a less-than-significant cumulative impact on climate change if it meets any of the following conditions:

1. Comply with an approved GHG reduction plan.
2. Achieve a score of at least 29 using any combination of approved operational Best Performance Standards.
3. Reduce operational GHG emissions by at least 29 percent over business-as-usual (BAU) conditions (demonstrated quantitatively).

Because Stanislaus County currently has no adopted GHG reduction plan, Option 1 (listed above) cannot be applied. Options 2 and 3 both require projects to achieve GHG reductions consistent with the goals of Assembly Bill (AB) 32, which is to reduce statewide GHG emissions to 1990 levels by 2020 (equivalent to a 29 percent reduction over BAU conditions).

However, since publication of SVJAPCD's GHG guidance in 2009, the California Supreme Court has considered the CEQA issue of determining the significance of GHG emissions, in its decision in *Center for Biological Diversity v. CDFW and Newhall Land and Farming (Center for Biological Diversity v. Department of Fish & Wildlife (2015) 62 Cal.4th 204)*. In the *Newhall* decision, the court questioned a common CEQA approach to GHG analyses for development projects that compared project emissions to the reductions from BAU that would be needed statewide to reduce emissions to 1990 levels by 2020, as required by AB 32. The court upheld the BAU method as valid in theory, but concluded that the method was applied improperly in the case of the Newhall project: The project's target was incorrectly deemed consistent with the statewide emission target of 29 percent below BAU for the year 2020. In other words, the court said that the percent-below-BAU target developed by the AB 32 Scoping Plan is intended as a measure of the GHG reduction effort

required by the state as a whole, and it cannot necessarily be applied to the impacts of a specific project in a specific location.

The California Supreme Court provided some guidance for evaluating the cumulative significance of a proposed land use project's GHG emissions but noted that none of the approaches could be guaranteed to satisfy CEQA for a particular project. The court's suggested "pathways to compliance" include:

- Use a geographically specific GHG emissions reduction plan (e.g., climate action plan) that outlines how the jurisdiction will reduce emissions consistent with state reduction targets, to provide the basis for streamlining project-level CEQA analysis, as described in State CEQA Guidelines Section 15183.5.
- Use the Scoping Plan's BAU reduction goal but provide substantial evidence to bridge the gap between the statewide goal and the project's emissions reductions.
- Assess consistency with AB 32's goal in whole or part by looking to comply with regulatory programs designed to reduce GHG emissions from particular activities. As an example, the court points out that projects consistent with a Senate Bill 375 sustainable communities strategy may need to reevaluate GHG emissions from cars and light trucks.
- Rely on existing numerical thresholds of significance for GHG emissions, such as those developed by an air district.

In light of the *Newhall* decision and the reliance of SVJAPCD's GHG guidance on the statewide percentage reduction of GHG emissions by 2020, the following assessment of the Project's potential construction-related GHG emissions impacts under CEQA uses the following twofold approach:

1. Does the Project include reasonably feasible measures (i.e., Best Performance Standards) to reduce operational GHG emissions?
2. Although not strictly applicable to projects within the SJVAB, would the proposed Project's emissions exceed the Sacramento Metropolitan Air Quality Management District (SMAQMD)'s GHG mass emissions (or "bright line") threshold of 1,100 metric tons of carbon dioxide equivalent (CO_2e) per year for construction activity (SMAQMD 2020)?

As discussed previously, operational GHG emissions for the Project would be generated primarily by periodic on-road vehicular traffic for maintenance-related trips. These trips would emit negligible amounts of GHGs. In addition, the Project itself can be considered a Best Performance Standard because it would be a solar energy Project that would result in the generation of relatively clean renewable energy to be added to TID's electricity grid, or to be used directly by TID to power its unrelated existing electrical facilities (e.g., water pumps). Regarding Project construction activities, the total GHG emissions from Project construction over the approximately 6-month construction period would be approximately 397 metric tons CO_2e, which would be well below the 1,100 metric tons

per year significance threshold. Therefore, the Project would not result in a cumulatively considerable increase in GHG emissions and this impact would be **less than significant**.

2.8.2 References

Sacramento Metropolitan Air Quality Management District (SMAQMD), 2020. SMAQMD Thresholds of Significance, Revised April 2020.

2.9 Hazards and Hazardous Materials

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
IX. HAZARDS AND HAZARDOUS MATERIALS — Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☐	☐	☒
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?	☐	☐	☒	☐

2.9.1 Environmental Setting

The Project sites are located in Stanislaus County on parcels zoned for agriculture. Project Site 1 is surrounded by parcels with almond trees. Project Site 2 is surrounded by agricultural lands and row crops. No schools are located within 1 mile of the Project sites and no public airports or public use airports are located within 2 miles of the Project sites. The Project sites are in areas with dispersed rural residences.

Hazardous Materials

Materials and waste may be considered hazardous if they are poisonous (toxic), can be ignited by open flame (ignitable), corrode other materials (corrosive), or react violently, explode, or generate vapors when mixed with water (reactive). The term *hazardous material* is defined in law as any material that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment (California Health and Safety Code, Section 25501[o]). In some cases, past uses can result in spills or leaks of hazardous materials to the ground, resulting in soil and groundwater contamination. The

use, storage, transportation, and disposal of hazardous materials are subject to numerous federal, state, and local laws and regulations.

Information about hazardous materials sites at the Project sites was collected by reviewing the California Environmental Protection Agency's Cortese List data resources and the State Water Resources Control Board's GeoTracker list. The Cortese List data resources provide information regarding facilities or sites identified as meeting the requirements for inclusion on the Cortese List. The Cortese List is updated at least annually, in compliance with California regulations (California Government Code Section 65964.6[a][4]), and includes federal Superfund sites, state response sites, non-operating hazardous waste sites, voluntary cleanup sites, and school cleanup sites. The GeoTracker list also identifies underground storage tanks. Based on a review of the Cortese List conducted in June 2022, no listed sites are located within 1 mile of the proposed Project sites (DTSC 2022).

Fire Suppression

The Project sites are located within a fire suppression Local Responsibility Area where Stanislaus County is responsible for fire suppression. Project Site 1 is located in an Unzoned Fire Hazard Severity Zone and Project Site 2 is located in a Moderate Fire Hazard Severity Zone (CAL FIRE 2007).

2.9.2 Discussion

a, b) **Less than Significant.** The proposed Project's construction equipment and materials would include fuels, oils, and lubricants which are all commonly used in construction. The routine use or an accidental spill of hazardous materials used in construction could result in inadvertent releases, which could adversely affect construction workers, the public, and the environment.

Project construction activities would be required to comply with numerous regulations to ensure that construction-related fuels and other hazardous materials are transported, used, stored, and disposed of safely to protect worker safety, and to reduce the potential for such fuels or other hazardous materials to be released into the environment, including stormwater and downstream receiving water bodies. Contractors would be required to prepare and implement hazardous-materials business plans that would require proper use of hazardous materials during construction and storage of such materials in appropriate containers with secondary containment, as needed, to contain a potential release.

In addition, construction contractors would be required to acquire coverage under the NPDES General Stormwater Permit, which requires the preparation and implementation of a storm water pollution prevention plan (SWPPP) for construction activities. The SWPPP would list the hazardous materials (including petroleum products) proposed for use during construction; describe spill prevention measures, equipment inspections, and equipment and fuel storage; describe protocols for responding immediately to spills; and BMPs for controlling site run-on and runoff. Details regarding BMPs designed to minimize erosion are discussed in Section 2.10, *Hydrology and Water Quality*. Construction would

be required to adhere to BMPs associated with the NPDES Construction General Permit for Discharges of Stormwater Associated with Construction Activities, also known as the Construction General Permit, to control sediment in stormwater runoff from the Project areas.

Lastly, the transportation of hazardous materials would be regulated by the U.S. Department of Transportation, Caltrans, and the California Highway Patrol. Together, federal and state agencies determine driver-training requirements, load-labeling procedures, and container specifications designed to minimize the risk of an accidental release.

After construction of the proposed Project has been completed, operations and maintenance would require routine panel cleaning and periodic research and monitoring components would also include the limited use of equipment that would consume fuel and lubricants. The Project would be required to comply with the numerous laws and regulations discussed above that govern transportation, use, handling, and disposal of these hazardous materials, which would limit the potential for creation of hazardous conditions due to the use or accidental release of hazardous materials.

The PV modules that would be installed on the Project site could include Cadmium Telluride (CdTe) thin film technology. Elemental cadmium (Cd), which forms CdTe when reacted with tellurium (Te), is a lung carcinogen, and long-term exposure can cause detrimental effects on kidney and bone (Fthenakis 2003). CdTe is generally bound to a glass sheet by a vapor transport deposition during the manufacturing process, followed by sealing the CdTe layer with a laminate material and then encapsulating it in a second glass sheet. Commercial PV modules meet rigorous performance testing standards demonstrating durability in a variety of environmental conditions. Therefore, the PV modules that would be used at the Project sites would have been determined to conform to the International Electrotechnical Commission (IEC) test standards IEC 61646 and IEC61730 PV as tested by a third-party testing laboratory certified by the IEC (Solar ABCs 2022). The PV modules also would conform to Underwriters Laboratory (UL) 1703, a standard established by the independent product safety certification organization. In accordance with UL 1703, the PV modules would undergo rigorous accelerated life testing under a variety of conditions to demonstrate safe construction and to monitor their performance (Solar ABCs 2022).

Studies indicate that standard operation of CdTe PV systems does not result in cadmium emissions to air, water, or soil (Fthenakis, et al. 2020). These studies have consistently concluded that during accidents such as fires, no emissions from CdTe PV modules would be released because cadmium would dissolve into molten glass. The Project includes operational and maintenance protocols that would be used to identify and remove damaged or defective PV modules during annual inspections. CdTe PV modules have proven to pass the federal toxicity characteristic leaching procedure (TCLP) criteria for non-hazardous waste allowing the modules to be disposed of in landfills or recycled as practical in compliance with applicable laws and regulations (Fthenakis, et al. 2020). Use of CdTe PV technology would result in a less-than-significant hazards impact on the public and environment.

The proposed energy storage facilities would use batteries that would be used at the Project sites and would either be contained within steel enclosures. Transformers would contain dielectric insulating fluid in the form of vegetable or mineral oil and would not be routinely handled by operations and maintenance staff. Equipment containing hazardous materials would be equipped with spill containment areas and battery storage would be in accordance with OSHA requirements such as inclusion of heating, ventilation, air conditioning, fire protection systems, and spill response supplies. A Spill Prevention, Control, and Countermeasure Plan (SPCC) would be developed for the Project, if needed, in accordance with all applicable federal, state, and local regulations to avoid spills and minimize impacts in the event of a spill, would limit impacts related to. As a result, this impact would be less than significant.

c) **No Impact.** No schools are located within one-quarter mile of the Project sites. Therefore, no impact on schools would occur.

d) **No Impact.** As discussed previously, based on a review of the Cortese List conducted in June 2022, no listed sites are located within 1 mile of the Project sites (DTSC 2022). Therefore, no impact related to being located on a listed hazardous materials site would occur.

e) **No Impact.** No public airports or public use airports are located within 2 miles of the Project sites. Therefore, no impact related to airport safety hazards would occur.

f) **No Impact.** The Project sites are along existing canals in Stanislaus County that are owned by TID. The staging areas would be sited in the existing TID right-of-way, or on an adjacent property. Construction of the Project would not require road closures or lane restrictions. Therefore, no impact on emergency response and evacuation plans would occur.

g) **Less than Significant.** The Project sites are located within a Local Responsibility Area. Project Site 1 is in an Unzoned Fire Hazard Severity Zone and Project Site 2 is in a Moderate Fire Hazard Severity Zone (CAL FIRE 2007). The areas surrounding the Project sites are used for irrigated agriculture, reducing fire risk. Construction of the Project would consist of the use of heavy vehicles and equipment. The use of vehicles and equipment during construction could ignite dry vegetation and result in a fire, particularly during the drier, warmer conditions of summer and fall. Activities that could result in sparks such as welding or ground disturbance have a greater potential to result in an ignition. Therefore, depending on the local conditions, construction activities could increase the sources of potential ignition and temporarily exacerbate the risk of wildfire. If construction were to result in an ignition, wildfire could result in smoke and air pollutants that could result in poor air quality for the surrounding communities.

As described above, the Project site is not considered to be an area of high fire risk due to the flat topography and lack of significant fuels. Therefore, while the use of equipment on-site during Project construction could temporarily increase the risk of an ignition, the risk of an ignition resulting in the uncontrolled spread of wildfire would be low. Due to the lack of fuels on-site, the flat topography of the Project sites, and the short duration of

construction, the risk of Project construction leading to an ignition and the spread of wildfire would be a less-than-significant impact.

Regarding Project operations, the addition of the solar panels that would cover and span various sections of TID's existing irrigation canal system and include power line connections to TID's electricity grid and/or its pumps, and battery storage facilities would not result in substantial amounts of flammable materials or fuels that could lead to wildland fires. However, the Project would include the addition of battery energy storage systems, which could be potential ignition sources. These components could contribute to an increase in wildfire risk. The Project would include battery energy storage facilities that would either be AC-coupled or DC-coupled and would be physically arranged in temperature-controlled enclosures (e.g., container boxes or trailers).

Construction of the Project's battery storage facilities would occur in a manner consistent with the California Building Code standards and design specifications, pursuant to Section 1206 of the California Fire Code pertaining to electric energy storage systems and safety standards. The proposed energy storage facilities would be designed, constructed, operated, and maintained in accordance with existing federal, state, and local regulations for health and safety, including Section 1206 of the 2019 California Fire Code, which contains requirements for electrical energy storage systems. Compliance with these independently enforceable regulatory requirements would reduce potential fire risk associated with the Project to a less-than-significant level. Further, the Project would include meteorological data collection systems to track weather conditions, including solar irradiance, air temperature, air pressure, and wind speed and direction, which would allow for monitoring during the operation phase. Given the flat site topography and surrounding lack of vegetation that could operate as fuel for a fire, Project operation and maintenance would not significantly exacerbate existing wildfire risks. The potential impacts related to wildfires during the operation and maintenance phase would be less than significant.

2.9.3 References

California Department of Forestry and Fire Protection (CAL FIRE), 2007. Fire Hazard Severity Zones in SRA, Stanislaus County. October 2007.

California Department of Toxic Substances Control (DTSC), 2022. DTSC's Hazardous Waste and Substances Site List—Site Cleanup (Cortese List). Available: https://calepa.ca.gov/sitecleanup/corteselist/. Accessed June 15, 2022.

Fthenakis, 2003. CdTe PV: Real and Perceived EHS Risks. May 2003 production, accepted December 1, 2003.

Fthenakis, Vasilis & Athias, Clement & Blumenthal, Alyssa & Kulur, Aylin & Magliozzo, Julia & Ng, David, 2020. "Sustainability evaluation of CdTe PV: An update," Renewable and Sustainable Energy Reviews, Elsevier, vol. 123(C). Available online: https://ideas.repec.org/a/eee/rensus/v123y2020ics1364032120300721.html. Accessed October 7, 2021.

Solar ABCs, 2022. Solar America Board for Codes and Standards. http://www.solarabcs.org/codes-standards/IEC/index.html. Accessed July 1, 2022.

2.10 Hydrology and Water Quality

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
X. HYDROLOGY AND WATER QUALITY — Would the project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☐	☒	☐
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☒	☐
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:				
i) result in substantial erosion or siltation on- or off-site;	☐	☐	☒	☐
ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	☐	☐	☒	☐
iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or	☐	☐	☒	☐
iv) impede or redirect flood flows?	☐	☐	☒	☐
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☒	☐
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☒	☐

2.10.1 Environmental Setting

Surface Water Hydrology

The San Joaquin River Hydrologic Region is in California's Central Valley and is generally the northern portion of the San Joaquin Valley, including the Project sites. The region is south of the Sacramento River Hydrologic Region and north of the Tulare Lake Hydrologic Region. The region includes approximately half of the Sacramento–San Joaquin Delta (Delta). The San Joaquin River basin has average annual runoff of approximately 4 million acre-feet (DWR 2014).

San Joaquin River

The San Joaquin River is the principal river in the region, running through Stanislaus County from south to north; all other streams in the area are tributaries to the San Joaquin. The major tributaries of the San Joaquin River include the Cosumnes, Mokelumne, Calaveras, Stanislaus, Tuolumne, Merced, Chowchilla, and Fresno Rivers. The San Joaquin, Stanislaus, and Tuolumne Rivers are the largest surface water features that have their origins in the Sierra Nevada. The San Joaquin River and its tributaries eventually drain to the Delta.

Water Quality

San Joaquin River

The water quality of the San Joaquin River is affected by agricultural return flows during the dry season. These return flows frequently transport pesticides, nutrients, and sediment from agricultural areas into the south Delta. In addition, many pesticides are applied during the dormant spray season, typically November to January, and can be transported to water bodies during rainfall events. The San Joaquin River from the Merced River to the Tuolumne River is impaired on the state's 2020/2022 Clean Water Act Section 303(d) list for all of the following: alpha.-BHC (Benzenehexachloride or alpha-HCH), DDE (Dichlorodiphenyldichloroethylene), DDT (Dichlorodiphenyltrichloroethane), Electrical Conductivity, Group A Pesticides, Mercury, Specific Conductivity, Temperature, water, Total Dissolved Solids, and Toxicity (SWRCB 2022).

Groundwater Hydrology and Water Quality

The San Joaquin River Hydrologic Region has 11 alluvial groundwater basins and subbasins. The Project sites are located within the San Joaquin Valley groundwater basin and the Turlock subbasin (DWR 2006).

DWR described the characteristics of the Turlock Subbasin in *California's Groundwater,* Bulletin 118: San Joaquin Valley Groundwater Basin, Turlock Subbasin, as follows (DWR 2006):

> *The Turlock Subbasin (Basin Number 5-22.03) has a total surface area of 347,000 acres (542 square miles). It lies between the Tuolumne and Merced rivers and is bounded on the west by the San Joaquin River and on the east by crystalline basement rock of the Sierra Nevada foothills. The northern, western, and southern boundaries are shared with the Modesto, Delta-Mendota, and Merced Groundwater subbasins, respectively. Similar to the Modesto Subbasin, groundwater flow is primarily to the southwest, following the regional dip of basement rock and sedimentary units. Based on recent groundwater measurements, a paired groundwater mound and depression appear beneath the city of Turlock and to its east, respectively.*
>
> *The groundwater in this subbasin is predominately of the sodium-calcium bicarbonate type, with sodium bicarbonate and sodium chloride types at the western margin and a small area in the north-central portion. TDS [total dissolved solids] values range from 100 to 8,300 mg/L [milligrams per liter], with a typical range of 200 to 500 mg/L. The Department of Health Services [now known as the California Department of Public Health] reports TDS values in 71 wells ranging from 100 to 930 mg/L, with an average value of 335 mg/L. EC values range from 168 to 1,000 µmhos/cm [micromhos per centimeter], with a typical range of 244 to 707 µmhos/cm. There are localized areas of hard groundwater, nitrate, chloride, boron, and DBCP [dibromochloropropane]. Some sodium chloride type water of high TDS is found along the west side of the subbasin.*

Groundwater levels have generally declined in the Turlock Subbasin but also have had periods of rebounding. Measured groundwater depth at Project Site 1 is approximately 60 feet below the existing ground surface and at Project Site 2 is approximately 190 feet below the existing ground surface.

Flood Control and Flood Management Facilities

Flood risks in the Sacramento–San Joaquin Valley are among the highest in the nation. To address these risks, the Central Valley Flood Protection Act of 2008 directed DWR to prepare the Central Valley Flood Protection Plan for adoption by the Central Valley Flood Protection Board. The plan lays out a strategy to prioritize the state's investment in flood management over the next three decades, as well as strategies to promote multi-benefit projects and to integrate and improve ecosystem functions associated with flood risk reduction projects. The Central Valley Flood Protection Plan also incorporates information about systemwide and regional flood management needs, advancements in the best available science, and new policy considerations.

The Central Valley Flood Protection Board is the state regulatory agency responsible for ensuring that appropriate standards are met for the construction, maintenance, and protection of the flood control system that protects life, property, and wildlife habitat in California's Central Valley from the effects of flooding. The San Joaquin River in the vicinity of the Project sites is located within the Sacramento–San Joaquin Drainage District under the jurisdiction of the Central Valley Flood Protection Board.

Dams on the Tuolumne and Stanislaus Rivers help to regulate the rivers and reduce the risk of flooding in Stanislaus County. An extensive network of levees also exists along the rivers, including along the San Joaquin River, to protect surrounding buildings and agricultural operations. Despite these measures to control flood flows, major flooding occurs along the San Joaquin River, and along portions of the Tuolumne River, Stanislaus River, and tributaries (Stanislaus County 2016). Damaging floods occurred in the Project area in 1937–1938, 1950–1951, 1952, 1955–1956, 1962–1963, 1982–1983, 1986, 1995, 1996–1997, and 1998.

2.10.2 Discussion

a, b) **Less than Significant.** Construction of the Project would involve the use of heavy equipment, such as augers, cranes, and trucks. Even though soil erosion potential at the Project sites is generally low, construction activities have the potential to increase rates of erosion, which could increase turbidity in downstream receiving waters. In addition, the use of heavy machinery during construction would have the potential to result in an accidental release of fuels, oils, solvents, hydraulic fluid, and other construction-related fluids to the environment, thereby degrading water quality.

As described previously, soils at the Project sites have low potential for erosion; however, the limited earthmoving activities during construction would have the potential to cause erosion. Routine Project operations, maintenance and research, and component monitoring activities are not anticipated to result in substantial soil erosion or loss of topsoil.

TID would be required to obtain an NPDES Construction General Permit for Discharges of Stormwater Associated with Construction Activities (Construction General Permit) from the Central Valley Regional Water Quality Control Board before initiating ground-disturbing activities. Among the permit's conditions would be preparation and

implementation of an SWPPP that would identify and require implementation of BMPs to prevent sediment and other construction-related compounds (e.g., fuel, oil) from entering stormwater runoff. Compliance with the NPDES Construction General Permit, including the implementation of BMPs described in the SWPPP, would ensure that the Project would avoid and/or minimize the potential impact of soil erosion or the loss of topsoil during construction. Therefore, this impact would be less than significant.

Routine operation and maintenance activities for the Project would include routine panel cleaning and periodic research and monitoring components. A small amount of water may be needed for periodic panel cleaning. The total water use needed during operations and maintenance is expected to be well below 1 acre-foot per year; therefore, any groundwater extracted for the Project would be considered de minimis and would not impede sustainable management of the Turlock Subbasin. Because the water required for operations and maintenance is small in relation to the entire basin, the Project would not decrease groundwater supplies or interfere with groundwater recharge, nor would it impede sustainable groundwater management. Therefore, the impact on groundwater supplies or recharge during operation and maintenance would be less-than-significant.

Project operations may require the use of mineral oil as an insulation medium and coolant in transformers and other electrical equipment. As discussed in Section 4.10, *Hazards and Hazardous Materials*, the potential for release of substances that could otherwise be detrimental to water quality would be limited due to the implementation of state law. There would be no significant increase in sediment or other potential pollutants discharged into receiving waters. As a result, impacts on water quality from the Project's operation and maintenance activities would be less than significant.

c.i–iv) **Less than Significant.** The Project would result in the installation of solar panels that would cover and span various sections of TID's existing irrigation canal system and would include power line connections to TID's electricity grid and/or pumps, and to the proposed battery storage facilities. Routine operation and maintenance activities for the Project would include routine panel cleaning and periodic research and monitoring components. The Project would not increase the amount of water in the TID canal system, or substantially alter the existing drainage pattern of the Project sites, including through the alteration of the course of a stream or river or through the addition of impervious surfaces. Therefore, this impact would be less than significant.

d) **Less than Significant.** The Project would result in the installation of solar panels that would cover and span various sections of TID's existing irrigation canal system and would include power line connections to TID's electricity grid and/or pumps, and to the proposed battery storage facilities. Once constructed, routine operations and maintenance would require routine panel cleaning and periodic research and monitoring components would also include the limited use of equipment that would use fuel and lubricants. Therefore, this impact would be less than significant.

e) **Less than Significant.** As described previously under checklist items a) and b), the Project would comply with the NPDES Construction General Permit, including the implementation of BMPs described in the SWPPP to prevent water quality pollutants such as silt, sediment, hazardous materials, and construction-related fluids from entering receiving waters. Shading of the canal caused by the solar panels as part of the Project would also have the expected added effect of causing less aquatic vegetation growth, which would reduce canal maintenance requirements and result in improved water quality. Therefore, this impact would be less than significant.

2.10.3 References

California Department of Water Resources (DWR), 2006. *California's Groundwater,* Bulletin 118: San Joaquin Valley Groundwater Basin, Turlock Subbasin.

———, 2014. California Water Plan Update 2013. October 2013.

Stanislaus County, 2016. *Stanislaus County General Plan and Airport Land Use Compatibility Plan Update, Draft Program Environmental Impact Report*. April 2016.

State Water Resources Control Board (SWRCB), 2022. 2020-2022 California Integrated Report Map (Clean Water Act Section 303(d) List/305(b) Report). Available: https://gispublic.waterboards.ca.gov/portal/apps/webappviewer/index.html?id=6cca2a3a18154655992012663 73cbb7b. Accessed June 22, 2022.

2.11 Noise

Issues (and Supporting Information Sources):	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
XI. NOISE — Would the project result in:				
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☒	☐	☐
b) Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

2.11.1 Environmental Setting

Sound is mechanical energy transmitted by pressure waves through a medium such as air, while noise is defined as unwanted sound. Sound pressure level is measured in decibels (dB), with 0 dB corresponding roughly to the threshold of human hearing and 120–140 dB corresponding to the threshold of pain.

The typical human ear is not equally sensitive to all frequencies of the audible sound spectrum. As a consequence, during assessments of potential noise impacts, sound is measured using an electronic filter that deemphasizes the frequencies below 1,000 Hertz[1] and above 5,000 Hertz in a manner corresponding to the human ear's decreased sensitivity to low and extremely high frequencies instead of the frequency mid-range. This method of frequency weighting is referred to as *A-weighting* and is expressed in units of A-weighted decibels (dBA).[2]

Effects of Noise on People

The effects of noise on people tend to fall into the following three categories:

- Subjective effects of annoyance, nuisance, and dissatisfaction
- Interference with activities such as speech, sleep, and learning
- Physiological effects such as hearing loss or sudden startling

Environmental noise typically produces effects in the first two categories. Workers at industrial plants generally experience noise in the last category. There is no completely satisfactory way to measure the subjective effects of noise, or the corresponding reactions of annoyance and dissatisfaction. A wide variation exists in individual thresholds of annoyance; different tolerances to noise tend to develop based on individuals' past experiences with noise.

[1] Hertz is a unit of frequency equivalent to one cycle per second.

[2] All noise levels reported herein reflect A-weighted decibels unless otherwise stated.

Thus, an important way to predict a human reaction to a new noise environment is the way it compares to the existing environment to which one has adapted: the so-called "ambient noise" level. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged by those hearing it. With regard to increases in A-weighted noise levels, the following relationships occur:

- In carefully controlled laboratory experiments, a change of 1 dBA cannot be perceived.
- Outside of the laboratory, a 3-dBA change is considered a just-perceivable difference when the change in noise is perceived but does not cause a human response.
- A change in level of at least 5 dBA is required before any noticeable change in human response would be expected.
- A 10-dBA change is subjectively heard as approximately a doubling in loudness and can cause adverse response.

The human ear perceives sound in a nonlinear fashion; hence, the decibel scale was developed. Because the decibel scale is nonlinear, two noise sources do not combine in a simple additive fashion, rather logarithmically. For example, if two identical noise sources produce noise levels of 50 dBA, the combined sound level would be 53 dBA, not 100 dBA.

Noise Attenuation

Stationary "point" sources of noise, including stationary mobile sources such as idling vehicles, attenuate (lessen) at a rate of 6.0 dBA per doubling of distance from the source where the ground surface is reflective, such as parking lots or paved areas, and at a rate of 7.5 dBA per doubling of distance from the source where the ground surface is absorptive, such as soft dirt, grass, or scattered bushes and trees. Widely distributed noises, such as a large industrial facility spread over many acres or a street with moving vehicles (a "line" source), would typically attenuate at a lower rate, approximately 3.0 dBA per doubling of distance where the ground surface is reflective or 4.5 dBA per doubling of distance from the source where the ground surface is absorptive (Caltrans 2013).

Vibration

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. Several different methods are used to quantify vibration, including (FTA 2018):

- *Peak particle velocity* (PPV) is defined as the maximum instantaneous peak of the vibration signal. The PPV is most frequently used to describe vibration impacts to buildings.
- The *root mean square* (RMS) amplitude is most frequently used to describe the effect of vibration on the human body. The RMS amplitude is defined as the average of the squared amplitude of the signal.
- Decibel notation, expressed as *vibration decibels* (VdB), is commonly used to measure RMS. The decibel notation acts to compress the range of numbers required to describe vibration.

Typically, groundborne vibration generated by man-made activities attenuates rapidly with distance from the source of the vibration.

Existing Ambient Noise Environment

The noise environment in the area surrounding the Project site is characterized by rural roadways, rural agricultural noise, and scattered rural residences. It includes low-volume traffic noise from tractors, large trucks, and other farm equipment, and both on- and off-road passenger vehicles. There are no public airports or public use airports are located within 2 miles of the Project sites. To characterize the existing ambient noise environment in the Project vicinity, short-term (15-minute) ambient noise level measurements were collected at locations adjacent to the Project sites (see **Figures 2.11-1** and **2.11-2** for illustrations of the noise measurement locations). These locations were chosen to best represent the ambient noise environments at the closest noise-sensitive uses to the Project sites.

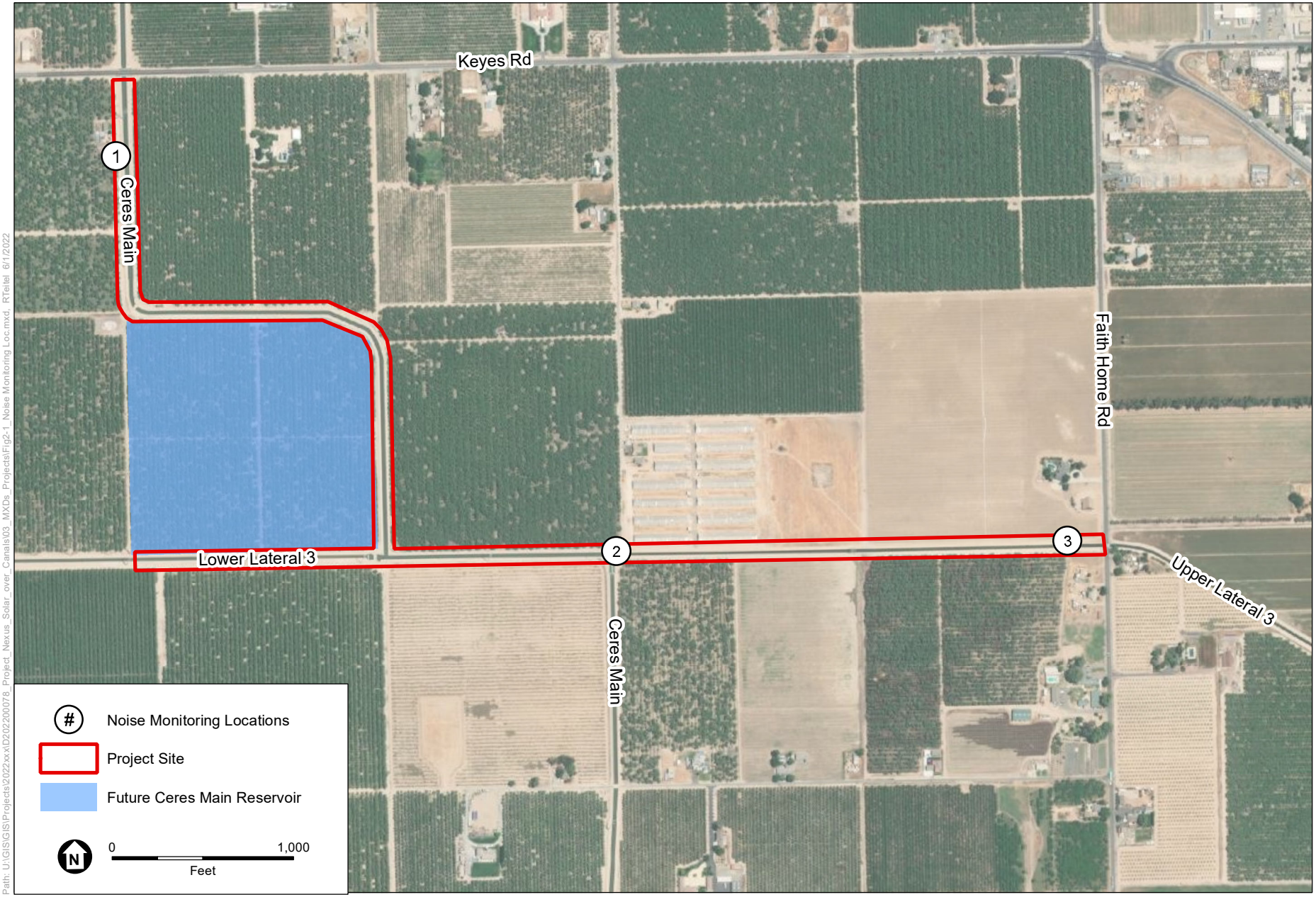
The measurements are characterized in terms of the equivalent sound level (L_{eq}) to describe noise over a specified period, in terms of a single numerical value that is the constant sound level, which would contain the same acoustic energy as the varying sound level during the same time period (i.e., the average noise exposure level for the given time period, in this case 15 minutes); as well as the L_{max} and L_{min}, which represent the instantaneous maximum and minimum noise levels, respectively, measured during the 15-minute measurement periods. **Table 2.11-1** shows the results of the noise monitoring survey. As shown in Table 2.11-1, L_{eq} noise levels ranged from approximately 49 dBA to 59 dBA, L_{max} noise levels ranged from approximately 58 dBA to 77 dBA, and L_{min} noise levels ranged from approximately 37 to 47 dBA in the vicinity of Site 1; and noise levels ranged from approximately 69 dBA to 72 dBA, L_{max} noise levels ranged from approximately 83 dBA to 85 dBA, and L_{min} noise levels ranged from approximately 34 to 54 dBA in the vicinity of Site 2.

TABLE 2.11-1
MEASURED SHORT-TERM AMBIENT NOISE MEASUREMENT RESULTS

No.	Location Description	Time Period	Noise Level (dBA)			Sources
			L_{eq}	L_{max}	L_{min}	
Project Site 1						
1	30 feet south of E. Keyes Road	10:12 a.m.–10:27 a.m.	50.4	65.5	37.1	Nearby traffic from E. Keyes Road, including simi-tractor trucks, birds chirping.
2	0.4 mile south of E. Keyes Road	10:38 a.m.–10:53 a.m.	49.4	58.4	47.0	Water pump near canal, birds chirping, tractor passing by on nearby residential property.
3	20 feet of Faith Home Road	11:08 a.m.–11:23 a.m.	59.1	77.0	42.3	Nearby traffic on Faith Home Road, water pump near canal, birds chirping, tractor passing by on nearby residential property.
Project Site 2						
4	0.4 mile north of Lake Road	1:16 p.m. – 1:31 p.m.	68.5	85.3	34.4	Bird chirping, waves of water hitting the canal banks.
5	0.2 mile north Lake Road	12:53 p.m. – 1:08 p.m.	69.2	82.9	41.3	Bird chirping, waves of water hitting the canal banks.
6	North of residence at 19701 Lake Road	12:14 p.m. – 12:29 p.m.	72.0	83.1	53.6	Vehicle traffic on Lake Road, including tractors, vehicles crossing bridge over the canal, birds chirping.

NOTES: dBA = A-weighted decibels; L_{eq} = equivalent sound level; L_{max} = maximum instantaneous sound level; L_{min} = minimum sound level. Measurements were short-term, collected over 15-minute periods on Thursday, June 2, 2022.

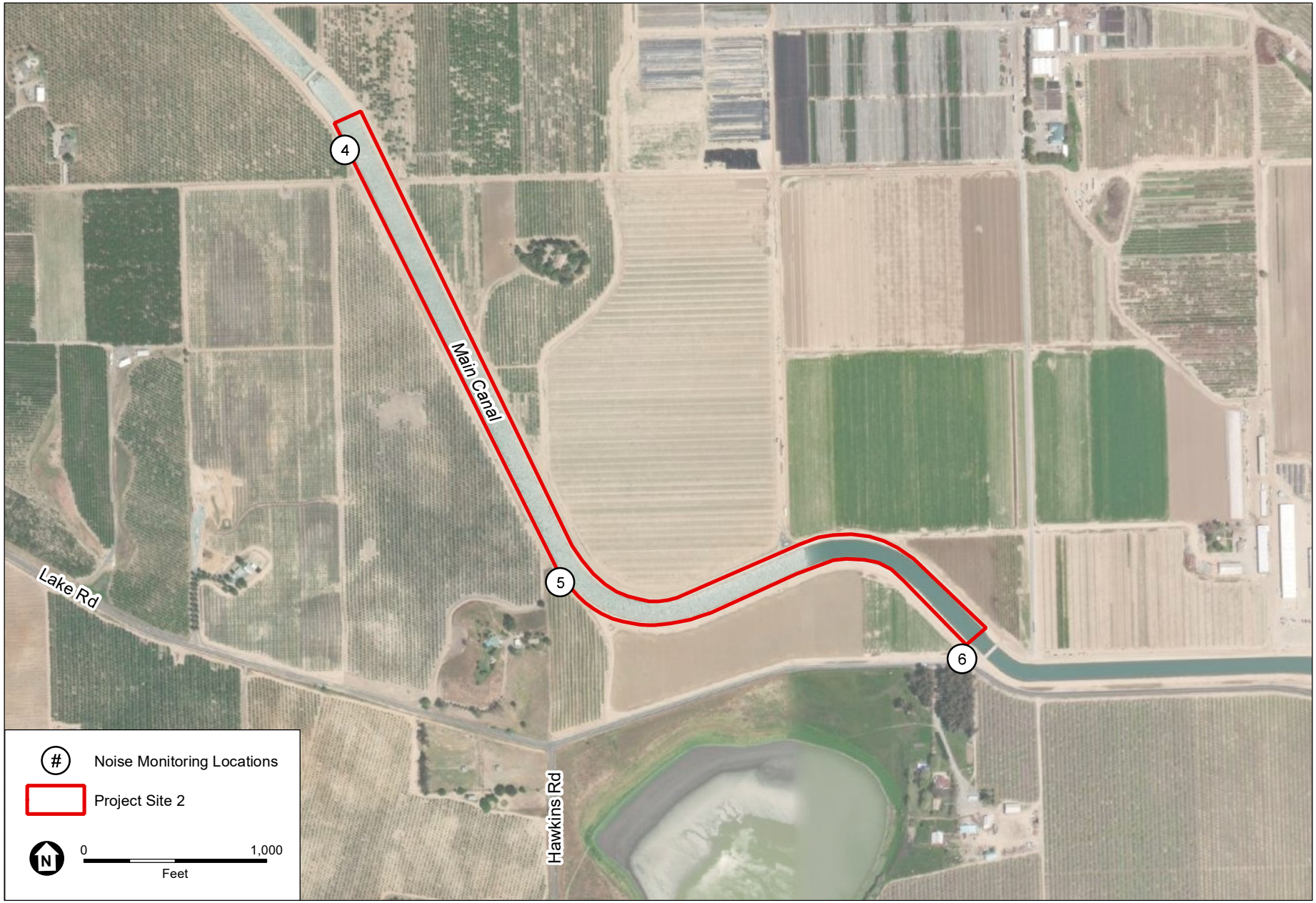
SOURCE: Appendix C.



SOURCE: Esri Imagery, ESA, 2022

Project Nexus

Figure 2.11-1
Noise Monitoring Locations in the Vicinity of Site 1



SOURCE: Esri Imagery, ESA, 2022

Project Nexus

Figure 2.11-2
Noise Monitoring Locations in the Vicinity of Site 2

Sensitive Receptors

Human response to noise varies considerably from one individual to another. Effects of noise at various levels can include interference with sleep, concentration, and communication; physiological and psychological stress; and hearing loss. Given these effects, some land uses are considered more sensitive to ambient noise levels than others. In general, residences, schools, hotels, hospitals, and nursing homes are considered to be the most sensitive to noise. Commercial and industrial uses are considered the least noise-sensitive. Sensitive receptor land uses in the vicinity of the Project site include rural residences.

The closest noise-sensitive receptors to Project Site 1 are residences approximately 70 feet and 750 feet west and east, respectively, of the northern extension of Ceres Main segment near Keyes Road; approximately 1,000 feet west-southwest of the western extent of the Lower Lateral 3 segment; approximately 475 feet north of the segment that is north of Ceres Main; and approximately 330 feet north and 100 feet south of the segment adjacent to Faith Home Road.

The closest noise-sensitive receptors to Project Site 2 are residences approximately 550 feet northeast of the northern segment, approximately 300 feet southwest of the segment near the intersection of Lake Road and Hawkins Road, and approximately 675 feet south-southwest of the eastern segment.

Regulatory Setting

Construction Noise

Section 10.46.060, *Specific noise source standards*, E., *Construction Equipment*, of the Stanislaus County Noise Control Ordinance limits construction noise to 75 dBA between the hours of 7:00 p.m. and 7:00 a.m. at the receiving property line of any property with a dwelling unit (Stanislaus County 2010).

Operational Noise Standards

Section 10.46.050, Exterior noise level standards, of the Stanislaus County Noise Control Ordinance limits the creation of any noise that causes the exterior noise level when measured at any property to exceed the noise level standards as set below in **Table 2.11-2**.

TABLE 2.11-2
EXTERIOR NOISE LEVEL STANDARDS

Designated Noise Zone	Maximum A-Weighted Sound Level as Measured on a Sound Level Meter (L_{max})	
	7:00 a.m. – 9:59 p.m.	10:00 p.m. – 6:59 a.m.
Residential	50	45

NOTES: L_{max} = maximum instantaneous sound level

SOURCE: Stanislaus County 2010

The Noise Element of the Stanislaus County General Plan identifies normally accepted community noise environments for a variety of land use categories. For low-density residential land uses, a day-night average level (L_{dn}) of up to 60 dBA is considered to be normally acceptable (Stanislaus County 2016). The L_{dn} is the energy-average of A-weighted sound levels occurring over a 24-hour period, with a 10 dB penalty applied to A-weighted sound levels occurring during nighttime hours (10:00 p.m. to 7:00 a.m.). Since the Project would not generate noise continuously over a 24-hour period, the L_{dn} is not a good metric for gauging Project-related noise levels. Pursuant to Noise Element Goal Two, which is to protect the citizens of Stanislaus County from the harmful effects of exposure to excessive noise, performance standards are identified for stationary noise sources (see **Table 2.11-3**).

TABLE 2.11-3
MAXIMUM ALLOWABLE NOISE EXPOSURE – STATIONARY NOISE SOURCES

	Daytime 7 a.m. to 10 p.m.	Nighttime 10 p.m. to 7 a.m.
Hourly Leq	55	45
Maximum Level	75	65

NOTES: L_{eq} = equivalent sound level

SOURCE: Stanislaus County 2016

Vibration

Section 10.46.070, Vibration, of the Stanislaus County Noise Control Ordinance prohibits the operation of any devise that creates vibration that is above the vibration perception threshold of any individual at 150 feet from the source if on a public space or public right-of-way. Vibration perception threshold is defined by the county as 0.01 inch per second (in/sec) over the range of 100 Hertz (Stanislaus County 2010).

2.11.2 Discussion

a) **Less than Significant with Mitigation Incorporated.**

Construction

Pursuant to Chapter 10.46 of the Stanislaus County Noise Control Ordinance, construction noise should be limited to 75 dBA at any receiving property line between the hours of 7:00 p.m. and 7:00 a.m. Project construction activities are anticipated to occur between the hours 7:00 a.m. and 7:00 p.m., in which case the Project would not result in nighttime construction activity noise levels that would exceed the County's nighttime construction noise limits. However, as mentioned in the Project Description, there is a possibility that the construction contractor would request to begin work at 6:00 a.m. and end work by 8:00 p.m.; therefore, this analysis evaluates construction noise levels that could occur from 6:00 a.m. to 7:00 a.m. and after 7:00 p.m. to 8:00 p.m. relative to the County's 75 dBA nighttime noise ordinance limit.

The County does not have a noise limit applicable to daytime construction activities; however, the Federal Transit Administration (FTA's) Transit Noise and Vibration Impact

Assessment provides guidelines for reasonable criteria for assessment of daytime construction noise. The guidance indicates that construction noise that exceeds a 1-hour L_{eq} level of 90 dBA during daytime hours would provoke an adverse community reaction at noise-sensitive land uses (FTA 2018). For this analysis, the daytime construction noise level of 90 dBA L_{eq} is used to evaluate whether construction would cause a substantial temporary or periodic increase in ambient daytime noise levels at sensitive receptors near the Project sites. Sensitive receptors located near construction areas that would be exposed to noise levels that exceed 90 dBA L_{eq} could experience an adverse reaction that would be considered a significant impact.

Loud construction equipment such as auger drill rigs, cranes, rough terrain forklifts, haul trucks, and generators would be used during the construction phase of the Project. Project construction activities are anticipated to last a total of approximately 6 months; however, construction activities in the vicinity of any one sensitive receptor location would not be expected to last for more than several weeks. This analysis used the Federal Highway Administration (FHWA's) Roadway Construction Noise Model (RCNM) to estimate construction equipment noise levels that would be associated with the Project (FHWA 2006). **Table 2.11-4** shows typical L_{max} and 1-hour L_{eq} noise levels that would be produced by the individual types of off-road equipment that would be used during construction of the Project at a distance of 50 feet from the source. The "acoustical usage factors" used to estimate L_{eq} noise levels are also shown as percent used in the table. These factors represent the fraction of time each piece of construction equipment operates at full power (i.e., its loudest condition).

TABLE 2.11-4
REFERENCE CONSTRUCTION EQUIPMENT NOISE LEVELS – (50 FEET FROM SOURCE)

Type of Equipment	L_{max}, dBA	Hourly L_{eq}, dBA/Percent Used
Forklift	83	79/40
Backhoe	78	74/40
Dozer	82	78/40
Crane	81	73/16
Auger/Rotary Drill Rig	84	77/20
Excavator	81	77/40
Generator Set	81	78/50
Aerial Lift	75	68/20

NOTES: dBA = A-weighted decibels; L_{eq} = equivalent sound level; L_{max} = maximum instantaneous sound level.
SOURCE: Federal Highway Administration (FHWA) 2006. FHWA Roadway Construction Noise Model. January 2006.

The operation of each piece of equipment at the Project construction sites would not be constant throughout the day, as equipment would be turned off when not in use. Over a typical workday, the equipment would be operating at different locations and all the equipment would not operate concurrently at the same location of the Project sites. However, to quantify construction-related noise exposure that could occur at the nearest

sensitive receptors, it was assumed that the two loudest pieces of construction equipment (i.e., a forklift and dozer) would operate at the closest location of the Project sites to the nearest off-site sensitive receptors, which are rural residences. **Table 2.11-5** presents the highest L_{max} and 1-hour L_{eq} construction noise exposure levels that would occur at the closest residences to the Project sites.

TABLE 2.11-5
SUMMARY OF ESTIMATED NOISE LEVELS AT SENSITIVE RECEPTORS DURING PROJECT CONSTRUCTION

Project Site	Loudest Two Pieces of Construction Equipment	Equipment Noise Level at 50 feet (dBA L_{max}/ dBA L_{eq})	Distance to Closest Residences (feet)	Attenuated Noise Level (dBA L_{max}/ dBA L_{eq})
Site 1	Forklift, Dozer	83/82	70	81/79
Site 1	Forklift, Dozer	83/82	750	60//58
Site 1	Forklift, Dozer	83/82	1,000	57/56
Site 1	Forklift, Dozer	83/82	475	64/62
Site 1	Forklift, Dozer	83/82	330	67/65
Site 1	Forklift, Dozer	83/82	100	77/76
Site 2	Forklift, Dozer	83/82	550	63/61
Site 2	Forklift, Dozer	83/82	300	68/66
Site 2	Forklift, Dozer	83/82	675	61/59

NOTES: dBA = A-weighted decibels; L_{eq} = equivalent sound level; L_{max} = maximum instantaneous sound level.

SOURCE: Federal Highway Administration (FHWA) 2006. FHWA Roadway Construction Noise Model. January 2006.

As shown in Table 2.11-5, Project construction activities would result in noise levels of up to 79 L_{eq} (1-hour) at the closest residence to Site 1 and up to 66 L_{eq} (1-hour) at the closest residence to Site 2. Given the ambient noise levels shown in Table 2.11-1 in the vicinity of the closest residences to Site 1 (i.e., 50 dBA L_{eq}), the short-term increase in ambient noise levels due to construction activities would likely be perceived as a nuisance. Although the noise levels in the vicinity of Site 1 would not exceed the FTA's 90 dBA 1-hour L_{eq} guidance level for assessment of daytime construction noise, they would exceed the County's nighttime ordinance level of 75 dBA if construction activities were to occur before 7:00 a.m. or after 7:00 p.m.

Given the ambient noise levels shown in Table 2.11-1 in the vicinity of the closest residences to Site 2 (i.e., 69 dBA L_{eq}), the short-term increase in ambient noise levels due to construction activities at the closest residence to Site 2 may or may not be noticeable and would not exceed the FTA's 90 dBA 1-hour L_{eq} guidance level for assessment of daytime construction noise or the County's nighttime ordinance level of 75 dBA.

Therefore, Project construction would result in a less-than-significant impact relative to causing a substantial temporary or periodic increase in ambient daytime noise levels at sensitive receptors near the Project sites; however, it would result in a potentially significant impact relative to causing a substantial temporary or periodic increase in ambient nighttime noise levels at residences near Project Site 1. Mitigation Measure

NOI-1 is recommended so that Project construction activities do not exceed the Stanislaus County nighttime noise ordinance level. Implementation of Mitigation Measure NOI-1 would reduce potential construction activity noise levels between 6:00 a.m. to 7:00 a.m. and after 7:00 p.m. to 8:00 p.m. to approximately 70 dBA at the nearest residences, which would reduce the impact to a less-than-significant level.

The Project would also result in off-site noise levels associated with daily vehicle trips, including a total of one-way averages of up to 40 worker automobile trips, 22 vendor (medium to heavy duty) trips, and 8 haul truck (heavy duty) trips during the peak of construction activities. However, these trip volumes would be dispersed throughout the Project area during the construction day (i.e., as early as 6:00 a.m. through 8:00 p.m.) and would not be expected to substantially increase ambient noise levels at any one sensitive receptor location or result in an exceedance of FTA's 90 dBA 1-hour L_{eq} guidance level for assessment of daytime construction noise or the County's nighttime ordinance level of 75 dBA.

Operations and Maintenance

The primary noise sources from operation and maintenance would be associated with the PV solar array inverters and transformers, and the energy storage system facilities. Periodic vehicle trips would be required associated with operations and maintenance, but these trips would not cause a perceptible increase in ambient noise levels at the nearest residence locations.

Based on the review of a recent solar power project in San Joaquin Valley that used National Electrical Manufacturers Association noise ratings, worst case noise levels for solar array transformers would be 67 dBA at 1 foot from the source, and worst-case noise levels for inverters would be 64 dBA at 33 feet from the source (Fresno County 2018). Combining the solar array transformer and invertor noise levels results in a noise level of approximately 58 dBA L_{eq} at 50 feet. This noise level would be limited to daytime hours when the solar array would be generating electricity. At a distance of 70 feet (the closest sensitive receptor), this would equate to a noise level of approximately 54 dBA, which would exceed Stanislaus County's exterior daytime noise level standard of 50 dBA but would not exceed the County's stationary source daytime noise level standard of 55 dBA. At 100 feet, the noise level would attenuate to 50 dBA. Therefore, operational noise levels associated with solar array transformers and inverters would be significant at or within 100 feet of nearby residences. Two residences are located at 100 feet or closer to Site 1; therefore, the operational noise impact near Site 1 would be considered significant. It should be noted that the daytime ambient noise level at the closest residence was measured to be 50 dBA L_{eq} (see Table 2.11-1), which is the same Project noise level estimated for 100 feet. There are no residences located at 100 feet or closer to Site 2; therefore, solar array transformer and inverter noise level impacts at residences in the vicinity of Site 2 would be less than significant.

The loudest operational noise levels that would be associated with the Project would be the air conditioning (HVAC) units at the battery storage facilities. The HVAC units

supplied as standard equipment for other energy storage projects were found to produce a noise level of 68 dBA at 50 feet during full operation (Fresno County 2018). Unlike the solar array facilities, it is reasonable to assume that the battery storage HVAC units would periodically operate during the nighttime hours. At 400 feet, this would equate to a noise level of approximately 45 dBA, which equals Stanislaus County's exterior and stationary source daytime noise level limit standard. Therefore, operational noise levels associated with the battery storage facilities within 400 feet of residences would result in a significant impact. The exact locations for the proposed battery storage facilities is not yet known; however, four residences are located 400 feet or closer to Site 1 and one residence is located within 400 feet of Site 2; therefore, depending on where the battery storage facilities would be located, the impact would be considered significant.

Mitigation Measure NOI-2 is recommended so that Project facilities are sited with sufficient buffers from existing residences in order to ensure that Stanislaus County noise level standards are not exceeded. Implementation of Mitigation Measure NOI-2 would reduce the significant operational noise impact to a less-than-significant level.

Mitigation Measures

Mitigation Measure NOI-1. All Project construction activities that occur between the hours of 6:00 a.m. to 7:00 a.m. and after 7:00 p.m. to 8:00 p.m. shall occur at a distance of at least 200 feet from the nearest residence.

Mitigation Measure NOI-2. All solar array transformers and inverters included in the scope of the Project shall be sited at least 100 feet away from nearby residences and each of the battery storage facilities shall be sited at least 400 feet from nearby residences.

b) **Less than Significant.** Operation of the Project would not include any activities that would generate significant levels of vibration. Therefore, it is not anticipated that Project operation would expose the nearest sensitive receptors or structures to vibration levels that would result in annoyance. For this reason, the following analysis of the Project's vibration impacts evaluates only the effects of on-site construction activities.

For adverse human reaction, the analysis applies the "strongly perceptible" threshold of 0.9 in/sec PPV for transient sources. For risk of architectural damage to historic buildings and structures, the analysis applies a threshold of 0.12 in/sec PPV (Caltrans 2013). The FTA threshold of 0.3 in/sec PPV is used to assess damage risk for all other buildings. There are no historic structures in the vicinity of the Project site that could be adversely affected by vibration related to Project construction.

Construction of the Project would involve the use of auger drills, cranes, a bulldozer, etc. The use of bulldozers would be expected to generate the highest vibration levels during construction. Vibration levels of bulldozers are typically 0.089 in/sec PPV at 25 feet, which is typical for a wide range of soils, and less than the Caltrans adverse human reaction threshold. No residences are within 25 feet of the Project sites. In addition, under typical propagation conditions, vibration levels at 150 feet would be approximately 0.01 in/sec PPV,

which would not exceed the Stanislaus County Noise Control Ordinance that prohibits the operation of any devise that creates vibration that is above 0.01 in/sec. Therefore, this impact would be less than significant.

c) **No Impact.** No private airstrips, public airports, or public use airports are located within 2 miles of the Project sites. Therefore, the Project would not expose people working in the Project area to excessive noise levels, and no impact would occur.

2.11.3 References

California Department of Transportation (Caltrans), 2013. *Technical Noise Supplement to the Traffic Noise Analysis Protocol*. September 2013.

Federal Highway Administration (FHWA), 2006. FHWA Roadway Construction Noise Model. January 2006.

Federal Transit Administration (FTA), 2018. *Transit Noise and Vibration Impact Assessment Manual.* September 2018.

Fresno County, 2018. Little Bear Solar Project Draft Environmental Impact Report, Appendix L, Noise and Acoustics. August 2018.

Stanislaus County, 2010. Stanislaus County Code, Title 10, Public Peace, Morals, and Welfare, Chapter 10.46, Noise Control. 2010.

———, 2016. Stanislaus County General Plan 2015, Noise Element, adopted August 26, 2016.

2.12 Transportation

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
XII. TRANSPORTATION — Would the project:				
a) Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☐	☒	☐
b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	☐	☐	☒	☐
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☒	☐
d) Result in inadequate emergency access?	☐	☐	☒	☐

2.12.1 Environmental Setting

Highways

Project Site 1 is located approximately 1.70 miles west of State Route 99. Project Site 2 is located approximately 1.40 miles south of California State Route 132 (SR 132).

County Roadways/Traffic Types

As described previously, the Project sites are located in rural areas. The roadways immediately adjacent to Project Site 1 are primarily dirt roads. The northern end of Project Site 1 ends at Keyes Road, a paved road, classified as a Minor Arterial by Stanislaus County (Stanislaus County 2016). The eastern end of Project Site 1 ends at Faith Home Road which is classified as a Major Collector (Stanislaus County 2016). Another larger roadway near Project Site 1 is Central Avenue (approximately 1 mile west of the Project Site 1) classified as a Major Collector by Stanislaus County (Stanislaus County 2016).

The roadways immediately adjacent to Project Site 2 are also primarily dirt roads. The southern end of Project Site 2 ends at Lake Road, a paved road, classified as a Major Collector by Stanislaus County (Stanislaus County 2016).

Airports

The nearest airport to Project Site 1 is the Modesto City-County Airport, approximately 5.4 miles to the northwest. The nearest airport to Project Site 2 is the Turlock Municipal Airport, approximately 10 miles to the southwest.

2.12.2 Discussion

a) **Less than Significant.** Construction of the Project would temporarily generate increases in vehicle trips by workers and vehicles on area roadways. There would be a minimal increase

in truck and automobile trips for construction; however, given the scale of the Project and the length of the construction period, the capacity of local roads used to access the Project sites would not likely be substantially reduced. Project operation would require periodic panel cleaning and activities associated with the research and monitoring components and would result in only a marginal increase in vehicle trips. Because the increase in traffic during construction would be minimal, there would be no decreased levels of service. The Project would not induce population growth or result in changes to a transit roadway, bicycle system, or pedestrian facilities. The Project would not change the existing land use at the Project sites. The Project would not impact any county program, plan, ordinance, or policy related to transit, bicycle, or pedestrian facilities in the vicinity of the Project sites or along local roadways. Therefore, this impact would be less than significant.

b) **Less than Significant.** Section 15064.3 of the State CEQA Guidelines establishes specific considerations for evaluating a project's transportation impacts. The State CEQA Guidelines identify vehicle miles traveled (VMT)—the amount and distance of automobile travel attributable to a project—as the most appropriate measure of transportation impacts. Other relevant considerations may include the effects of the project on transit and nonmotorized travel. Construction of the Project would last approximately 24 weeks and would use construction crews that would generate an estimated average of 40 one-way automobile trips per day. Operation of the Project would not add a substantial amount of VMT to the Project areas. In addition, Stanislaus County's VMT per capita is projected to decrease. Therefore, this impact would be less than significant.

c) **Less than Significant.** Trucks accessing the Project sites would use local rural roadways. Based on the low number of anticipated construction trips relative to traffic volumes on local roadways and their limited duration, this impact of Project construction would be less than significant. Construction of the Project would not result in new design features on roads in the area. Further, the Project would not result in in potential traffic safety hazards for vehicles, bicyclists, or pedestrians on public roadways, given the intermittent and temporary nature of construction activities. Therefore, this impact would be less than significant.

d) **Less than Significant.** Temporary construction staging would not block or interfere with emergency response vehicles. Increases in traffic volumes on local roadways providing access to the Project sites could cause intermittent and temporary slowdowns in traffic flow during construction, although truck trips associated with Project construction are not expected to cause access on local roadways to deteriorate. For these reasons, the Project would not result in inadequate emergency access, and this impact would be less than significant.

2.12.3 References

Stanislaus County, 2016. *Stanislaus County General Plan and Airport Land Use Compatibility Plan Update, Draft Program Environmental Impact Report*. April 2016.

2.13 Tribal Cultural Resources

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
XVI. TRIBAL CULTURAL RESOURCES —				
a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources. Code Section 5020.1(k), or	☐	☒	☐	☐
ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☒	☐	☐

2.13.1 Environmental Setting

On behalf of TID, Environmental Science Associates contacted the NAHC on May 5, 2022, to request a search of the NAHC's Sacred Lands File and a list of Native American representatives who may have knowledge of tribal cultural resources in the vicinity of the Project sites, or interest in the Project. The NAHC replied to Environmental Science Associates by electronic mail on June 28, 2022, with the statement that the Sacred Lands File has no record of sacred sites at the Project sites. The NAHC's response included a list of Native American representatives from 11 tribes who may have knowledge of tribal cultural resources at the Project sites or may otherwise be interested in the Project.

See Section 2.5, *Cultural Resources*, for a summary of Environmental Science Associate's CCaIC records search, background research, and archaeological sensitivity analysis.

2.13.2 Discussion

a.i) **Less than Significant with Mitigation Incorporated.** Based on the results of the tribal outreach efforts, no known tribal cultural resources listed or determined eligible for listing in the California Register, or included in a local register of historical resources as defined in Public Resources Code (PRC) Section 5020.1(k), pursuant to PRC Section 21074(a)(1), would be affected by the Project.

However, if any previously unrecorded archaeological resource were identified during ground-disturbing construction activities and were found to qualify as a tribal cultural

resource pursuant to PRC Section 21074(a)(1) (determined to be eligible for listing in the California Register or in a local register of historical resources), any impacts of the Project on the resource could be potentially significant. The potentially significant impact would be reduced to a less-than-significant level with implementation of Mitigation Measure CUL-1: Cultural Resources Awareness Training, Mitigation Measure CUL-2: Inadvertent Discovery of Cultural Resources, and Mitigation Measure CUL-3: Inadvertent Discovery of Human Remains (see Section 2.5, *Cultural Resources*).

Mitigation Measures

Mitigation Measures CUL-1, CUL-2, and CUL-3 (see Section 2.5, *Cultural Resources*)

a.ii) **Less than Significant with Mitigation Incorporated.** Based on the results of tribal outreach efforts, TID did not determine that a resource could potentially be affected by the Project to be a tribal cultural resource significant pursuant to criteria set forth in PRC Section 5024.1(c). Therefore, the Project is not anticipated to affect any such resources.

However, if any previously unrecorded archaeological resource were identified during ground-disturbing construction activities and were found to qualify as a tribal cultural resource pursuant to PRC Section 21074(a)(1) (determined to be eligible for listing in the California Register or in a local register of historical resources), any impacts of the Project on the resource could be potentially significant. Any such potentially significant impacts would be reduced to a less-than-significant level by implementing Mitigation Measure CUL-1: Cultural Resources Awareness Training, Mitigation Measure CUL-2: Inadvertent Discovery of Cultural Resources, and Mitigation Measure CUL-3: Inadvertent Discovery of Human Remains (see Section 3.5, *Cultural Resources*).

Mitigation Measures

Mitigation Measures CUL-1, CUL-2, and CUL-3 (see Section 2.5, *Cultural Resources*)

2.14 Utilities and Service Systems

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
XIV. UTILITIES AND SERVICE SYSTEMS — Would the project:				
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☒	☐
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☒	☐
c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☒	☐
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☒	☐
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☒	☐

2.14.1 Environmental Setting

Residential uses in the Project area pump groundwater from privately owned wells. Nonpotable water supply in the Project area is provided by TID (Stanislaus County 2016). Wastewater is treated and disposed of through septic systems in the vicinity of the Project sites.

Electricity is provided to the Project area by TID. In Stanislaus County, electrical power is carried mostly through aboveground lines. TID currently has sufficient energy supplies and distribution facilities to support the Project.

Residential and commercial garbage service in the unincorporated areas of Stanislaus County is provided by three franchised garbage collection companies: Bertolotti Disposal, Gilton Solid Waste, and Turlock Scavenger (Stanislaus County 2016). The Fink Road Sanitary Landfill in the Project vicinity is a Class III landfill for nonhazardous municipal solid waste; the facility is owned by Stanislaus County and operated by the Stanislaus County Department of Environmental Resources. The landfill has adequate capacity.

2.14.2 Discussion

a–d) **Less than Significant.** The Project would result in the installation of solar panels that would cover and span various sections of TID's existing irrigation canal system and would include power line connections to TID's electricity grid and/or pumps, and to the proposed battery storage facilities, the effects of which are analyzed throughout this

document. The Project would not include or require the relocation or construction of new or expanded wastewater treatment or stormwater drainage, natural gas, or telecommunications facilities as a result of the proposed Project. The Project could require limited water supplies for panel cleaning and expanded wastewater treatment capacity would not be required. Construction of the Project would comply with all wastewater requirements of the Central Valley Regional Water Quality Control Board (see Section 2.10, *Hydrology and Water Quality*, for more information), as well as all federal, state, and local statutes and regulations related to solid waste. Therefore, these impacts would be less than significant.

e) **Less than Significant.** The Project would generate minimal waste during temporary construction activities and would not require extensive ground preparation or earthmoving activities and would not require the removal of existing agricultural crops or facilities. As of March 1, 2017, the Fink Road Sanitary Landfill, the sole permitted landfill in Stanislaus County, had a permitted capacity of 14,640,000 cubic yards and a remaining capacity of 7,184,701 cubic yards, and the landfill is permitted through 2023 (CalRecycle 2022). The landfill that serves the Project area has the capacity to accept the minimal amount of waste that would be generated by the Project. Therefore, this impact would be less than significant.

2.14.3 References

California Department of Resources Recycling and Recovery (CalRecycle), 2022. Facility/Site Summary Details: Fink Road Landfill (50-AA-0001). Available: https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/992?siteID=3733. Accessed June 15, 2022.

Stanislaus County, 2016. *Stanislaus County General Plan and Airport Land Use Compatibility Plan Update, Draft Program Environmental Impact Report*. April 2016.

2.15 Wildfire

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
XV. WILDFIRE — If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☒	☐
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	☐	☐	☒	☐
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	☒

2.15.1 Environmental Setting

The proposed Project sites are located within a Local Responsibility Area and Stanislaus County is responsible for fire suppression in the Project areas. Project Site 1 is located in an Unzoned Fire Hazard Severity Zone and Project Site 2 is located in a Moderate Fire Hazard Severity Zone (CAL FIRE 2007).

2.15.2 Discussion

a) **Less than Significant.** The proposed Project sites are adjacent to lands occupied by irrigated agriculture. The vegetation and land use types have a low potential for wildland fires and the Project is not expected to expose people or structures to a significant risk of loss, injury, or death involving wildland fires. Project activities would be contained within the boundaries of the Project area along the existing irrigation canals and would not impair emergency response access on roadways or to areas within or adjacent to the Project areas. Therefore, this impact would be less than significant. For additional details, refer to Section 2.9, *Hazards and Hazardous Materials*, criterion g) discussion.

b) **Less than Significant.** The Project would result in the installation of solar panels that would cover and span various sections of TID's existing irrigation canal system and would include power line connections to TID's electricity grid and/or pumps, and to the proposed battery storage facilities. The Project would not exacerbate wildfire risks that would expose on-site employees to wildfire pollutant concentrations or uncontrolled wildfires. This impact would be less than significant.

c) **Less than Significant.** The Project would result in the installation of solar panels that would cover and span various sections of TID's existing irrigation canal system and would include power line connections to TID's electricity grid and/or pumps, and to the proposed battery storage facilities. Given the low wildfire potential because of the irrigated agricultural lands surrounding the Project Site and the limited size of the facilities, the Project is not expected to result in temporary or ongoing impacts to the environment from the installation or maintenance of infrastructure that would exacerbate wildfire risks. This impact would be less than significant.

d) **No Impact.** The Project would result in the installation of solar panels that would cover and span various sections of TID's existing irrigation canal system and would include power line connections to TID's electricity grid and/or pumps, and to the proposed battery storage facilities. Therefore, the Project would not expose people or structures to risks of downstream flooding or landslide, and no impact would occur.

2.15.3 References

California Department of Forestry and Fire Protection (CAL FIRE), 2007. Fire Hazard Severity Zones in SRA, Stanislaus County. October 2007.

2.16 Mandatory Findings of Significance

Issues (and Supporting Information Sources):	*Potentially Significant Impact*	*Less Than Significant with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
XVI. MANDATORY FINDINGS OF SIGNIFICANCE —				
a) Does the project have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☒	☐	☐
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

2.16.1 Discussion

a) **Less than Significant with Mitigation Incorporated.** As described in the preceding impact discussions, the impacts related to the potential of the Project to substantially degrade the environment would be less than significant with incorporated mitigation measures. As described in this Initial Study, the Project has the potential for impacts related to biological resources, cultural resources, geology and soils, noise, and tribal cultural resources. However, these impacts would be avoided or reduced to a less-than-significant level with the incorporation of mitigation measures discussed in each section.

b) **Less than Significant with Mitigation Incorporated.** This section provides a description of other actions in the area and a discussion of the cumulative impacts of those projects, in combination with the previously identified effects of the proposed Project. State CEQA Guidelines Section 15355 states that "cumulative impacts refer to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts."

   a. The individual effects may be changes resulting from a single project or a number of separate projects.

   b. The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.

The past, present, and reasonably foreseeable future conditions of the proposed Project sites and vicinity were considered for the cumulative analysis. The Ceres Main Regulating Reservoir Project is a TID cumulative project taking place adjacent to Project Site 1.

Aesthetics. Completion of the Project would result in some permanent visual changes to the Project sites, from installation of solar panels that would cover and span various sections of TID's existing irrigation canal system and would include power line connections to TID's electric grid and/or pumps, and to the proposed battery storage facilities. The Project would result in reflective surfaces; however, the solar panels would be in a rural agricultural area and would primarily not be visible to the public. Further, these changes would be surrounded by parcels still in agricultural use and would not be easily visible from the adjacent area. Therefore, cumulative impacts on aesthetics would be less than significant.

Agriculture and Forestry Resources. Implementation of the Project would result in installation of solar panels that would cover and span various sections of TID's existing irrigation canal system, associated power lines, and battery storage facilities. The Project would not result in the loss of Farmland or conflict with existing zoning for agricultural use, or a Williamson Act contract. As such, cumulative impacts to agricultural resources would be less than significant. The Project would have no impact on forestry resources and thus would not contribute to cumulative impacts.

Air Quality and Greenhouse Gas Emissions. A number of individual projects in the vicinity of the proposed Project, including the Ceres Main Regulating Reservoir Project may be under construction simultaneously with the Project. Depending on construction schedules and actual implementation of projects in and around Stanislaus County, generation of fugitive dust and pollutant emissions during construction may result in short-term air pollutants, which would contribute to short-term cumulative impacts on air quality. However, each individual project would be subject to San Joaquin Valley Air Pollution Control District rules, regulations, and other mitigation requirements during construction. For cumulative impacts on air quality and greenhouse gas emissions, see Section 2.3, *Air Quality*, and Section 2.8, *Greenhouse Gas Emissions*, above. The thresholds used consider the contributions of other projects in the air basin. Additionally, greenhouse gas emissions are considered cumulative in nature because it is unlikely that a single project would contribute significantly to climate change.

Biological Resources, Cultural Resources, Geology and Soils, Noise, and Tribal Cultural Resources. The Project's impacts for these environmental issues would be limited to the Project sites, and any significant impacts would be reduced to a less-than-significant level with implementation of the recommended mitigation measures. Thus, the Project would not contribute to significant cumulative impacts for these topics, and the cumulative impact would be less than significant.

Energy. Construction of the Project would result in fuel consumption from the use of construction tools and equipment, truck trips to haul materials, and vehicle trips by construction workers commuting to and from the Project sites. This impact would be temporary and localized. Operational energy impacts are not anticipated. Construction-related fuel consumption by the Project would not result in inefficient, wasteful, or unnecessary energy use compared with other construction sites in the region. The cumulative impact would be less than significant.

Hydrology and Water Quality. Implementation of the Project would result in the installation of solar panels that would cover and span various sections of TID's existing irrigation canal system, associated power lines, and battery storage facilities. Construction contractors would be required to acquire coverage under the National Pollutant Discharge Elimination System General Stormwater Permit, which requires the preparation and implementation of an SWPPP for construction activities. The SWPPP would list the hazardous materials (including petroleum products) proposed for use during construction; describe spill prevention measures, equipment inspections, and equipment and fuel storage; describe protocols for responding immediately to spills; and describe best management practices for controlling site run-on and runoff. Therefore, cumulative impacts would be less than significant.

Land Use and Land Use Planning. The Project would have no impact on land use and land use planning; therefore, it would not contribute to cumulative land use issues.

Mineral Resources. The Project would have no impact on mineral resources and thus would not contribute to cumulative impacts.

Population and Housing. The Project would have no impact on population growth in the area because it would not include any new residential or commercial development. The Project also would not result in temporary employment during construction and would not result in the permanent creation of new jobs that would induce substantial population growth. Therefore, cumulative population and housing impacts would be less than significant.

Public Services. No commercial or residential development is proposed as part of the Project; therefore, the Project would not increase demands on fire protection or police services, nor would it affect the response time of these services. Therefore, cumulative public services impacts would be less than significant.

Recreation. The Project would have no impact on recreation and thus would not contribute to cumulative impacts.

Transportation. For cumulative impacts, see Section 2.12, *Transportation*.

Utilities and Service Systems. The Project does not include and would not require the relocation or construction of new or expanded wastewater treatment or stormwater drainage, natural gas, or telecommunications facilities. The Project also would not require

stormwater treatment. Therefore, cumulative impacts related to utilities and service systems would be less than significant.

Conclusion Summary. The analyses in this draft Initial Study/Mitigated Negative Declaration found that the Project and associated activities would have the potential to result in impacts on the environment in the areas of biological resources, cultural resources, geology and soils, noise, and tribal cultural resources. However, these potential impacts would be reduced to a less-than-significant level with implementation of the mitigation measures included in this document, and most impacts would be temporary (i.e., would occur only during construction). Other future projects proposed in the region and vicinity may increase the impacts identified herein, or the Project may contribute to other impacts. However, the Project is not anticipated to contribute substantially to any one impact, and the Project's impacts are not anticipated to be cumulatively considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of future projects. Thus, this impact would be less than significant with mitigation incorporated.

c) ***Less than Significant with Mitigation Incorporated.*** The Project would not result in any substantial adverse effects on human beings, either directly or indirectly, because each potentially significant impact can be reduced to a less-than-significant level with the implementation of the mitigation measures provided in this document. No other substantial adverse effects on human beings are anticipated as a result of the Project, resulting in a less-than-significant impact with mitigation incorporated.

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Appendix A
Air Quality and GHG Emissions Modeling

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Project Nexus - Stanislaus County, Annual

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Project Nexus

Stanislaus County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	10.00	User Defined Unit	10.00	435,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	46
Climate Zone	3			**Operational Year**	2023
Utility Company	Turlock Irrigation District				
CO2 Intensity (lb/MWhr)	420.83	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Project Nexus

Land Use - Assume a total project area of 10 acres

Construction Phase - Project Description

Off-road Equipment - project description

Off-road Equipment - Project Description

Off-road Equipment - project description

Off-road Equipment - project description

Trips and VMT - It is assumed that panels and associated infrastructure would come from Port of Oakland (approximatley 100-mile one-way trip) and there would be two haul truck loads per day (4 one-way trips per day).

On-road Fugitive Dust -

Grading -

Construction Off-road Equipment Mitigation -

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	0.5
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	230.00	130.00
tblConstructionPhase	NumDays	230.00	130.00
tblConstructionPhase	NumDays	10.00	44.00
tblFleetMix	HHD	0.00	0.02
tblFleetMix	LDA	0.00	0.52
tblFleetMix	LDT1	0.00	0.05
tblFleetMix	LDT2	0.00	0.17
tblFleetMix	LHD1	0.00	0.03
tblFleetMix	LHD2	0.00	8.1480e-003
tblFleetMix	MCY	0.00	0.03
tblFleetMix	MDV	0.00	0.16
tblFleetMix	MH	0.00	4.0720e-003
tblFleetMix	MHD	0.00	0.01
tblFleetMix	OBUS	0.00	8.6000e-004
tblFleetMix	SBUS	0.00	1.4010e-003
tblFleetMix	UBUS	0.00	3.0500e-004
tblTripsAndVMT	HaulingTripNumber	0.00	520.00
tblTripsAndVMT	HaulingTripNumber	0.00	260.00
tblTripsAndVMT	HaulingTripNumber	0.00	88.00
tblTripsAndVMT	WorkerTripNumber	183.00	20.00
tblTripsAndVMT	WorkerTripNumber	183.00	10.00
tblTripsAndVMT	WorkerTripNumber	8.00	10.00

2.0 Emissions Summary

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule 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					
2022	0.0608	0.6901	0.5760	1.9800e-003	1.1920	0.0246	1.2165	0.1384	0.0233	0.1617	0.0000	178.7978	178.7978	0.0286	9.4000e-003	182.3124
2023	0.0661	0.7195	0.6992	2.3500e-003	1.2959	0.0253	1.3213	0.1341	0.0241	0.1582	0.0000	211.0546	211.0546	0.0353	9.4800e-003	214.7625
Maximum	**0.0661**	**0.7195**	**0.6992**	**2.3500e-003**	**1.2959**	**0.0253**	**1.3213**	**0.1384**	**0.0241**	**0.1617**	**0.0000**	**211.0546**	**211.0546**	**0.0353**	**9.4800e-003**	**214.7625**

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					
2022	0.0608	0.6901	0.5760	1.9800e-003	0.7531	0.0246	0.7776	0.0945	0.0233	0.1178	0.0000	178.7977	178.7977	0.0286	9.4000e-003	182.3123
2023	0.0661	0.7195	0.6992	2.3500e-003	0.8041	0.0253	0.8294	0.0849	0.0241	0.1091	0.0000	211.0545	211.0545	0.0353	9.4800e-003	214.7623
Maximum	**0.0661**	**0.7195**	**0.6992**	**2.3500e-003**	**0.8041**	**0.0253**	**0.8294**	**0.0945**	**0.0241**	**0.1178**	**0.0000**	**211.0545**	**211.0545**	**0.0353**	**9.4800e-003**	**214.7623**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule 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**	**37.41**	**0.00**	**36.68**	**34.16**	**0.00**	**29.10**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**10-17-2022**	**1-16-2023**	0.8630	0.8630
2	**1-17-2023**	**4-16-2023**	0.6597	0.6597
		Highest	0.8630	0.8630

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	2.0013	0.0000	9.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.8000e-004	1.8000e-004	0.0000	0.0000	1.9000e-004
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	**2.0013**	**0.0000**	**9.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**1.8000e-004**	**1.8000e-004**	**0.0000**	**0.0000**	**1.9000e-004**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule 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	2.0013	0.0000	9.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.8000e-004	1.8000e-004	0.0000	0.0000	1.9000e-004
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	**2.0013**	**0.0000**	**9.0000e-005**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**1.8000e-004**	**1.8000e-004**	**0.0000**	**0.0000**	**1.9000e-004**

	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	Battery Storage	Site Preparation	10/17/2022	12/15/2022	5	44	
2	Panel and associated facilities installation	Building Construction	10/17/2022	4/14/2023	5	130	
3	Power line	Building Construction	10/17/2022	4/14/2023	5	130	

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Acres of Grading (Site Preparation Phase): 2

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

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
Battery Storage	Rough Terrain Forklifts	1	2.00	100	0.40
Battery Storage	Rubber Tired Dozers	1	2.00	247	0.40
Battery Storage	Tractors/Loaders/Backhoes	1	2.00	97	0.37
Panel and associated facilities installation	Aerial Lifts	1	4.00	63	0.31
Panel and associated facilities installation	Bore/Drill Rigs	1	8.00	221	0.50
Panel and associated facilities installation	Cranes	1	4.00	231	0.29
Panel and associated facilities installation	Excavators	1	2.00	158	0.38
Panel and associated facilities installation	Generator Sets	1	8.00	84	0.74
Panel and associated facilities installation	Rough Terrain Forklifts	2	2.00	100	0.40
Power line	Aerial Lifts	1	4.00	63	0.31
Power line	Bore/Drill Rigs	1	8.00	221	0.50
Power line	Cranes	1	4.00	231	0.29
Power line	Generator Sets	1	8.00	84	0.74
Power line	Other Construction Equipment	1	2.00	172	0.42

Trips and VMT

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

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
Battery Storage	3	10.00	2.00	88.00	10.80	7.30	100.00	LD_Mix	HDT_Mix	HHDT
Panel and associated facilities installation	7	20.00	10.00	520.00	10.80	7.30	100.00	LD_Mix	HDT_Mix	HHDT
Power line	5	10.00	10.00	260.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Reduce Vehicle Speed on Unpaved Roads

3.2 Battery Storage - 2022

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					0.0342	0.0000	0.0342	0.0183	0.0000	0.0183	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.1300e-003	0.0657	0.0446	8.0000e-005		3.0800e-003	3.0800e-003		2.8300e-003	2.8300e-003	0.0000	7.2948	7.2948	2.3600e-003	0.0000	7.3538
Total	**6.1300e-003**	**0.0657**	**0.0446**	**8.0000e-005**	**0.0342**	**3.0800e-003**	**0.0373**	**0.0183**	**2.8300e-003**	**0.0212**	**0.0000**	**7.2948**	**7.2948**	**2.3600e-003**	**0.0000**	**7.3538**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Battery Storage - 2022

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	6.5000e-004	0.0302	3.6500e-003	1.3000e-004	0.0320	3.4000e-004	0.0324	3.8500e-003	3.2000e-004	4.1700e-003	0.0000	12.4944	12.4944	7.0000e-005	1.9700e-003	13.0818
Vendor	9.0000e-005	2.4200e-003	6.6000e-004	1.0000e-005	0.0209	3.0000e-005	0.0210	2.1400e-003	3.0000e-005	2.1700e-003	0.0000	0.8783	0.8783	1.0000e-005	1.3000e-004	0.9180
Worker	7.9000e-004	5.4000e-004	6.3400e-003	2.0000e-005	0.1545	1.0000e-005	0.1545	0.0157	1.0000e-005	0.0157	0.0000	1.4717	1.4717	5.0000e-005	5.0000e-005	1.4867
Total	**1.5300e-003**	**0.0332**	**0.0107**	**1.6000e-004**	**0.2075**	**3.8000e-004**	**0.2078**	**0.0217**	**3.6000e-004**	**0.0221**	**0.0000**	**14.8444**	**14.8444**	**1.3000e-004**	**2.1500e-003**	**15.4864**

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					0.0342	0.0000	0.0342	0.0183	0.0000	0.0183	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.1300e-003	0.0657	0.0446	8.0000e-005		3.0800e-003	3.0800e-003		2.8300e-003	2.8300e-003	0.0000	7.2948	7.2948	2.3600e-003	0.0000	7.3538
Total	**6.1300e-003**	**0.0657**	**0.0446**	**8.0000e-005**	**0.0342**	**3.0800e-003**	**0.0373**	**0.0183**	**2.8300e-003**	**0.0212**	**0.0000**	**7.2948**	**7.2948**	**2.3600e-003**	**0.0000**	**7.3538**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Battery Storage - 2022

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	6.5000e-004	0.0302	3.6500e-003	1.3000e-004	0.0211	3.4000e-004	0.0214	2.7500e-003	3.2000e-004	3.0800e-003	0.0000	12.4944	12.4944	7.0000e-005	1.9700e-003	13.0818
Vendor	9.0000e-005	2.4200e-003	6.6000e-004	1.0000e-005	0.0129	3.0000e-005	0.0130	1.3400e-003	3.0000e-005	1.3700e-003	0.0000	0.8783	0.8783	1.0000e-005	1.3000e-004	0.9180
Worker	7.9000e-004	5.4000e-004	6.3400e-003	2.0000e-005	0.0952	1.0000e-005	0.0952	9.7700e-003	1.0000e-005	9.7800e-003	0.0000	1.4717	1.4717	5.0000e-005	5.0000e-005	1.4867
Total	**1.5300e-003**	**0.0332**	**0.0107**	**1.6000e-004**	**0.1292**	**3.8000e-004**	**0.1296**	**0.0139**	**3.6000e-004**	**0.0142**	**0.0000**	**14.8444**	**14.8444**	**1.3000e-004**	**2.1500e-003**	**15.4864**

3.3 Panel and associated facilities installation - 2022

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	0.0238	0.2407	0.2521	6.3000e-004		9.8700e-003	9.8700e-003		9.4100e-003	9.4100e-003	0.0000	54.6153	54.6153	0.0134	0.0000	54.9497
Total	**0.0238**	**0.2407**	**0.2521**	**6.3000e-004**		**9.8700e-003**	**9.8700e-003**		**9.4100e-003**	**9.4100e-003**	**0.0000**	**54.6153**	**54.6153**	**0.0134**	**0.0000**	**54.9497**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Panel and associated facilities installation - 2022

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	1.6100e-003	0.0756	9.1200e-003	3.2000e-004	0.0801	8.4000e-004	0.0809	9.6300e-003	8.0000e-004	0.0104	0.0000	31.2361	31.2361	1.8000e-004	4.9100e-003	32.7045
Vendor	5.8000e-004	0.0151	4.1400e-003	6.0000e-005	0.1309	1.6000e-004	0.1310	0.0134	1.6000e-004	0.0136	0.0000	5.4892	5.4892	4.0000e-005	8.3000e-004	5.7375
Worker	1.9700e-003	1.3500e-003	0.0158	4.0000e-005	0.3862	3.0000e-005	0.3862	0.0392	2.0000e-005	0.0393	0.0000	3.6792	3.6792	1.3000e-004	1.1000e-004	3.7166
Total	**4.1600e-003**	**0.0920**	**0.0291**	**4.2000e-004**	**0.5972**	**1.0300e-003**	**0.5982**	**0.0623**	**9.8000e-004**	**0.0632**	**0.0000**	**40.4046**	**40.4046**	**3.5000e-004**	**5.8500e-003**	**42.1586**

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	0.0238	0.2407	0.2521	6.3000e-004		9.8700e-003	9.8700e-003		9.4100e-003	9.4100e-003	0.0000	54.6152	54.6152	0.0134	0.0000	54.9496
Total	**0.0238**	**0.2407**	**0.2521**	**6.3000e-004**		**9.8700e-003**	**9.8700e-003**		**9.4100e-003**	**9.4100e-003**	**0.0000**	**54.6152**	**54.6152**	**0.0134**	**0.0000**	**54.9496**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Panel and associated facilities installation - 2022

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	1.6100e-003	0.0756	9.1200e-003	3.2000e-004	0.0527	8.4000e-004	0.0535	6.8900e-003	8.0000e-004	7.6900e-003	0.0000	31.2361	31.2361	1.8000e-004	4.9100e-003	32.7045
Vendor	5.8000e-004	0.0151	4.1400e-003	6.0000e-005	0.0808	1.6000e-004	0.0810	8.3900e-003	1.6000e-004	8.5400e-003	0.0000	5.4892	5.4892	4.0000e-005	8.3000e-004	5.7375
Worker	1.9700e-003	1.3500e-003	0.0158	4.0000e-005	0.2381	3.0000e-005	0.2381	0.0244	2.0000e-005	0.0245	0.0000	3.6792	3.6792	1.3000e-004	1.1000e-004	3.7166
Total	**4.1600e-003**	**0.0920**	**0.0291**	**4.2000e-004**	**0.3716**	**1.0300e-003**	**0.3726**	**0.0397**	**9.8000e-004**	**0.0407**	**0.0000**	**40.4046**	**40.4046**	**3.5000e-004**	**5.8500e-003**	**42.1586**

3.3 Panel and associated facilities installation - 2023

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	0.0305	0.3006	0.3421	8.5000e-004		0.0120	0.0120		0.0114	0.0114	0.0000	74.5395	74.5395	0.0182	0.0000	74.9941
Total	**0.0305**	**0.3006**	**0.3421**	**8.5000e-004**		**0.0120**	**0.0120**		**0.0114**	**0.0114**	**0.0000**	**74.5395**	**74.5395**	**0.0182**	**0.0000**	**74.9941**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Panel and associated facilities installation - 2023

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	9.1000e-004	0.0820	9.7100e-003	4.2000e-004	0.1092	8.6000e-004	0.1101	0.0131	8.2000e-004	0.0140	0.0000	40.8521	40.8521	1.8000e-004	6.4300e-003	42.7713
Vendor	4.0000e-004	0.0165	4.8100e-003	8.0000e-005	0.1785	1.0000e-004	0.1786	0.0183	1.0000e-004	0.0184	0.0000	7.1983	7.1983	3.0000e-005	1.0900e-003	7.5229
Worker	2.4700e-003	1.6000e-003	0.0197	5.0000e-005	0.5267	3.0000e-005	0.5267	0.0535	3.0000e-005	0.0535	0.0000	4.8842	4.8842	1.6000e-004	1.4000e-004	4.9308
Total	**3.7800e-003**	**0.1002**	**0.0342**	**5.5000e-004**	**0.8143**	**9.9000e-004**	**0.8153**	**0.0849**	**9.5000e-004**	**0.0859**	**0.0000**	**52.9346**	**52.9346**	**3.7000e-004**	**7.6600e-003**	**55.2250**

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	0.0305	0.3006	0.3421	8.5000e-004		0.0120	0.0120		0.0114	0.0114	0.0000	74.5394	74.5394	0.0182	0.0000	74.9940
Total	**0.0305**	**0.3006**	**0.3421**	**8.5000e-004**		**0.0120**	**0.0120**		**0.0114**	**0.0114**	**0.0000**	**74.5394**	**74.5394**	**0.0182**	**0.0000**	**74.9940**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Panel and associated facilities installation - 2023

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	9.1000e-004	0.0820	9.7100e-003	4.2000e-004	0.0718	8.6000e-004	0.0727	9.3900e-003	8.2000e-004	0.0102	0.0000	40.8521	40.8521	1.8000e-004	6.4300e-003	42.7713
Vendor	4.0000e-004	0.0165	4.8100e-003	8.0000e-005	0.1102	1.0000e-004	0.1103	0.0114	1.0000e-004	0.0115	0.0000	7.1983	7.1983	3.0000e-005	1.0900e-003	7.5229
Worker	2.4700e-003	1.6000e-003	0.0197	5.0000e-005	0.3247	3.0000e-005	0.3247	0.0333	3.0000e-005	0.0333	0.0000	4.8842	4.8842	1.6000e-004	1.4000e-004	4.9308
Total	**3.7800e-003**	**0.1002**	**0.0342**	**5.5000e-004**	**0.5067**	**9.9000e-004**	**0.5077**	**0.0541**	**9.5000e-004**	**0.0551**	**0.0000**	**52.9346**	**52.9346**	**3.7000e-004**	**7.6600e-003**	**55.2250**

3.4 Power line - 2022

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	0.0235	0.2343	0.2259	5.9000e-004		9.9400e-003	9.9400e-003		9.4700e-003	9.4700e-003	0.0000	51.0653	51.0653	0.0122	0.0000	51.3710
Total	**0.0235**	**0.2343**	**0.2259**	**5.9000e-004**		**9.9400e-003**	**9.9400e-003**		**9.4700e-003**	**9.4700e-003**	**0.0000**	**51.0653**	**51.0653**	**0.0122**	**0.0000**	**51.3710**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Power line - 2022

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	2.1000e-004	8.4100e-003	1.5800e-003	3.0000e-005	0.0292	8.0000e-005	0.0293	3.0800e-003	8.0000e-005	3.1600e-003	0.0000	3.2446	3.2446	2.0000e-005	5.1000e-004	3.3972
Vendor	5.8000e-004	0.0151	4.1400e-003	6.0000e-005	0.1309	1.6000e-004	0.1310	0.0134	1.6000e-004	0.0136	0.0000	5.4892	5.4892	4.0000e-005	8.3000e-004	5.7375
Worker	9.9000e-004	6.7000e-004	7.9200e-003	2.0000e-005	0.1931	1.0000e-005	0.1931	0.0196	1.0000e-005	0.0196	0.0000	1.8396	1.8396	7.0000e-005	6.0000e-005	1.8583
Total	**1.7800e-003**	**0.0242**	**0.0136**	**1.1000e-004**	**0.3532**	**2.5000e-004**	**0.3535**	**0.0361**	**2.5000e-004**	**0.0363**	**0.0000**	**10.5735**	**10.5735**	**1.3000e-004**	**1.4000e-003**	**10.9930**

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	0.0235	0.2343	0.2259	5.9000e-004		9.9400e-003	9.9400e-003		9.4700e-003	9.4700e-003	0.0000	51.0652	51.0652	0.0122	0.0000	51.3709
Total	**0.0235**	**0.2343**	**0.2259**	**5.9000e-004**		**9.9400e-003**	**9.9400e-003**		**9.4700e-003**	**9.4700e-003**	**0.0000**	**51.0652**	**51.0652**	**0.0122**	**0.0000**	**51.3709**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Power line - 2022

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	2.1000e-004	8.4100e-003	1.5800e-003	3.0000e-005	0.0183	8.0000e-005	0.0183	1.9800e-003	8.0000e-005	2.0600e-003	0.0000	3.2446	3.2446	2.0000e-005	5.1000e-004	3.3972
Vendor	5.8000e-004	0.0151	4.1400e-003	6.0000e-005	0.0808	1.6000e-004	0.0810	8.3900e-003	1.6000e-004	8.5400e-003	0.0000	5.4892	5.4892	4.0000e-005	8.3000e-004	5.7375
Worker	9.9000e-004	6.7000e-004	7.9200e-003	2.0000e-005	0.1190	1.0000e-005	0.1191	0.0122	1.0000e-005	0.0122	0.0000	1.8396	1.8396	7.0000e-005	6.0000e-005	1.8583
Total	**1.7800e-003**	**0.0242**	**0.0136**	**1.1000e-004**	**0.2181**	**2.5000e-004**	**0.2184**	**0.0226**	**2.5000e-004**	**0.0228**	**0.0000**	**10.5735**	**10.5735**	**1.3000e-004**	**1.4000e-003**	**10.9930**

3.4 Power line - 2023

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	0.0300	0.2921	0.3062	8.0000e-004		0.0121	0.0121		0.0115	0.0115	0.0000	69.6964	69.6964	0.0166	0.0000	70.1118
Total	**0.0300**	**0.2921**	**0.3062**	**8.0000e-004**		**0.0121**	**0.0121**		**0.0115**	**0.0115**	**0.0000**	**69.6964**	**69.6964**	**0.0166**	**0.0000**	**70.1118**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Power line - 2023

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	1.6000e-004	9.3400e-003	1.9300e-003	4.0000e-005	0.0399	9.0000e-005	0.0399	4.2000e-003	8.0000e-005	4.2800e-003	0.0000	4.2438	4.2438	2.0000e-005	6.7000e-004	4.4433
Vendor	4.0000e-004	0.0165	4.8100e-003	8.0000e-005	0.1785	1.0000e-004	0.1786	0.0183	1.0000e-004	0.0184	0.0000	7.1983	7.1983	3.0000e-005	1.0900e-003	7.5229
Worker	1.2300e-003	8.0000e-004	9.8500e-003	3.0000e-005	0.2633	2.0000e-005	0.2633	0.0268	2.0000e-005	0.0268	0.0000	2.4421	2.4421	8.0000e-005	7.0000e-005	2.4654
Total	**1.7900e-003**	**0.0267**	**0.0166**	**1.5000e-004**	**0.4816**	**2.1000e-004**	**0.4818**	**0.0492**	**2.0000e-004**	**0.0494**	**0.0000**	**13.8842**	**13.8842**	**1.3000e-004**	**1.8300e-003**	**14.4316**

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	0.0300	0.2921	0.3062	8.0000e-004		0.0121	0.0121		0.0115	0.0115	0.0000	69.6963	69.6963	0.0166	0.0000	70.1118
Total	**0.0300**	**0.2921**	**0.3062**	**8.0000e-004**		**0.0121**	**0.0121**		**0.0115**	**0.0115**	**0.0000**	**69.6963**	**69.6963**	**0.0166**	**0.0000**	**70.1118**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Power line - 2023

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	1.6000e-004	9.3400e-003	1.9300e-003	4.0000e-005	0.0249	9.0000e-005	0.0250	2.7000e-003	8.0000e-005	2.7800e-003	0.0000	4.2438	4.2438	2.0000e-005	6.7000e-004	4.4433
Vendor	4.0000e-004	0.0165	4.8100e-003	8.0000e-005	0.1102	1.0000e-004	0.1103	0.0114	1.0000e-004	0.0115	0.0000	7.1983	7.1983	3.0000e-005	1.0900e-003	7.5229
Worker	1.2300e-003	8.0000e-004	9.8500e-003	3.0000e-005	0.1623	2.0000e-005	0.1624	0.0167	2.0000e-005	0.0167	0.0000	2.4421	2.4421	8.0000e-005	7.0000e-005	2.4654
Total	**1.7900e-003**	**0.0267**	**0.0166**	**1.5000e-004**	**0.2974**	**2.1000e-004**	**0.2976**	**0.0308**	**2.0000e-004**	**0.0310**	**0.0000**	**13.8842**	**13.8842**	**1.3000e-004**	**1.8300e-003**	**14.4316**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule 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
User Defined Industrial	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
User Defined Industrial	9.50	7.30	7.30	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
User Defined Industrial	0.515394	0.052058	0.166327	0.163679	0.033750	0.008148	0.012972	0.015736	0.000860	0.000305	0.025297	0.001401	0.004072

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule 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 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					
User Defined Industrial	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					
User Defined Industrial	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 Applied

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
User Defined Industrial	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			
User Defined Industrial	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 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	2.0013	0.0000	9.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.8000e-004	1.8000e-004	0.0000	0.0000	1.9000e-004
Unmitigated	2.0013	0.0000	9.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.8000e-004	1.8000e-004	0.0000	0.0000	1.9000e-004

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	0.3024					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.6989					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	9.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.8000e-004	1.8000e-004	0.0000	0.0000	1.9000e-004
Total	**2.0013**	**0.0000**	**9.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.8000e-004**	**1.8000e-004**	**0.0000**	**0.0000**	**1.9000e-004**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule 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	0.3024					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	1.6989					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.0000e-005	0.0000	9.0000e-005	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.8000e-004	1.8000e-004	0.0000	0.0000	1.9000e-004
Total	**2.0013**	**0.0000**	**9.0000e-005**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.8000e-004**	**1.8000e-004**	**0.0000**	**0.0000**	**1.9000e-004**

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 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			
User Defined Industrial	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 Applied

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
User Defined Industrial	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 Applied

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
User Defined Industrial	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			
User Defined Industrial	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 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

Project Nexus - Stanislaus County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Project Nexus

Stanislaus County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
User Defined Industrial	10.00	User Defined Unit	10.00	435,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	46
Climate Zone	3			**Operational Year**	2023
Utility Company	Turlock Irrigation District				
CO2 Intensity (lb/MWhr)	420.83	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Project Nexus

Land Use - Assume a total project area of 10 acres

Construction Phase - Project Description

Off-road Equipment - project description

Off-road Equipment - Project Description

Off-road Equipment - project description

Off-road Equipment - project description

Trips and VMT - It is assumed that panels and associated infrastructure would come from Port of Oakland (approximatley 100-mile one-way trip) and there would be two haul truck loads per day (4 one-way trips per day).

On-road Fugitive Dust -

Grading -

Construction Off-road Equipment Mitigation -

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	0.5
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	15
tblConstructionPhase	NumDays	230.00	130.00
tblConstructionPhase	NumDays	230.00	130.00
tblConstructionPhase	NumDays	10.00	44.00
tblFleetMix	HHD	0.00	0.02
tblFleetMix	LDA	0.00	0.52
tblFleetMix	LDT1	0.00	0.05
tblFleetMix	LDT2	0.00	0.17
tblFleetMix	LHD1	0.00	0.03
tblFleetMix	LHD2	0.00	8.1480e-003
tblFleetMix	MCY	0.00	0.03
tblFleetMix	MDV	0.00	0.16
tblFleetMix	MH	0.00	4.0720e-003
tblFleetMix	MHD	0.00	0.01
tblFleetMix	OBUS	0.00	8.6000e-004
tblFleetMix	SBUS	0.00	1.4010e-003
tblFleetMix	UBUS	0.00	3.0500e-004
tblTripsAndVMT	HaulingTripNumber	0.00	520.00
tblTripsAndVMT	HaulingTripNumber	0.00	260.00
tblTripsAndVMT	HaulingTripNumber	0.00	88.00
tblTripsAndVMT	WorkerTripNumber	183.00	20.00
tblTripsAndVMT	WorkerTripNumber	183.00	10.00
tblTripsAndVMT	WorkerTripNumber	8.00	10.00

2.0 Emissions Summary

Project Nexus - Stanislaus County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule 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					
2022	2.2858	26.1080	21.4454	0.0741	51.7669	0.9242	52.6911	6.0201	0.8761	6.8961	0.0000	7,380.4120	7,380.4120	1.1701	0.3989	7,528.5338
2023	1.7663	19.2594	18.6436	0.0626	39.4543	0.6755	40.1298	4.0678	0.6431	4.7109	0.0000	6,198.2578	6,198.2578	1.0382	0.2792	6,307.4209
Maximum	**2.2858**	**26.1080**	**21.4454**	**0.0741**	**51.7669**	**0.9242**	**52.6911**	**6.0201**	**0.8761**	**6.8961**	**0.0000**	**7,380.4120**	**7,380.4120**	**1.1701**	**0.3989**	**7,528.5338**

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					
2022	2.2858	26.1080	21.4454	0.0741	32.6903	0.9242	33.6145	4.1124	0.8761	4.9885	0.0000	7,380.4119	7,380.4119	1.1701	0.3989	7,528.5338
2023	1.7663	19.2594	18.6436	0.0626	24.4463	0.6755	25.1218	2.5670	0.6431	3.2101	0.0000	6,198.2578	6,198.2578	1.0382	0.2792	6,307.4209
Maximum	**2.2858**	**26.1080**	**21.4454**	**0.0741**	**32.6903**	**0.9242**	**33.6145**	**4.1124**	**0.8761**	**4.9885**	**0.0000**	**7,380.4119**	**7,380.4119**	**1.1701**	**0.3989**	**7,528.5338**

Project Nexus - Stanislaus County, Winter

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule 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	37.36	0.00	36.72	33.79	0.00	29.37	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 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	10.9663	1.0000e-005	1.0200e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.1900e-003	2.1900e-003	1.0000e-005		2.3300e-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
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	**10.9663**	**1.0000e-005**	**1.0200e-003**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.1900e-003**	**2.1900e-003**	**1.0000e-005**	**0.0000**	**2.3300e-003**

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	10.9663	1.0000e-005	1.0200e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.1900e-003	2.1900e-003	1.0000e-005		2.3300e-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
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	**10.9663**	**1.0000e-005**	**1.0200e-003**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**2.1900e-003**	**2.1900e-003**	**1.0000e-005**	**0.0000**	**2.3300e-003**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule 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	Battery Storage	Site Preparation	10/17/2022	12/15/2022	5	44	
2	Panel and associated facilities installation	Building Construction	10/17/2022	4/14/2023	5	130	
3	Power line	Building Construction	10/17/2022	4/14/2023	5	130	

Acres of Grading (Site Preparation Phase): 2

Acres of Grading (Grading Phase): 0

Acres of Paving: 0

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
Battery Storage	Rough Terrain Forklifts	1	2.00	100	0.40
Battery Storage	Rubber Tired Dozers	1	2.00	247	0.40
Battery Storage	Tractors/Loaders/Backhoes	1	2.00	97	0.37
Panel and associated facilities installation	Aerial Lifts	1	4.00	63	0.31
Panel and associated facilities installation	Bore/Drill Rigs	1	8.00	221	0.50
Panel and associated facilities installation	Cranes	1	4.00	231	0.29
Panel and associated facilities installation	Excavators	1	2.00	158	0.38

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

Panel and associated facilities installation	Generator Sets	1	8.00	84	0.74
Panel and associated facilities installation	Rough Terrain Forklifts	2	2.00	100	0.40
Power line	Aerial Lifts	1	4.00	63	0.31
Power line	Bore/Drill Rigs	1	8.00	221	0.50
Power line	Cranes	1	4.00	231	0.29
Power line	Generator Sets	1	8.00	84	0.74
Power line	Other Construction Equipment	1	2.00	172	0.42

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
Battery Storage	3	10.00	2.00	88.00	10.80	7.30	100.00	LD_Mix	HDT_Mix	HHDT
Panel and associated facilities installation	7	20.00	10.00	520.00	10.80	7.30	100.00	LD_Mix	HDT_Mix	HHDT
Power line	5	10.00	10.00	260.00	10.80	7.30	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Reduce Vehicle Speed on Unpaved Roads

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Battery Storage - 2022

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					1.5537	0.0000	1.5537	0.8328	0.0000	0.8328			0.0000			0.0000
Off-Road	0.2784	2.9874	2.0271	3.7700e-003		0.1398	0.1398		0.1286	0.1286		365.5072	365.5072	0.1182		368.4625
Total	**0.2784**	**2.9874**	**2.0271**	**3.7700e-003**	**1.5537**	**0.1398**	**1.6935**	**0.8328**	**0.1286**	**0.9614**		**365.5072**	**365.5072**	**0.1182**		**368.4625**

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	0.0292	1.3990	0.1666	5.9000e-003	1.6458	0.0152	1.6611	0.1946	0.0146	0.2092		626.0817	626.0817	3.5200e-003	0.0985	655.5129
Vendor	4.1500e-003	0.1120	0.0307	4.2000e-004	1.0874	1.2000e-003	1.0886	0.1110	1.1500e-003	0.1121		44.0269	44.0269	2.9000e-004	6.6600e-003	46.0183
Worker	0.0372	0.0269	0.2846	7.0000e-004	8.0256	4.8000e-004	8.0261	0.8139	4.4000e-004	0.8144		71.5385	71.5385	2.7700e-003	2.4500e-003	72.3368
Total	**0.0705**	**1.5379**	**0.4820**	**7.0200e-003**	**10.7589**	**0.0169**	**10.7758**	**1.1195**	**0.0162**	**1.1357**		**741.6470**	**741.6470**	**6.5800e-003**	**0.1076**	**773.8681**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.2 Battery Storage - 2022

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					1.5537	0.0000	1.5537	0.8328	0.0000	0.8328			0.0000			0.0000
Off-Road	0.2784	2.9874	2.0271	3.7700e-003		0.1398	0.1398		0.1286	0.1286	0.0000	365.5072	365.5072	0.1182		368.4625
Total	**0.2784**	**2.9874**	**2.0271**	**3.7700e-003**	**1.5537**	**0.1398**	**1.6935**	**0.8328**	**0.1286**	**0.9614**	**0.0000**	**365.5072**	**365.5072**	**0.1182**		**368.4625**

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	0.0292	1.3990	0.1666	5.9000e-003	1.0752	0.0152	1.0904	0.1375	0.0146	0.1521		626.0817	626.0817	3.5200e-003	0.0985	655.5129
Vendor	4.1500e-003	0.1120	0.0307	4.2000e-004	0.6708	1.2000e-003	0.6720	0.0693	1.1500e-003	0.0705		44.0269	44.0269	2.9000e-004	6.6600e-003	46.0183
Worker	0.0372	0.0269	0.2846	7.0000e-004	4.9442	4.8000e-004	4.9446	0.5058	4.4000e-004	0.5062		71.5385	71.5385	2.7700e-003	2.4500e-003	72.3368
Total	**0.0705**	**1.5379**	**0.4820**	**7.0200e-003**	**6.6902**	**0.0169**	**6.7071**	**0.7127**	**0.0162**	**0.7288**		**741.6470**	**741.6470**	**6.5800e-003**	**0.1076**	**773.8681**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Panel and associated facilities installation - 2022

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	0.8652	8.7514	9.1682	0.0228		0.3590	0.3590		0.3421	0.3421		2,189.2016	2,189.2016	0.5361		2,202.6048
Total	**0.8652**	**8.7514**	**9.1682**	**0.0228**		**0.3590**	**0.3590**		**0.3421**	**0.3421**		**2,189.2016**	**2,189.2016**	**0.5361**		**2,202.6048**

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	0.0584	2.7980	0.3333	0.0118	3.2917	0.0305	3.3222	0.3892	0.0292	0.4184		1,252.1634	1,252.1634	7.0500e-003	0.1969	1,311.0259
Vendor	0.0208	0.5600	0.1536	2.0800e-003	5.4370	6.0000e-003	5.4430	0.5549	5.7400e-003	0.5607		220.1343	220.1343	1.4400e-003	0.0333	230.0917
Worker	0.0744	0.0537	0.5693	1.4100e-003	16.0513	9.7000e-004	16.0523	1.6279	8.9000e-004	1.6288		143.0770	143.0770	5.5400e-003	4.8900e-003	144.6736
Total	**0.1536**	**3.4117**	**1.0561**	**0.0153**	**24.7799**	**0.0375**	**24.8174**	**2.5720**	**0.0358**	**2.6078**		**1,615.3747**	**1,615.3747**	**0.0140**	**0.2351**	**1,685.7912**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Panel and associated facilities installation - 2022

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	0.8652	8.7514	9.1682	0.0228		0.3590	0.3590		0.3421	0.3421	0.0000	2,189.2016	2,189.2016	0.5361		2,202.6048
Total	**0.8652**	**8.7514**	**9.1682**	**0.0228**		**0.3590**	**0.3590**		**0.3421**	**0.3421**	**0.0000**	**2,189.2016**	**2,189.2016**	**0.5361**		**2,202.6048**

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	0.0584	2.7980	0.3333	0.0118	2.1504	0.0305	2.1809	0.2751	0.0292	0.3043		1,252.1634	1,252.1634	7.0500e-003	0.1969	1,311.0259
Vendor	0.0208	0.5600	0.1536	2.0800e-003	3.3541	6.0000e-003	3.3601	0.3467	5.7400e-003	0.3524		220.1343	220.1343	1.4400e-003	0.0333	230.0917
Worker	0.0744	0.0537	0.5693	1.4100e-003	9.8883	9.7000e-004	9.8893	1.0116	8.9000e-004	1.0125		143.0770	143.0770	5.5400e-003	4.8900e-003	144.6736
Total	**0.1536**	**3.4117**	**1.0561**	**0.0153**	**15.3928**	**0.0375**	**15.4303**	**1.6333**	**0.0358**	**1.6691**		**1,615.3747**	**1,615.3747**	**0.0140**	**0.2351**	**1,685.7912**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Panel and associated facilities installation - 2023

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	0.8141	8.0164	9.1235	0.0228		0.3200	0.3200		0.3047	0.3047		2,191.0855	2,191.0855	0.5346		2,204.4492
Total	**0.8141**	**8.0164**	**9.1235**	**0.0228**		**0.3200**	**0.3200**		**0.3047**	**0.3047**		**2,191.0855**	**2,191.0855**	**0.5346**		**2,204.4492**

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	0.0240	2.2279	0.2600	0.0113	3.2916	0.0229	3.3146	0.3892	0.0219	0.4111		1,201.0262	1,201.0262	5.2400e-003	0.1889	1,257.4469
Vendor	0.0103	0.4507	0.1308	2.0000e-003	5.4370	2.7900e-003	5.4397	0.5549	2.6700e-003	0.5576		211.8181	211.8181	9.3000e-004	0.0320	221.3736
Worker	0.0684	0.0469	0.5202	1.3600e-003	16.0513	9.1000e-004	16.0522	1.6279	8.4000e-004	1.6287		139.3000	139.3000	4.9600e-003	4.4800e-003	140.7596
Total	**0.1026**	**2.7255**	**0.9110**	**0.0147**	**24.7799**	**0.0266**	**24.8065**	**2.5720**	**0.0255**	**2.5974**		**1,552.1443**	**1,552.1443**	**0.0111**	**0.2254**	**1,619.5801**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.3 Panel and associated facilities installation - 2023

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	0.8141	8.0164	9.1235	0.0228		0.3200	0.3200		0.3047	0.3047	0.0000	2,191.0855	2,191.0855	0.5346		2,204.4492
Total	**0.8141**	**8.0164**	**9.1235**	**0.0228**		**0.3200**	**0.3200**		**0.3047**	**0.3047**	**0.0000**	**2,191.0855**	**2,191.0855**	**0.5346**		**2,204.4492**

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	0.0240	2.2279	0.2600	0.0113	2.1503	0.0229	2.1733	0.2751	0.0219	0.2970		1,201.0262	1,201.0262	5.2400e-003	0.1889	1,257.4469
Vendor	0.0103	0.4507	0.1308	2.0000e-003	3.3541	2.7900e-003	3.3569	0.3466	2.6700e-003	0.3493		211.8181	211.8181	9.3000e-004	0.0320	221.3736
Worker	0.0684	0.0469	0.5202	1.3600e-003	9.8883	9.1000e-004	9.8892	1.0116	8.4000e-004	1.0124		139.3000	139.3000	4.9600e-003	4.4800e-003	140.7596
Total	**0.1026**	**2.7255**	**0.9110**	**0.0147**	**15.3927**	**0.0266**	**15.4194**	**1.6333**	**0.0255**	**1.6587**		**1,552.1443**	**1,552.1443**	**0.0111**	**0.2254**	**1,619.5801**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Power line - 2022

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	0.8526	8.5207	8.2153	0.0213		0.3615	0.3615		0.3443	0.3443		2,046.9033	2,046.9033	0.4901		2,059.1560
Total	**0.8526**	**8.5207**	**8.2153**	**0.0213**		**0.3615**	**0.3615**		**0.3443**	**0.3443**		**2,046.9033**	**2,046.9033**	**0.4901**		**2,059.1560**

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	7.4900e-003	0.3121	0.0584	1.2300e-003	1.2118	3.0800e-003	1.2149	0.1270	2.9400e-003	0.1299		130.1054	130.1054	7.8000e-004	0.0205	136.2227
Vendor	0.0208	0.5600	0.1536	2.0800e-003	5.4370	6.0000e-003	5.4430	0.5549	5.7400e-003	0.5607		220.1343	220.1343	1.4400e-003	0.0333	230.0917
Worker	0.0372	0.0269	0.2846	7.0000e-004	8.0256	4.8000e-004	8.0261	0.8139	4.4000e-004	0.8144		71.5385	71.5385	2.7700e-003	2.4500e-003	72.3368
Total	**0.0655**	**0.8990**	**0.4966**	**4.0100e-003**	**14.6744**	**9.5600e-003**	**14.6840**	**1.4958**	**9.1200e-003**	**1.5049**		**421.7782**	**421.7782**	**4.9900e-003**	**0.0562**	**438.6512**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Power line - 2022

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	0.8526	8.5207	8.2153	0.0213		0.3615	0.3615		0.3443	0.3443	0.0000	2,046.9033	2,046.9033	0.4901		2,059.1560
Total	**0.8526**	**8.5207**	**8.2153**	**0.0213**		**0.3615**	**0.3615**		**0.3443**	**0.3443**	**0.0000**	**2,046.9033**	**2,046.9033**	**0.4901**		**2,059.1560**

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	7.4900e-003	0.3121	0.0584	1.2300e-003	0.7553	3.0800e-003	0.7584	0.0813	2.9400e-003	0.0842		130.1054	130.1054	7.8000e-004	0.0205	136.2227
Vendor	0.0208	0.5600	0.1536	2.0800e-003	3.3541	6.0000e-003	3.3601	0.3467	5.7400e-003	0.3524		220.1343	220.1343	1.4400e-003	0.0333	230.0917
Worker	0.0372	0.0269	0.2846	7.0000e-004	4.9442	4.8000e-004	4.9446	0.5058	4.4000e-004	0.5062		71.5385	71.5385	2.7700e-003	2.4500e-003	72.3368
Total	**0.0655**	**0.8990**	**0.4966**	**4.0100e-003**	**9.0536**	**9.5600e-003**	**9.0631**	**0.9337**	**9.1200e-003**	**0.9429**		**421.7782**	**421.7782**	**4.9900e-003**	**0.0562**	**438.6512**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Power line - 2023

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	0.8011	7.7890	8.1661	0.0213		0.3233	0.3233		0.3077	0.3077		2,048.7228	2,048.7228	0.4885		2,060.9354
Total	**0.8011**	**7.7890**	**8.1661**	**0.0213**		**0.3233**	**0.3233**		**0.3077**	**0.3077**		**2,048.7228**	**2,048.7228**	**0.4885**		**2,060.9354**

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	4.0000e-003	0.2544	0.0520	1.1800e-003	1.2118	2.3100e-003	1.2141	0.1270	2.2100e-003	0.1292		124.8370	124.8370	6.0000e-004	0.0196	130.7028
Vendor	0.0103	0.4507	0.1308	2.0000e-003	5.4370	2.7900e-003	5.4397	0.5549	2.6700e-003	0.5576		211.8181	211.8181	9.3000e-004	0.0320	221.3736
Worker	0.0342	0.0234	0.2601	6.8000e-004	8.0256	4.6000e-004	8.0261	0.8139	4.2000e-004	0.8144		69.6500	69.6500	2.4800e-003	2.2400e-003	70.3798
Total	**0.0485**	**0.7285**	**0.4429**	**3.8600e-003**	**14.6744**	**5.5600e-003**	**14.6800**	**1.4958**	**5.3000e-003**	**1.5011**		**406.3051**	**406.3051**	**4.0100e-003**	**0.0539**	**422.4563**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule Applied

3.4 Power line - 2023

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	0.8011	7.7890	8.1661	0.0213		0.3233	0.3233		0.3077	0.3077	0.0000	2,048.7228	2,048.7228	0.4885		2,060.9354
Total	**0.8011**	**7.7890**	**8.1661**	**0.0213**		**0.3233**	**0.3233**		**0.3077**	**0.3077**	**0.0000**	**2,048.7228**	**2,048.7228**	**0.4885**		**2,060.9354**

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	4.0000e-003	0.2544	0.0520	1.1800e-003	0.7553	2.3100e-003	0.7576	0.0813	2.2100e-003	0.0835		124.8370	124.8370	6.0000e-004	0.0196	130.7028
Vendor	0.0103	0.4507	0.1308	2.0000e-003	3.3541	2.7900e-003	3.3569	0.3466	2.6700e-003	0.3493		211.8181	211.8181	9.3000e-004	0.0320	221.3736
Worker	0.0342	0.0234	0.2601	6.8000e-004	4.9442	4.6000e-004	4.9446	0.5058	4.2000e-004	0.5062		69.6500	69.6500	2.4800e-003	2.2400e-003	70.3798
Total	**0.0485**	**0.7285**	**0.4429**	**3.8600e-003**	**9.0536**	**5.5600e-003**	**9.0591**	**0.9337**	**5.3000e-003**	**0.9390**		**406.3051**	**406.3051**	**4.0100e-003**	**0.0539**	**422.4563**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule 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
User Defined Industrial	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
User Defined Industrial	9.50	7.30	7.30	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
User Defined Industrial	0.515394	0.052058	0.166327	0.163679	0.033750	0.008148	0.012972	0.015736	0.000860	0.000305	0.025297	0.001401	0.004072

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule 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					
User Defined Industrial	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 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					
User Defined Industrial	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	10.9663	1.0000e-005	1.0200e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.1900e-003	2.1900e-003	1.0000e-005		2.3300e-003
Unmitigated	10.9663	1.0000e-005	1.0200e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.1900e-003	2.1900e-003	1.0000e-005		2.3300e-003

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule 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	1.6572					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	9.3090					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	9.0000e-005	1.0000e-005	1.0200e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.1900e-003	2.1900e-003	1.0000e-005		2.3300e-003
Total	**10.9663**	**1.0000e-005**	**1.0200e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.1900e-003**	**2.1900e-003**	**1.0000e-005**		**2.3300e-003**

EMFAC Off-Model Adjustment Factors for Gasoline Light Duty Vehicle to Account for the SAFE Vehicle Rule 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	1.6572					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	9.3090					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	9.0000e-005	1.0000e-005	1.0200e-003	0.0000		0.0000	0.0000		0.0000	0.0000		2.1900e-003	2.1900e-003	1.0000e-005		2.3300e-003
Total	**10.9663**	**1.0000e-005**	**1.0200e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**2.1900e-003**	**2.1900e-003**	**1.0000e-005**		**2.3300e-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 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

Appendix B
Biological Resources Survey Report

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memorandum

date	June 22, 2022
to	Bill F. Penney, Turlock Irrigation District
cc	Matt Fagundes, ESA
from	Angelica Oregel, ESA
subject	TID Project Nexus Biological Survey Report

Introduction

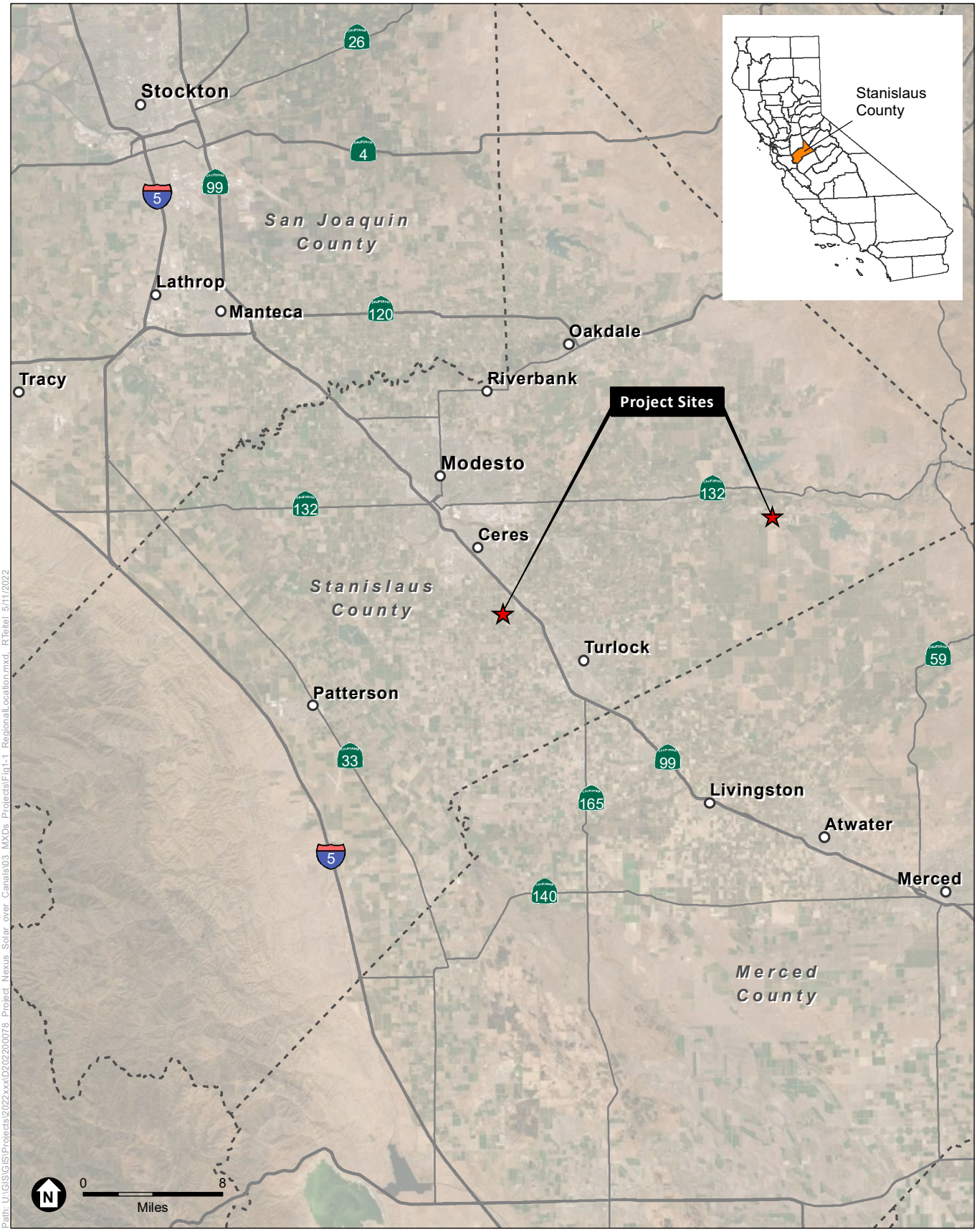
This biological resource survey report analyzes the biological resources for the study areas of the Project Nexus (proposed project) sites within Turlock Irrigation District's (TID's) canal system in Stanislaus County, California. The purpose of this biological survey report is to document information on existing biological resources within the study area, which encompasses the proposed project sites plus a 250-foot buffer for all biological resources except for raptors' nests, for which the survey buffer extends to a 0.5-mile radius of the proposed project sites. Additionally, this report provides information on potential biological constraints associated with development of the proposed project to support the forthcoming California Environmental Quality Act (CEQA) analysis.

Study Area

The proposed project includes two sites (**Figure 1-1**). Site 1, which includes segments of the Ceres Main Canal, Upper Lateral 3 Canal, and Lower Lateral 3 Canal are 0.25 mile south of Keyes Road and 0.25 mile west of Prairie Flower Road in Stanislaus County (**Figure 1-2**). Site 2, which is a segment of the Main Canal, is north of the Lake Road and Hawkins Road intersection (**Figure 1-3**). The study area consists of irrigation canals; disturbed lands, including levee roads; agricultural fields; and non-native annual grassland vegetation around the perimeter of the agricultural fields. Examples of agricultural fields consisted of aging almond trees, grapes, and other consumer fruits and vegetables. The areas surrounding the farms consist of native and nonnative annual grasslands.

Proposed Project

The proposed project includes installing solar panels that would cover and span various sections of TID's existing irrigation canal system. The proposed project would serve as a Proof of Concept to pilot, research, and study solar over canal design and deployment on behalf of the State of California using TID land and grid access. It is expected that the solar shading over canals would provide various co-benefits including reduced water evaporation resulting from mid-day shade and wind mitigation, water quality improvements through reduced vegetative growth, reduced canal maintenance through reduced vegetative growth, and renewable electricity generation, among others. The proposed project also includes the installation of battery energy storage features at each of the sites.

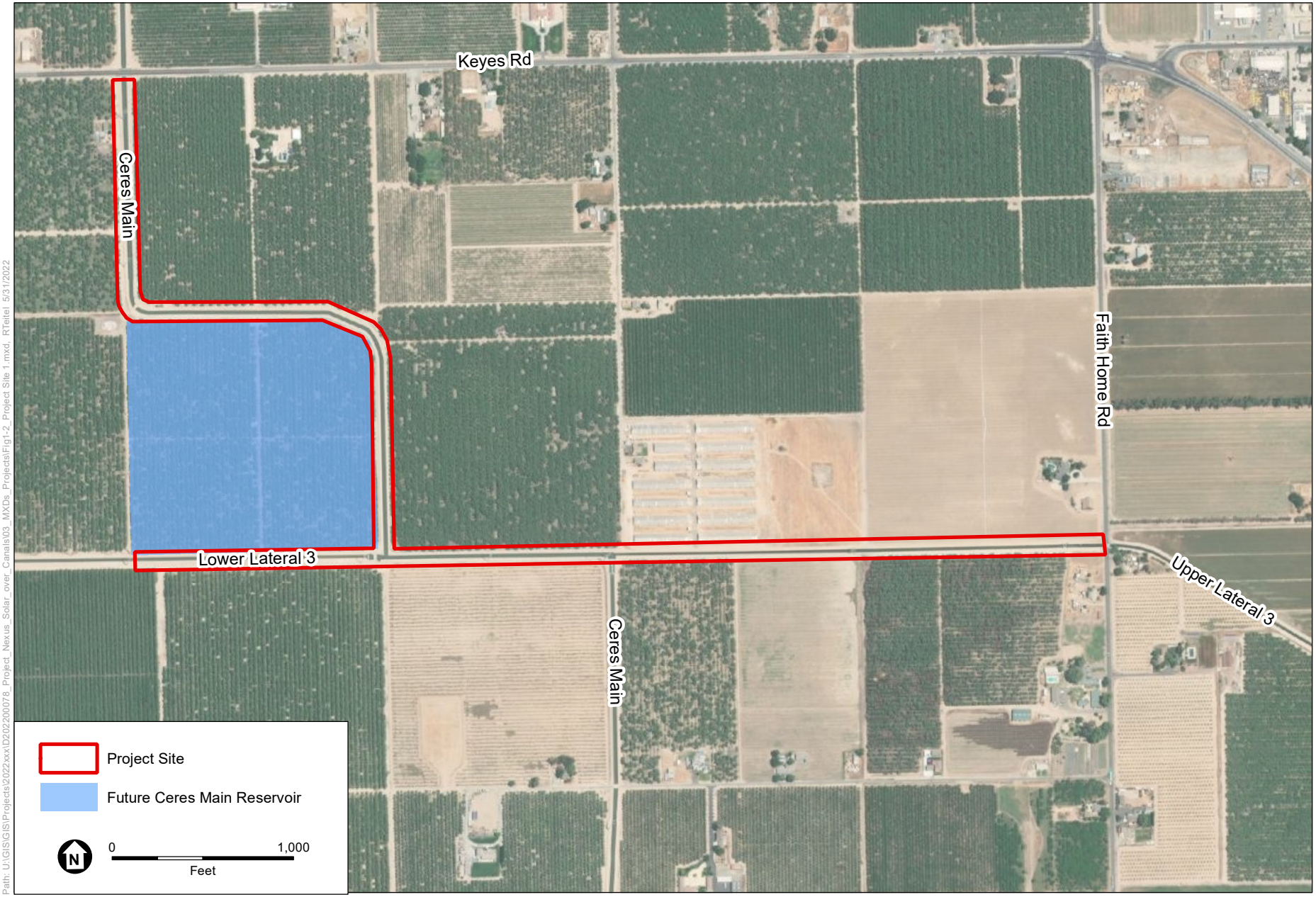


SOURCE: Esri, 2015; ESA, 2021

Project Nexus

Figure 1-1
Regional Location

ESA

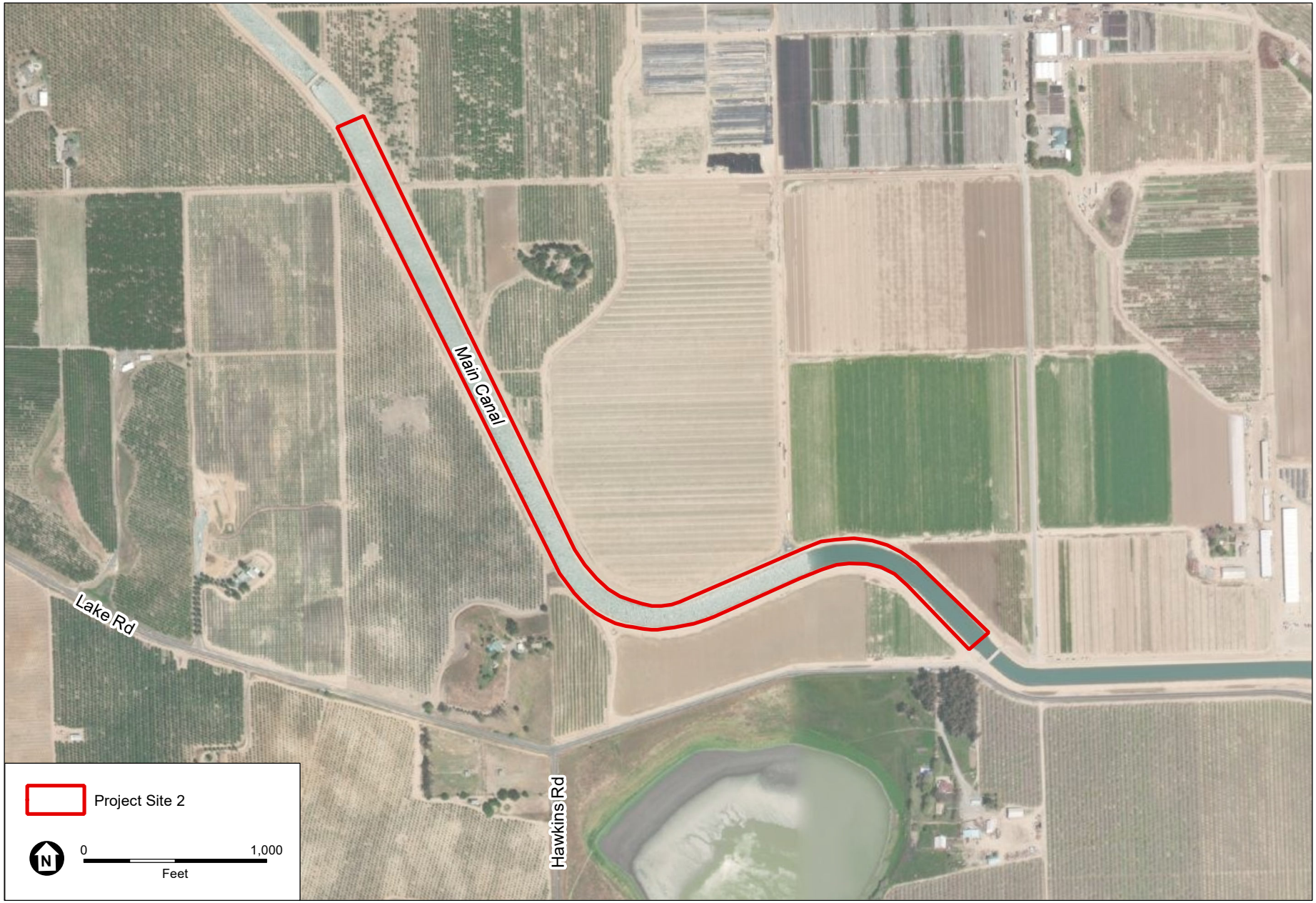


Path: U:\GIS\GIS\Projects\2022xxx\D202200078_Project_Nexus_Solar_over_Canals\03_MXDs_Projects\Fig1-2_Project Site 1.mxd, RTeitel 5/31/2022

SOURCE: Esri Imagery, ESA, 2022

Project Nexus

Figure 1-2
Project Site 1



Path: U:\GIS\GIS\Projects\2022xxxx\D202200078_Project_Nexus_Solar_over_Canals\03_MXDs_Projects\Fig1-3_Project Site 2.mxd, RTeitel 6/1/2022

SOURCE: Esri Imagery, ESA, 2022

Project Nexus

Figure 1-3
Project Site 2

Biological Resources

Environmental Science Associates (ESA) evaluated biological resource constraints within the study areas, focusing on identifying the presence or potential presence of sensitive biological resources regulated by federal or state resource agencies, and the presence of habitat for special-status species that should be considered during the CEQA review.

The information and analysis presented in this section focus on special status species,[1] wildlife habitat, vegetation communities, and potentially jurisdictional waters of the United States (U.S.) and/or of the state that occurs or has the potential to occur within or in the vicinity of the proposed project sites. The results of the assessment presented in this section are based on literature review and database queries as well as a reconnaissance-level survey conducted within the proposed project sites. Data sources reviewed for this evaluation included the following:

- U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation (IPaC) list (v6.74.1-rc3)(see Attachment A);
- California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB)(see Attachment A); and
- California Native Plant Society (CNPS) Inventory of Rare Plants and Endangered Plants known to occur within Ceres, CA in USGS 7.5-minute topographic quadrangle code 3712058, 3712066, 3712056 (CNPS, 2022)(see Attachment A).

Biological Resource Constraints

Sensitive Natural Communities: A sensitive natural community is a biological community that is regionally rare, provides important habitat opportunities for wildlife, is structurally complex, or is in other ways of special concern to local, state, or federal agencies. Most sensitive natural communities are given special consideration because they perform important ecological functions, such as maintaining water quality and providing essential habitats for plants and wildlife. Some plant communities support a unique or diverse assemblage of plant species and therefore are considered sensitive from a botanical standpoint. The elimination of such communities would be considered a significant CEQA impact.

Site 1:

No sensitive natural communities are present at Site 1.

Site 2:

During the survey at Site 2 suitable habitat was discovered for the following sensitive species: California tiger salamander (*Ambystoma californiense*), San Joaquin kit fox (*Vulpes macrotis mutica*), and Swainson's hawk (*Buteo swainsoni)*.

Aquatic Resources: Aquatic resources include features that may be subject to federal regulation under Section 404 of the Clean Water Act (CWA) as well as state of California regulation under the Porter-Cologne Water

Quality Control Act, State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State (State Wetlands Procedures), and California Fish and Game Code (FGC) Section 1600.

No natural waterways are present at the sites. There are three irrigation canals associated with the proposed project: the Ceres Main Canal (Site 1) and the Main Canal (Site 2) run north to south whereas the Upper and Lower Lateral 3 Canals run east to west within the Site 1 boundary. Per TID, all channels are manmade irrigation ditches and are assumed not to be jurisdictional under the CWA and State of California regulations. Therefore, these features are not to be considered waters of the U.S. or of the state.

Special-status Plants: Special-status plants known to occur in the vicinity of the proposed project sites are listed in Attachment A. None of these species have the potential to occur on the site due to regular mowing and agricultural disking. Potential spreading of noxious weeds could occur during construction and thus mitigation measures to avoid the spread of noxious weeds are recommended.

No special-status plants were observed during the site visits.

Special-status Wildlife:

Site 1:

Critical habitat for potential special status species were not observed at Site 1 (see Attachment A), nor were special-status wildlife observed during the survey (USFW, 2022).

Site 2:

Burrows less than 3 inches in diameter that are suitable habitat for California tiger salamander (*Ambystoma californiense*) were observed along the eastern edge, the western base of the Main Canal, and within 250 feet of Site 2. California tiger salamander is a native terrestrial amphibian classified as a threatened species by CDFW in Stanislaus County, California (CDFW, 2022). The Main Canal also features two burrows along the western base and piping on the eastern base of the Main Canal, both of which are greater than 4 inches in diameter and suitable for San Joaquin kit fox (*Vulpes macrotis mutica*). San Joaquin kit fox is the smallest fox in North America and is listed as endangered species by the CDFW wherever it is found (CDFW, 2022). Two active Swainson's hawk nests, a state-listed threatened species, were observed within the 0.5-mile buffer from Site 2, at a stand of eucalyptus trees south of Lake Road. Site 2 lies within the CNDDB range for the three listed species (CDFW, 2022; USFWS, 2022).

It is recommended that construction of solar panel infrastructure within the Main Canal include mitigation to avoid impacts to listed and special-status wildlife (California tiger salamander, San Joaquin kit fox, and Swainson's hawk), such as pre-construction surveys by a qualified biologist, and installation of exclusion fencing around the work area. Consultation with federal and state wildlife agencies is also recommended (see Resource Agency Approvals, below).

Nesting Birds: Sites 1 and 2 contain no trees or shrubs; however, the surrounding area consists of a large number of trees, as well as herbaceous vegetation, suitable for nesting migratory birds. Potential impacts on non-special

[1] Species that are protected pursuant to Federal or State endangered species laws or have been designated as Species of Special Concern by the CDFW, or species that are not included on any agency listing but meet the definition of rare, endangered, or threatened species of the CEQA Guidelines section 15380(b), are collectively referred to as "special-status species."

status nesting birds listed under the Migratory Bird Treaty Act (MBTA) could occur depending on the timing of construction activities. For example, if activities are expected to occur during bird nesting season, approximately February 1 to September 1, an impact could occur; however, the nesting season may begin earlier or end later depending on species and weather conditions, and protection measures would need to be implemented to avoid potential impacts on active bird nests. These measures may include pre-construction surveys and avoidance of identified nesting sites with a suitable buffer until the young have fledged.

During the survey at Site 2, multiple cliff swallow nests were observed below the two bridges north and south of the project boundary crossing the Main Canal.

Wildlife Movement Corridors: The Ceres Main Canal, Upper Lateral 3, and the Main Canal likely serve as wildlife corridors for wildlife to access habitat areas within the nearby orchards. Project construction in the channels would be of limited duration and conducted during daytime hours and would not have a substantial impact on the use of these canals as wildlife movement corridors. The placement of solar panels that would cover and span various sections of the canals are not expected to interfere with the movement of wildlife as they can continue to move beneath the panels.

Resource Agency Approvals

The proposed project may require approvals from the resource agencies for impacts on biological resources.

Aquatic Resource Permits

Because the Main Canal, Ceres Main Canal, and Upper and Lower Lateral 3 Canals are manmade irrigation ditches, they are assumed to be non-jurisdictional under the Clean Water Act and State of California regulations. Thus, the proposed project would not require a Clean Water Act Section 404 permit from the U.S. Army Corps of Engineers, a Clean Water Act Section 401 Water Quality Certification from the California Regional Water Quality Control Board, or a California Fish and Game Code Section 1601 Streambed Alteration Agreement from CDFW.

Storm Water Permit. Construction of the proposed project would require compliance with the California Construction General Permit regarding stormwater discharges, and, in particular, would require the preparation of a Storm Water Pollution Prevention Plan. The proposed project can obtain coverage under the Construction General Permit by filing a Notice of Intent and other documents with the State Water Resources Control Board.

Special-Status Species

Permits may be required for impacts to protected animal species under Sections 7 or 10 of the Federal Endangered Species Act, Section 2081 of the California Endangered Species Act, and the California Fish and Game Code.

Federal Permits. Project Site 2 provides suitable habitat for California tiger salamander, San Joaquin kit fox, and Swainson's hawk. Construction activities within or near Site 2 could potentially impact these species. Presence of species listed under the Federal Endangered Species Act would require coordination with the USFWS. Under Federal Endangered Species Act Section 7, consultation with USFWS and potential issuance of an incidental take permit may be required; Section 7 consultation would be required should there be another federal permit (such as

a Clean Water Act permit), or funding required for the proposed project. If no other federal permit were required, take of a listed species could still occur using a Federal Endangered Species Act Section 10 incidental take permit; however, a Section 10 permit also would require submittal of a Habitat Conservation Plan and a finding from the USFWS that the permittee has "to the maximum extent practicable, minimized and mitigated the impacts of the taking" amongst other findings. (16 U.S.C. § 1539(a)(2)(B).) The Section 10 process is more complicated and time-consuming than the Section 7 process; thus, having a federal nexus for Section 7 consultation would be preferable. The nexus for Section 7 consultation is normally triggered by the Section 404 permit (which is not assumed to be needed for the proposed project) but could also be triggered by federal funding for the proposed project.

California Department of Fish and Wildlife. Project Site 2 provides suitable habitat for two state-listed threatened species; California tiger salamander, Swainson's hawk, and one endangered species, San Joaquin kit fox. Construction activities within or near Site 2 could potentially impact these species. For any incidental take of species listed under the California Endangered Species Act, a Section 2081 permit would be required from CDFW. The focus of CDFW's permit would be "full mitigation" of the impacts, ensuring that mitigation is "roughly proportional" to impacts, and ensuring funding for mitigation is adequate (Cal. Fish & Game Code §§ 2081(b), (c)). The two active Swainson's Hawk nests would need monitoring during construction activities and further CEQA analysis.

Reconnaissance Survey

On May 16, 2022, an ESA biological resource specialist conducted a reconnaissance survey of project Site 1 on foot and via vehicle. On June 10, 2022, and ESA biological resource specialist conducted a reconnaissance survey for project Site 2. The surveys consisted of traveling throughout proposed construction work areas, staging areas, and along the proposed access roads. The surveys also consisted of surveying areas within 250 feet of the project sites with a 40 by 60 monocular scope as well as driving within publicly accessible routes within a 0.5-mile survey radius to identify Swainson's hawk and other potential raptor nests. At the time of the survey, Site 1 was bordered by almond orchards on all sides. Along the northern side of the Upper Lateral 3 Canal, an approximately12-acre indoor chicken farm complex with several buildings including barns, sheds, and residential/office buildings was observed to be active. At the time of the survey, Site 2 was surrounded by active consumer fruit and vegetable agriculture fields and a plant nursery that produces heavy traffic over the bridge crossing the Main Canal north of Lake Road.

No sensitive natural communities, special-status plants, or special-status wildlife were observed during the reconnaissance surveys for the proposed project sites. See Attachment A for listed common flora and fauna observed.

Summary

In summary, proposed project Site 1 has low biological sensitivity for both federal and state-sensitive resources and no additional work would be required for CEQA analysis. Project Site 2 has mid-level biological sensitivity for both federal and state-sensitive resources, which would require additional CEQA analysis. Mitigation measures for potential nesting birds, special-status species, and county-listed noxious weeds are recommended.

References

California Department of Fish and Wildlife (CDFW). 2022. California Natural Diversity Data Base (CNDDB). BIOS viewer 5.108.119 database for 7.5-minute U.S. Geological Survey (USGS) quadrangles code 3712058, 3712066, 3712056, Stanislaus County, CA. https://apps.wildlife.ca.gov/bios/?tool=cnddbQuick

California Native Plant Society (CNPS). 2022. California Rare Plant Ranking Inventory of Rare and Endangered Plants for USGS 7.5-minute quadrangle code 3712058, 3712066, 3712056, Stanislaus County, CA. http://www.rareplants.cnps.org/

United States Fish and Wildlife Service (USFWS). 2022. IPaC, USFWS Information for Planning and Consultation online system. Official Species List. Stanislaus County, California. May. https://ecos.fws.gov/ipac/

Photo 1: Ceres Main Canal facing south from E Keyes Road.

Photo 2: Upper Lateral 3 canal facing west from Faith Home Road.

Photo 3: The Main Canal facing north from the bridge leading to the Dave Wilson Nursery, east of Lake Road.

Attachment A

Table 1-1
Commone Species Observed in Proposed Project

Type	Common Name	Scientific Name	Site(s) Presence
Flora	Common fidleneck	*Amsinckia menziesii*	1 & 2
Flora	cheeseweed mallow	*Malva parviflora*	1
Flora	red clover	*Trifolium pratense*	2
Flora	common groundsel	*Senecio vulgaris*	1 & 2
Flora	common stork's bill	*Erodium cicutarium*	1 & 2
Flora	cutleaf evening primrose	*Oenothera laciniata*	1 & 2
Flora	fat hen	*Atriplex prostrata*	1 & 2
Flora	foxtail barely	*Hordeum murinum*	1
Flora	horseweed	*Erigeron canadensis*	1 & 2
Flora	Italian rye grass	*Festuca perennis*	1
Flora	jimsonweed	*Datura sp.*	1 & 2
Flora	nut tree	*Juglans sp.*	2
Flora	panic veldt grass	*Erhardta erecta*	1 & 2
Flora	scarlet pimpernel	*Lysimachia arvensis*	1
Flora	wild mustard	*Sinapis sp.*	2
Flora	wild oats	*Avena fatua*	1 & 2
Fauna	American kestrel	*Falco sparverius*	2
Fauna	California scrub-jay	*Aphelocoma californica*	1 & 2
Fauna	cliff swallow	*Petrochelidon pyrrhonota*	2
Fauna	common ground squirrel	*Otospermophilus beecheyi*	1
Fauna	killdeer	*Charadrius vociferus*	1 & 2
Fauna	mourning dove	*Zenaida macroura*	1 & 2
Fauna	red-tailed hawk	*Buteo jamaicensis*	1
Fauna	turkey vulture	*Cathartes aura*	2
Fauna	western kingbird	*Tyrannus verticalis*	1 & 2

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Ceres (3712058) OR Paulsell (3712066) OR Montpelier (3712056))
 AND County IS (Stanislaus)

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
California linderiella *Linderiella occidentalis*	ICBRA06010	None	None	G2G3	S2S3	
California tiger salamander - central California DPS *Ambystoma californiense pop. 1*	AAAAA01181	Threatened	Threatened	G2G3T3	S3	WL
Colusa grass *Neostapfia colusana*	PMPOA4C010	Threatened	Endangered	G1	S1	1B.1
Crotch bumble bee *Bombus crotchii*	IIHYM24480	None	None	G2	S1S2	
Greene's tuctoria *Tuctoria greenei*	PMPOA6N010	Endangered	Rare	G1	S1	1B.1
hairy Orcutt grass *Orcuttia pilosa*	PMPOA4G040	Endangered	Endangered	G1	S1	1B.1
hardhead *Mylopharodon conocephalus*	AFCJB25010	None	None	G3	S3	SSC
heartscale *Atriplex cordulata var. cordulata*	PDCHE040B0	None	None	G3T2	S2	1B.2
Hoover's calycadenia *Calycadenia hooveri*	PDAST1P040	None	None	G2	S2	1B.3
Hoover's spurge *Euphorbia hooveri*	PDEUP0D150	Threatened	None	G1	S1	1B.2
moestan blister beetle *Lytta moesta*	IICOL4C020	None	None	G2	S2	
Northern Hardpan Vernal Pool *Northern Hardpan Vernal Pool*	CTT44110CA	None	None	G3	S3.1	
obscure bumble bee *Bombus caliginosus*	IIHYM24380	None	None	G2G3	S1S2	
San Joaquin Valley Orcutt grass *Orcuttia inaequalis*	PMPOA4G060	Threatened	Endangered	G1	S1	1B.1
steelhead - Central Valley DPS *Oncorhynchus mykiss irideus pop. 11*	AFCHA0209K	Threatened	None	G5T2Q	S2	
subtle orache *Atriplex subtilis*	PDCHE042T0	None	None	G1	S1	1B.2
Swainson's hawk *Buteo swainsoni*	ABNKC19070	None	Threatened	G5	S3	
Townsend's big-eared bat *Corynorhinus townsendii*	AMACC08010	None	None	G4	S2	SSC
tricolored blackbird *Agelaius tricolor*	ABPBXB0020	None	Threatened	G1G2	S1S2	SSC

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	IICOL48011	Threatened	None	G3T2T3	S3	
vernal pool fairy shrimp *Branchinecta lynchi*	ICBRA03030	Threatened	None	G3	S3	
vernal pool tadpole shrimp *Lepidurus packardi*	ICBRA10010	Endangered	None	G4	S3S4	
western ridged mussel *Gonidea angulata*	IMBIV19010	None	None	G3	S1S2	
western spadefoot *Spea hammondii*	AAABF02020	None	None	G2G3	S3	SSC

Record Count: 24

CNPS Rare Plant Inventory

California Native Plant Society

Search Results

2 matches found. Click on scientific name for details

Search Criteria: County is one of [**STA**], Quad is one of [**3712058**]

▲ SCIENTIFIC NAME	COMMON NAME	FAMILY	LIFEFORM	BLOOMING PERIOD	FED LIST	STATE LIST	GLOBAL RANK	STATE RANK	CA RARE PLANT RANK	PHOTO
Atriplex cordulata var. *cordulata*	heartscale	Chenopodiaceae	annual herb	Apr-Oct	None	None	G3T2	S2	1B.2	 © 1994 Robert E. Preston, Ph.D.
Atriplex subtilis	subtle orache	Chenopodiaceae	annual herb	(Apr)Jun-Sep(Oct)	None	None	G1	S1	1B.2	 © 2000 Robert E. Preston, Ph.D.

Showing 1 to 2 of 2 entries

Suggested Citation:

California Native Plant Society, Rare Plant Program. 2022. Rare Plant Inventory (online edition, v9-01 1.5). Website https://www.rareplants.cnps.org [accessed 3 June 2022].

California Native Plant Society

Search Results

9 matches found. Click on scientific name for details

Search Criteria: County is one of [**STA**], Quad is one of [**3712056:3712066**]

▲ SCIENTIFIC NAME	COMMON NAME	FAMILY	LIFEFORM	BLOOMING PERIOD	FED LIST	STATE LIST	GLOBAL RANK	STATE RANK	CA RARE PLANT RANK	PHOTO
Calycadenia hooveri	Hoover's calycadenia	Asteraceae	annual herb	Jul-Sep	None	None	G2	S2	1B.3	No Photo Available
Euphorbia hooveri	Hoover's spurge	Euphorbiaceae	annual herb	Jul-Sep(Oct)	FT	None	G1	S1	1B.2	No Photo Available
Fritillaria agrestis	stinkbells	Liliaceae	perennial bulbiferous herb	Mar-Jun	None	None	G3	S3	4.2	 © 2016 Aaron Schusteff
Hesperevax caulescens	hogwallow starfish	Asteraceae	annual herb	Mar-Jun	None	None	G3	S3	4.2	 © 2017 John Doyen
Neostapfia colusana	Colusa grass	Poaceae	annual herb	May-Aug	FT	CE	G1	S1	1B.1	No Photo Available
Orcuttia inaequalis	San Joaquin Valley Orcutt grass	Poaceae	annual herb	Apr-Sep	FT	CE	G1	S1	1B.1	No Photo Available
Orcuttia pilosa	hairy Orcutt grass	Poaceae	annual herb	May-Sep	FE	CE	G1	S1	1B.1	 © 2003 George W. Hartwell
Tuctoria greenei	Greene's tuctoria	Poaceae	annual herb	May-Jul(Sep)	FE	CR	G1	S1	1B.1	 ©2008 F. Gauna
Wolffia brasiliensis	Brazilian watermeal	Araceae	perennial herb (aquatic)	Apr-Dec	None	None	G5	S2	2B.3	 © 2021 Scot Loring

Showing 1 to 9 of 9 entries

Suggested Citation:

California Native Plant Society, Rare Plant Program. 2022. Rare Plant Inventory (online edition, v9-01 1.5). Website

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
Phone: (916) 414-6600 Fax: (916) 414-6713

In Reply Refer To:
Project Code: 2022-0052682
Project Name: Project Nexus Site 1

June 10, 2022

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 ECOS-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 ECOS-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 in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

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/birds/policies-and-regulations.php.

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/birds/bird-enthusiasts/threats-to-birds.php.

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/birds/policies-and-regulations/executive-orders/e0-13186.php.

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:

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

Project Summary

Project Code: 2022-0052682
Event Code: None
Project Name: Project Nexus Site 1
Project Type: Government / Municipal (Non-Military) Construction
Project Description: The proposed project includes installing solar panels that will cover and span various sections of TID's existing irrigation canal system. The proposed project will serve as a Proof of Concept to pilot, research, and study solar over canal design and deployment on behalf of the State of California using TID land and grid access. It is expected that the solar shading over canals will provide various co-benefits including reduced water evaporation resulting from mid-day shade and wind mitigation, water quality improvements through reduced vegetative growth, and reduced canal maintenance through reduced vegetative growth, and renewable electricity generation, among others. The Project Partners are also considering including the installation of energy storage features in the form of underground compressed air-powered water-turbine generation or flow battery technology.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@37.5474945,-120.93644356642773,14z

Counties: Stanislaus County, California

Endangered Species Act Species

There is a total of 7 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.

Reptiles

NAME	STATUS
Giant Garter Snake *Thamnophis gigas*	Threatened

No critical habitat has been designated for this species.
Species profile: https://ecos.fws.gov/ecp/species/4482

Amphibians

NAME	STATUS
California Tiger Salamander *Ambystoma californiense*	Threatened

Population: U.S.A. (Central CA DPS)
There is **final** critical habitat for this species. The location of the critical habitat is not available.
Species profile: https://ecos.fws.gov/ecp/species/2076

Fishes

NAME	STATUS
Delta Smelt *Hypomesus transpacificus*	Threatened

There is **final** critical habitat for this species. The location of the critical habitat is not available.
Species profile: https://ecos.fws.gov/ecp/species/321

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
Valley Elderberry Longhorn Beetle *Desmocerus californicus dimorphus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/7850	Threatened

Crustaceans

NAME	STATUS
Vernal Pool Fairy Shrimp *Branchinecta lynchi* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/498	Threatened
Vernal Pool Tadpole Shrimp *Lepidurus packardi* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/2246	Endangered

Critical habitats

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

IPaC User Contact Information

Agency: ESA
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State: CA
Zip: 95816
Email aoregel@esassoc.com
Phone: 7146104325

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
Phone: (916) 414-6600 Fax: (916) 414-6713

In Reply Refer To:
Project Code: 2022-0052294
Project Name: Project Nexus Site 2

June 09, 2022

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 ECOS-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 ECOS-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 in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

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/birds/policies-and-regulations.php.

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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):

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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".

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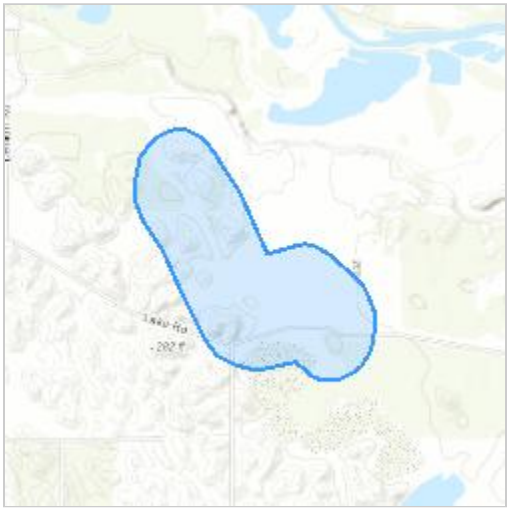
Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

Project Summary

Project Code: 2022-0052294
Event Code: None
Project Name: Project Nexus Site 2
Project Type: Government / Municipal (Non-Military) Construction
Project Description: The proposed project includes installing solar panels that will cover and span various
sections of TID's existing irrigation canal system. The proposed project will serve as a Proof of
Concept to pilot, research, and study solar over canal design and deployment on behalf of the State
of California using TID land and grid access. It is expected that the solar shading over canals
will provide various co-benefits including reduced water evaporation resulting from mid-day shade
and wind mitigation, water quality improvements through reduced vegetative growth, reduced canal
maintenance through reduced vegetative growth, and renewable electricity generation, among others.
The Project Partners are also considering including installation of energy storage features in the
form of underground
compressed air-powered water-turbine generation or flow battery technology.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@37.62095775,-120.64436374360497,14z



Counties: Stanislaus County, California

Endangered Species Act Species

There is a total of 14 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.

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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.

Mammals

NAME	STATUS
San Joaquin Kit Fox *Vulpes macrotis mutica* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2873	Endangered

Reptiles

NAME	STATUS
Giant Garter Snake *Thamnophis gigas* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4482	Threatened

Amphibians

NAME	STATUS
California Tiger Salamander *Ambystoma californiense* Population: U.S.A. (Central CA DPS) There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/2076	Threatened

Fishes

NAME	STATUS
Delta Smelt *Hypomesus transpacificus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/321	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
Valley Elderberry Longhorn Beetle *Desmocerus californicus dimorphus* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/7850	Threatened

Crustaceans

NAME	STATUS
Conservancy Fairy Shrimp *Branchinecta conservatio* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/8246	Endangered
Vernal Pool Fairy Shrimp *Branchinecta lynchi* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/498	Threatened
Vernal Pool Tadpole Shrimp *Lepidurus packardi* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/2246	Endangered

Flowering Plants

NAME	STATUS
Colusa Grass *Neostapfia colusana* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/5690	Threatened
Greene's Tuctoria *Tuctoria greenei* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/1573	Endangered
Hairy Orcutt Grass *Orcuttia pilosa* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2262	Endangered
Hoover's Spurge *Chamaesyce hooveri* There is **final** critical habitat for this species. Your location overlaps the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3019	Threatened
San Joaquin Orcutt Grass *Orcuttia inaequalis* There is **final** critical habitat for this species. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/5506	Threatened

Critical habitats

There are 4 critical habitats wholly or partially within your project area under this office's jurisdiction.

NAME	STATUS
Colusa Grass *Neostapfia colusana* https://ecos.fws.gov/ecp/species/5690#crithab	Final
Hairy Orcutt Grass *Orcuttia pilosa* https://ecos.fws.gov/ecp/species/2262#crithab	Final
Hoover's Spurge *Chamaesyce hooveri* https://ecos.fws.gov/ecp/species/3019#crithab	Final
Vernal Pool Fairy Shrimp *Branchinecta lynchi* https://ecos.fws.gov/ecp/species/498#crithab	Final

IPaC User Contact Information

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Phone: 7146104325

https://www.rareplants.cnps.org [accessed 9 June 2022].

CONTACT US

Send questions and comments to rareplants@cnps.org.

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CONTRIBUTORS

The Calflora Database
The California Lichen Society
California Natural Diversity Database
The Jepson Flora Project
The Consortium of California Herbaria
CalPhotos

Developed by
Rincon Consultants, Inc.

Appendix C
Noise Survey

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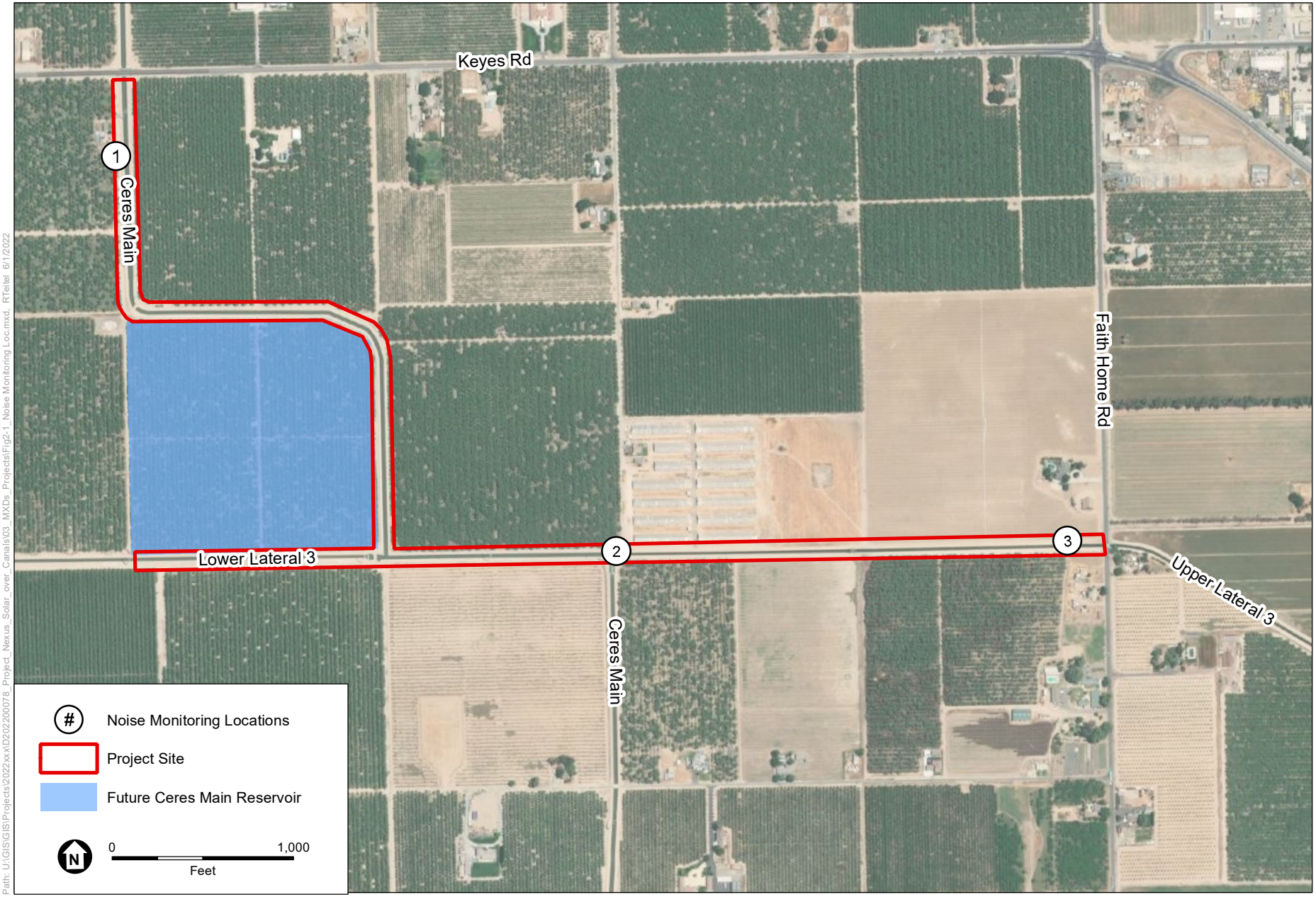


SOURCE: Esri Imagery, ESA, 2022

Project Nexus

Figure 1
Noise Monitoring Locations in the Vicinity of Site 1

Measurement Location 1 (Front)

Measurement Location 1 (Back)

Summary

File Name on Meter	LxT_Data.136.s
File Name on PC	LxT_0004435-20220602 101217-LxT_Data.136.ldbin
Serial Number	0004435
Model	SoundTrack LxT®
Firmware Version	2.404
User	
Location	
Job Description	
Note	

Measurement

Description	
Start	2022-06-02 10:12:17
Stop	2022-06-02 10:27:28
Duration	00:15:11.2
Run Time	00:15:11.2
Pause	00:00:00.0
Pre-Calibration	2022-06-02 07:42:49
Post-Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting			
Peak Weight	Z Weighting			
Detector	Slow			
Preamplifier	PRMLxT2B			
Microphone Correction	Off			
Integration Method	Exponential			
Overload	143.8 dB			
	A		**C**	**Z**
Under Range Peak	100.0		97.0	**102.0** dB
Under Range Limit	**38.3**		37.9	44.7 dB
Noise Floor	29.2		28.7	35.5 dB
	First		**Second**	**Third**
Instrument Identification				

Results

LASeq	50.4		
LASE	80.0		
EAS	11.001 µPa²h		
EAS8	347.711 µPa²h		
EAS40	1.739 mPa²h		
LZpeak (max)	2022-06-02 10:27:25	106.2	dB
LASmax	2022-06-02 10:13:40	65.5	dB
LASmin	2022-06-02 10:21:49	37.1	dB
SEA	-99.9 dB		

	Exceedance Counts	**Duration**
LAS > 85.0 dB	0	0.0 s
LAS > 115.0 dB	0	0.0 s
LZpeak > 135.0 dB	0	0.0 s
LZpeak > 137.0 dB	0	0.0 s
LZpeak > 140.0 dB	0	0.0 s

LCSeq	68.9	dB
LASeq	50.4	dB

L_{CSeq} - L_{ASeq}	18.6 dB
L_{Aleq}	53.8 dB
L_{Aeq}	50.4 dB
L_{Aleq} - L_{Aeq}	3.5 dB

	A		C		Z	
	dB	**Time Stamp**	**dB**	**Time Stamp**	**dB**	**Time Stamp**
L_{eq}	50.4					
$L_{S(max)}$	65.5	2022/06/02 10:13:40				
$L_{S(min)}$	37.1	2022/06/02 10:21:49				
$L_{Peak(max)}$					106.2	2022/06/02 10:27:25

Overload Count	0
Overload Duration	0.0 s

Dose Settings

Dose Name	OSHA-1	OSHA-2	
Exchange Rate	5	5	dB
Threshold	90	80	dB
Criterion Level	90	90	dB
Criterion Duration	8	8	h

Results

Dose	0.01	0.01	%
Projected Dose	0.32	0.32	%
TWA (Projected)	48.6	48.6	dB
TWA (t)	23.7	23.7	dB
Lep (t)	35.4	35.4	dB

Statistics

LAS 5.00	56.7	dB
LAS 10.00	53.0	dB
LAS 33.30	48.0	dB
LAS 50.00	46.0	dB
LAS 66.60	44.3	dB
LAS 90.00	39.3	dB

Calibration History

Preamp	**Date**	**dB re. 1V/Pa**	**6.3**	**8.0**	**10.0**	**12.5**
PRMLxT2B	2022-06-02 07:42:49	-49.98	66.72	65.81	50.76	56.03
PRMLxT2B	2022-05-26 10:29:14	-49.91	24.06	23.03	22.41	21.34
PRMLxT2B	2022-05-24 06:54:31	-49.76	56.98	54.08	71.02	61.09
PRMLxT2B	2022-04-19 11:05:32	-49.92	100.60	83.47	76.95	59.25
PRMLxT2B	2022-03-25 09:07:56	-49.77	46.45	59.35	50.71	56.84
PRMLxT2B	2022-03-08 10:39:27	-49.82	52.04	48.46	51.30	62.27
PRMLxT2B	2022-03-03 10:19:29	-49.76	66.39	65.68	49.98	50.58
PRMLxT2B	2022-02-09 11:34:07	-49.60	68.53	60.70	64.55	70.07
PRMLxT2B	2022-02-09 11:33:53	-49.60	96.65	87.56	66.93	69.37
PRMLxT2B	2021-12-15 16:59:36	-49.55	42.40	51.88	46.87	51.67
PRMLxT2B	2021-12-15 16:59:21	-49.56	47.69	60.88	51.04	53.33

16.0	20.0	25.0	31.5	40.0	50.0	63.0	80.0	100	125	160	200	250	315	400	500	630	800	1000
50.94	49.89	50.01	46.49	41.57	44.87	46.32	45.37	38.14	36.06	29.37	33.61	38.16	42.62	47.76	34.51	37.13	35.03	113.92
20.53	19.72	19.01	51.49	58.81	58.61	65.77	55.22	54.25	53.84	51.02	50.00	52.06	51.70	48.01	47.69	46.73	42.62	113.83
57.20	51.80	48.63	45.78	40.93	42.52	44.58	43.13	34.25	32.23	30.53	28.71	29.53	27.88	26.20	25.67	25.35	29.14	114.14
63.74	58.97	51.90	49.13	48.41	52.09	54.00	45.67	48.45	49.68	54.67	48.93	46.56	48.24	38.46	30.20	27.19	30.31	113.84
62.22	56.57	59.56	62.46	62.83	69.18	72.98	63.58	62.67	65.15	65.20	61.56	59.20	55.76	59.49	63.98	58.53	52.74	114.03
54.42	49.57	56.35	64.13	57.32	61.46	57.87	48.94	61.65	57.16	46.32	57.09	51.58	63.51	66.78	63.17	49.32	34.04	113.92
44.42	45.21	35.79	35.11	41.87	33.39	33.56	32.92	25.79	29.37	28.54	27.09	27.73	26.44	26.56	26.76	25.50	30.45	113.82
58.27	62.65	62.67	54.05	54.21	43.91	41.09	34.29	33.16	24.59	23.53	29.15	114.01	49.23	32.66	51.34	29.81	69.72	25.66
71.60	69.85	64.70	61.52	53.62	48.40	34.74	33.79	58.54	56.18	52.39	49.47	113.95	62.18	62.68	52.31	39.86	69.67	31.27
54.60	58.03	64.37	66.08	65.53	63.46	58.62	57.18	62.33	55.08	57.48	59.21	56.12	59.29	68.26	63.75	50.08	45.94	113.99
48.98	65.15	66.64	62.63	60.92	63.48	60.14	60.82	61.02	59.59	57.83	59.71	58.87	57.92	61.10	59.57	52.67	46.82	114.12

1250	1600	2000	2500	3150	4000	5000	6300	8000	10000	12500	16000	20000
48.88	28.57	64.11	29.90	60.03	33.12	33.48	34.52	35.51	36.93	37.49	38.67	40.40
49.18	35.62	64.70	30.04	58.97	34.80	34.51	34.94	36.05	40.67	37.97	38.68	40.37
49.22	28.69	64.68	30.31	60.70	34.37	37.82	34.68	35.72	36.44	37.62	38.86	40.58
48.94	28.11	62.01	29.68	59.36	31.90	35.48	34.43	35.37	36.33	37.53	38.53	40.39
53.84	43.38	61.92	32.75	58.92	36.10	36.02	35.26	35.60	36.60	37.41	38.90	40.53
48.91	28.89	64.22	30.34	61.28	45.64	44.14	43.47	41.94	40.66	39.51	39.53	40.58
48.89	27.55	62.07	29.46	59.29	31.74	34.39	34.05	34.96	36.34	37.36	38.62	40.29
56.05	43.81	41.65	40.23	31.89	31.74	32.67	33.64	35.22	36.20	37.32	38.59	40.35
55.93	43.56	41.41	40.27	32.30	31.64	32.65	33.74	34.80	36.10	37.25	38.46	40.13
49.84	37.41	56.78	36.21	49.12	31.47	32.33	34.12	35.09	36.13	37.37	38.34	40.28
50.21	37.69	56.87	36.25	49.29	32.28	33.10	33.80	35.16	36.48	37.52	38.39	40.49

Measurement Location 2 (Front)

Measurement Location 2 (Back)

Summary

File Name on Meter	LxT_Data.137.s
File Name on PC	LxT_0004435-20220602 103829-LxT_Data.137.ldbin
Serial Number	0004435
Model	SoundTrack LxT®
Firmware Version	2.404
User	
Location	
Job Description	
Note	

Measurement

Description	
Start	2022-06-02 10:38:29
Stop	2022-06-02 10:53:32
Duration	00:15:02.4
Run Time	00:15:02.4
Pause	00:00:00.0
Pre-Calibration	2022-06-02 07:42:49
Post-Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting			
Peak Weight	Z Weighting			
Detector	Slow			
Preamplifier	PRMLxT2B			
Microphone Correction	Off			
Integration Method	Exponential			
Overload	143.8 dB			
	A		**C**	**Z**
Under Range Peak	100.0		97.0	**102.0** dB
Under Range Limit	**38.3**		37.9	44.7 dB
Noise Floor	29.2		28.7	35.5 dB
	First		**Second**	**Third**
Instrument Identification				

Results

LA_{Seq}	49.4		
LASE	78.9		
EAS	8.678 µPa²h		
EAS8	276.964 µPa²h		
EAS40	1.385 mPa²h		
$LZ_{peak\ (max)}$	2022-06-02 10:46:59	100.8	dB
LAS_{max}	2022-06-02 10:46:59	58.4	dB
LAS_{min}	2022-06-02 10:41:42	47.0	dB
SEA	-99.9 dB		

	Exceedance Counts	**Duration**
LAS > 85.0 dB	0	0.0 s
LAS > 115.0 dB	0	0.0 s
LZ_{peak} > 135.0 dB	0	0.0 s
LZ_{peak} > 137.0 dB	0	0.0 s
LZ_{peak} > 140.0 dB	0	0.0 s

LC_{Seq}	67.7	dB
LA_{Seq}	49.4	dB

L_{CSeq} - L_{ASeq}	18.3 dB
L_{Aleq}	51.3 dB
L_{Aeq}	49.4 dB
L_{Aleq} - L_{Aeq}	1.9 dB

	A		C		Z	
	dB	**Time Stamp**	**dB**	**Time Stamp**	**dB**	**Time Stamp**
L_{eq}	49.4					
$L_{S(max)}$	58.4	2022/06/02 10:46:59				
$L_{S(min)}$	47.0	2022/06/02 10:41:42				
$L_{Peak(max)}$					100.8	2022/06/02 10:46:59

Overload Count	0
Overload Duration	0.0 s

Dose Settings

Dose Name	OSHA-1	OSHA-2	
Exchange Rate	5	5	dB
Threshold	90	80	dB
Criterion Level	90	90	dB
Criterion Duration	8	8	h

Results

Dose	0.01	0.01	%
Projected Dose	0.35	0.35	%
TWA (Projected)	49.3	49.3	dB
TWA (t)	24.3	24.3	dB
Lep (t)	34.3	34.3	dB

Statistics

LAS 5.00	51.4	dB
LAS 10.00	50.3	dB
LAS 33.30	49.4	dB
LAS 50.00	49.0	dB
LAS 66.60	48.7	dB
LAS 90.00	48.1	dB

Calibration History

Preamp	**Date**	**dB re. 1V/Pa**	**6.3**	**8.0**	**10.0**	**12.5**
PRMLxT2B	2022-06-02 07:42:49	-49.98	66.72	65.81	50.76	56.03
PRMLxT2B	2022-05-26 10:29:14	-49.91	24.06	23.03	22.41	21.34
PRMLxT2B	2022-05-24 06:54:31	-49.76	56.98	54.08	71.02	61.09
PRMLxT2B	2022-04-19 11:05:32	-49.92	100.60	83.47	76.95	59.25
PRMLxT2B	2022-03-25 09:07:56	-49.77	46.45	59.35	50.71	56.84
PRMLxT2B	2022-03-08 10:39:27	-49.82	52.04	48.46	51.30	62.27
PRMLxT2B	2022-03-03 10:19:29	-49.76	66.39	65.68	49.98	50.58
PRMLxT2B	2022-02-09 11:34:07	-49.60	68.53	60.70	64.55	70.07
PRMLxT2B	2022-02-09 11:33:53	-49.60	96.65	87.56	66.93	69.37
PRMLxT2B	2021-12-15 16:59:36	-49.55	42.40	51.88	46.87	51.67
PRMLxT2B	2021-12-15 16:59:21	-49.56	47.69	60.88	51.04	53.33

16.0	20.0	25.0	31.5	40.0	50.0	63.0	80.0	100	125	160	200	250	315	400	500	630	800	1000
50.94	49.89	50.01	46.49	41.57	44.87	46.32	45.37	38.14	36.06	29.37	33.61	38.16	42.62	47.76	34.51	37.13	35.03	113.92
20.53	19.72	19.01	51.49	58.81	58.61	65.77	55.22	54.25	53.84	51.02	50.00	52.06	51.70	48.01	47.69	46.73	42.62	113.83
57.20	51.80	48.63	45.78	40.93	42.52	44.58	43.13	34.25	32.23	30.53	28.71	29.53	27.88	26.20	25.67	25.35	29.14	114.14
63.74	58.97	51.90	49.13	48.41	52.09	54.00	45.67	48.45	49.68	54.67	48.93	46.56	48.24	38.46	30.20	27.19	30.31	113.84
62.22	56.57	59.56	62.46	62.83	69.18	72.98	63.58	62.67	65.15	65.20	61.56	59.20	55.76	59.49	63.98	58.53	52.74	114.03
54.42	49.57	56.35	64.13	57.32	61.46	57.87	48.94	61.65	57.16	46.32	57.09	51.58	63.51	66.78	63.17	49.32	34.04	113.92
44.42	45.21	35.79	35.11	41.87	33.39	33.56	32.92	25.79	29.37	28.54	27.09	27.73	26.44	26.56	26.76	25.50	30.45	113.82
58.27	62.65	62.67	54.05	54.21	43.91	41.09	34.29	33.16	24.59	23.53	29.15	114.01	49.23	32.66	51.34	29.81	69.72	25.66
71.60	69.85	64.70	61.52	53.62	48.40	34.74	33.79	58.54	56.18	52.39	49.47	113.95	62.18	62.68	52.31	39.86	69.67	31.27
54.60	58.03	64.37	66.08	65.53	63.46	58.62	57.18	62.33	55.08	57.48	59.21	56.12	59.29	68.26	63.75	50.08	45.94	113.99
48.98	65.15	66.64	62.63	60.92	63.48	60.14	60.82	61.02	59.59	57.83	59.71	58.87	57.92	61.10	59.57	52.67	46.82	114.12

1250	1600	2000	2500	3150	4000	5000	6300	8000	10000	12500	16000	20000
48.88	28.57	64.11	29.90	60.03	33.12	33.48	34.52	35.51	36.93	37.49	38.67	40.40
49.18	35.62	64.70	30.04	58.97	34.80	34.51	34.94	36.05	40.67	37.97	38.68	40.37
49.22	28.69	64.68	30.31	60.70	34.37	37.82	34.68	35.72	36.44	37.62	38.86	40.58
48.94	28.11	62.01	29.68	59.36	31.90	35.48	34.43	35.37	36.33	37.53	38.53	40.39
53.84	43.38	61.92	32.75	58.92	36.10	36.02	35.26	35.60	36.60	37.41	38.90	40.53
48.91	28.89	64.22	30.34	61.28	45.64	44.14	43.47	41.94	40.66	39.51	39.53	40.58
48.89	27.55	62.07	29.46	59.29	31.74	34.39	34.05	34.96	36.34	37.36	38.62	40.29
56.05	43.81	41.65	40.23	31.89	31.74	32.67	33.64	35.22	36.20	37.32	38.59	40.35
55.93	43.56	41.41	40.27	32.30	31.64	32.65	33.74	34.80	36.10	37.25	38.46	40.13
49.84	37.41	56.78	36.21	49.12	31.47	32.33	34.12	35.09	36.13	37.37	38.34	40.28
50.21	37.69	56.87	36.25	49.29	32.28	33.10	33.80	35.16	36.48	37.52	38.39	40.49

Measurement Location 3 (Front)

Measurement Location 3 (Back)

Summary

File Name on Meter	LxT_Data.138.s
File Name on PC	LxT_0004435-20220602 110832-LxT_Data.138.ldbin
Serial Number	0004435
Model	SoundTrack LxT®
Firmware Version	2.404
User	
Location	
Job Description	
Note	

Measurement

Description	
Start	2022-06-02 11:08:32
Stop	2022-06-02 11:23:36
Duration	00:15:04.2
Run Time	00:15:04.2
Pause	00:00:00.0
Pre-Calibration	2022-06-02 07:42:49
Post-Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting
Peak Weight	Z Weighting
Detector	Slow
Preamplifier	PRMLxT2B
Microphone Correction	Off
Integration Method	Exponential
Overload	143.8 dB

	A	**C**	**Z**	
Under Range Peak	100.0	97.0	**102.0**	dB
Under Range Limit	**38.3**	37.9	44.7	dB
Noise Floor	29.2	28.7	35.5	dB

	First	**Second**	**Third**
Instrument Identification			

Results

LA_{Seq}	59.1		
LASE	88.7		
EAS	82.153	µPa²h	
EAS8	2.617	mPa²h	
EAS40	13.083	mPa²h	
$LZ_{peak\ (max)}$	2022-06-02 11:16:44	112.8	dB
LAS_{max}	2022-06-02 11:12:44	77.0	dB
LAS_{min}	2022-06-02 11:20:23	42.3	dB
SEA	-99.9	dB	

	Exceedance Counts	**Duration**	
LAS > 85.0 dB	0	0.0	s
LAS > 115.0 dB	0	0.0	s
LZ_{peak} > 135.0 dB	0	0.0	s
LZ_{peak} > 137.0 dB	0	0.0	s
LZ_{peak} > 140.0 dB	0	0.0	s

LC_{Seq}	78.5	dB
LA_{Seq}	59.1	dB

L_{CSeq} - L_{ASeq}	19.4 dB
L_{Aleq}	63.5 dB
L_{Aeq}	59.1 dB
L_{Aleq} - L_{Aeq}	4.4 dB

	A		C		Z	
	dB	**Time Stamp**	**dB**	**Time Stamp**	**dB**	**Time Stamp**
L_{eq}	59.1					
$L_{S(max)}$	77.0	2022/06/02 11:12:44				
$L_{S(min)}$	42.3	2022/06/02 11:20:23				
$L_{Peak(max)}$					112.8	2022/06/02 11:16:44

Overload Count	0
Overload Duration	0.0 s

Dose Settings

Dose Name	OSHA-1	OSHA-2	
Exchange Rate	5	5	dB
Threshold	90	80	dB
Criterion Level	90	90	dB
Criterion Duration	8	8	h

Results

Dose	0.03	0.03	%
Projected Dose	1.09	1.09	%
TWA (Projected)	57.4	57.4	dB
TWA (t)	32.4	32.4	dB
Lep (t)	44.1	44.1	dB

Statistics

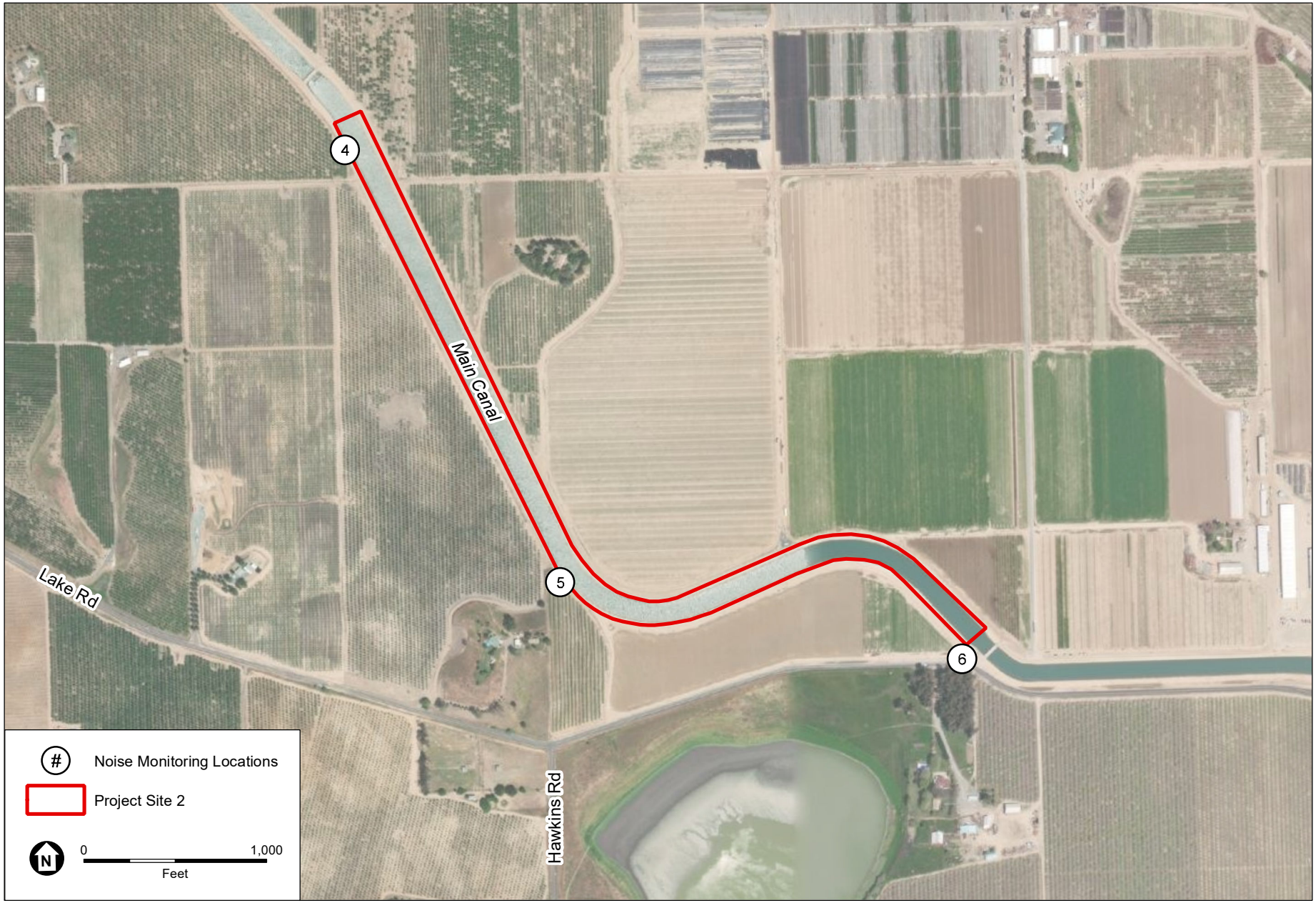
LAS 5.00	64.3 dB
LAS 10.00	62.4 dB
LAS 33.30	57.5 dB
LAS 50.00	54.9 dB
LAS 66.60	52.5 dB
LAS 90.00	47.3 dB

Calibration History

Preamp	**Date**	**dB re. 1V/Pa**	**6.3**	**8.0**	**10.0**	**12.5**
PRMLxT2B	2022-06-02 07:42:49	-49.98	66.72	65.81	50.76	56.03
PRMLxT2B	2022-05-26 10:29:14	-49.91	24.06	23.03	22.41	21.34
PRMLxT2B	2022-05-24 06:54:31	-49.76	56.98	54.08	71.02	61.09
PRMLxT2B	2022-04-19 11:05:32	-49.92	100.60	83.47	76.95	59.25
PRMLxT2B	2022-03-25 09:07:56	-49.77	46.45	59.35	50.71	56.84
PRMLxT2B	2022-03-08 10:39:27	-49.82	52.04	48.46	51.30	62.27
PRMLxT2B	2022-03-03 10:19:29	-49.76	66.39	65.68	49.98	50.58
PRMLxT2B	2022-02-09 11:34:07	-49.60	68.53	60.70	64.55	70.07
PRMLxT2B	2022-02-09 11:33:53	-49.60	96.65	87.56	66.93	69.37
PRMLxT2B	2021-12-15 16:59:36	-49.55	42.40	51.88	46.87	51.67
PRMLxT2B	2021-12-15 16:59:21	-49.56	47.69	60.88	51.04	53.33

16.0	20.0	25.0	31.5	40.0	50.0	63.0	80.0	100	125	160	200	250	315	400	500	630	800	1000
50.94	49.89	50.01	46.49	41.57	44.87	46.32	45.37	38.14	36.06	29.37	33.61	38.16	42.62	47.76	34.51	37.13	35.03	113.92
20.53	19.72	19.01	51.49	58.81	58.61	65.77	55.22	54.25	53.84	51.02	50.00	52.06	51.70	48.01	47.69	46.73	42.62	113.83
57.20	51.80	48.63	45.78	40.93	42.52	44.58	43.13	34.25	32.23	30.53	28.71	29.53	27.88	26.20	25.67	25.35	29.14	114.14
63.74	58.97	51.90	49.13	48.41	52.09	54.00	45.67	48.45	49.68	54.67	48.93	46.56	48.24	38.46	30.20	27.19	30.31	113.84
62.22	56.57	59.56	62.46	62.83	69.18	72.98	63.58	62.67	65.15	65.20	61.56	59.20	55.76	59.49	63.98	58.53	52.74	114.03
54.42	49.57	56.35	64.13	57.32	61.46	57.87	48.94	61.65	57.16	46.32	57.09	51.58	63.51	66.78	63.17	49.32	34.04	113.92
44.42	45.21	35.79	35.11	41.87	33.39	33.56	32.92	25.79	29.37	28.54	27.09	27.73	26.44	26.56	26.76	25.50	30.45	113.82
58.27	62.65	62.67	54.05	54.21	43.91	41.09	34.29	33.16	24.59	23.53	29.15	114.01	49.23	32.66	51.34	29.81	69.72	25.66
71.60	69.85	64.70	61.52	53.62	48.40	34.74	33.79	58.54	56.18	52.39	49.47	113.95	62.18	62.68	52.31	39.86	69.67	31.27
54.60	58.03	64.37	66.08	65.53	63.46	58.62	57.18	62.33	55.08	57.48	59.21	56.12	59.29	68.26	63.75	50.08	45.94	113.99
48.98	65.15	66.64	62.63	60.92	63.48	60.14	60.82	61.02	59.59	57.83	59.71	58.87	57.92	61.10	59.57	52.67	46.82	114.12

1250	1600	2000	2500	3150	4000	5000	6300	8000	10000	12500	16000	20000
48.88	28.57	64.11	29.90	60.03	33.12	33.48	34.52	35.51	36.93	37.49	38.67	40.40
49.18	35.62	64.70	30.04	58.97	34.80	34.51	34.94	36.05	40.67	37.97	38.68	40.37
49.22	28.69	64.68	30.31	60.70	34.37	37.82	34.68	35.72	36.44	37.62	38.86	40.58
48.94	28.11	62.01	29.68	59.36	31.90	35.48	34.43	35.37	36.33	37.53	38.53	40.39
53.84	43.38	61.92	32.75	58.92	36.10	36.02	35.26	35.60	36.60	37.41	38.90	40.53
48.91	28.89	64.22	30.34	61.28	45.64	44.14	43.47	41.94	40.66	39.51	39.53	40.58
48.89	27.55	62.07	29.46	59.29	31.74	34.39	34.05	34.96	36.34	37.36	38.62	40.29
56.05	43.81	41.65	40.23	31.89	31.74	32.67	33.64	35.22	36.20	37.32	38.59	40.35
55.93	43.56	41.41	40.27	32.30	31.64	32.65	33.74	34.80	36.10	37.25	38.46	40.13
49.84	37.41	56.78	36.21	49.12	31.47	32.33	34.12	35.09	36.13	37.37	38.34	40.28
50.21	37.69	56.87	36.25	49.29	32.28	33.10	33.80	35.16	36.48	37.52	38.39	40.49



Path: U:\GIS\GIS\Projects\2022xxxx\D2022000078_Project_Nexus_Solar_over_Canals\03_MXDs_Projects\Fig2-2_Noise Monitoring Loc.mxd, RTeitel 6/2/2022

SOURCE: Esri Imagery, ESA, 2022

Project Nexus

Figure 2
Noise Monitoring Locations in the Vicinity of Site 2

Measurement Location 4 (Front)

Measurement Location 4 (Back)

Summary

File Name on Meter	LxT_Data.141.s
File Name on PC	LxT_0004435-20220602 131606-LxT_Data.141.ldbin
Serial Number	0004435
Model	SoundTrack LxT®
Firmware Version	2.404
User	
Location	
Job Description	
Note	

Measurement

Description	
Start	2022-06-02 13:16:06
Stop	2022-06-02 13:31:09
Duration	00:15:02.9
Run Time	00:15:02.9
Pause	00:00:00.0
Pre-Calibration	2022-06-02 07:42:49
Post-Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting			
Peak Weight	Z Weighting			
Detector	Slow			
Preamplifier	PRMLxT2B			
Microphone Correction	Off			
Integration Method	Exponential			
Overload	143.8 dB			
	A	**C**	**Z**	
Under Range Peak	100.0	97.0	**102.0**	dB
Under Range Limit	**38.3**	37.9	44.7	dB
Noise Floor	29.2	28.7	35.5	dB
	First	**Second**	**Third**	
Instrument Identification				

Results

LASeq	68.5		
LASE	98.1		
EAS	718.445 µPa²h		
EAS8	22.916 mPa²h		
EAS40	114.582 mPa²h		
LZpeak (max)	2022-06-02 13:28:21	122.3	dB
LASmax	2022-06-02 13:16:47	85.3	dB
LASmin	2022-06-02 13:23:47	34.4	dB
SEA	141.1 dB		

	Exceedance Counts	**Duration**	
LAS > 85.0 dB	1	2.7	s
LAS > 115.0 dB	0	0.0	s
LZpeak > 135.0 dB	0	0.0	s
LZpeak > 137.0 dB	0	0.0	s
LZpeak > 140.0 dB	0	0.0	s

LCSeq	87.8	dB
LASeq	68.5	dB

L_{CSeq} - L_{ASeq}	19.3 dB
L_{AIeq}	75.6 dB
L_{Aeq}	68.5 dB
L_{AIeq} - L_{Aeq}	7.1 dB

	A		C		Z	
	dB	**Time Stamp**	**dB**	**Time Stamp**	**dB**	**Time Stamp**
L_{eq}	68.5					
$L_{S(max)}$	85.3	2022/06/02 13:16:47				
$L_{S(min)}$	34.4	2022/06/02 13:23:47				
$L_{Peak(max)}$					122.3	2022/06/02 13:28:21

Overload Count	0
Overload Duration	0.0 s

Dose Settings

Dose Name	OSHA-1	OSHA-2	
Exchange Rate	5	5	dB
Threshold	90	80	dB
Criterion Level	90	90	dB
Criterion Duration	8	8	h

Results

Dose	0.11	0.11	%
Projected Dose	3.38	3.38	%
TWA (Projected)	65.6	65.6	dB
TWA (t)	40.6	40.6	dB
Lep (t)	53.5	53.5	dB

Statistics

LAS 5.00	74.8	dB
LAS 10.00	71.5	dB
LAS 33.30	64.9	dB
LAS 50.00	60.8	dB
LAS 66.60	56.3	dB
LAS 90.00	45.1	dB

Calibration History

Preamp	**Date**	**dB re. 1V/Pa**	**6.3**	**8.0**	**10.0**	**12.5**
PRMLxT2B	2022-06-02 07:42:49	-49.98	66.72	65.81	50.76	56.03
PRMLxT2B	2022-05-26 10:29:14	-49.91	24.06	23.03	22.41	21.34
PRMLxT2B	2022-05-24 06:54:31	-49.76	56.98	54.08	71.02	61.09
PRMLxT2B	2022-04-19 11:05:32	-49.92	100.60	83.47	76.95	59.25
PRMLxT2B	2022-03-25 09:07:56	-49.77	46.45	59.35	50.71	56.84
PRMLxT2B	2022-03-08 10:39:27	-49.82	52.04	48.46	51.30	62.27
PRMLxT2B	2022-03-03 10:19:29	-49.76	66.39	65.68	49.98	50.58
PRMLxT2B	2022-02-09 11:34:07	-49.60	68.53	60.70	64.55	70.07
PRMLxT2B	2022-02-09 11:33:53	-49.60	96.65	87.56	66.93	69.37
PRMLxT2B	2021-12-15 16:59:36	-49.55	42.40	51.88	46.87	51.67
PRMLxT2B	2021-12-15 16:59:21	-49.56	47.69	60.88	51.04	53.33

16.0	20.0	25.0	31.5	40.0	50.0	63.0	80.0	100	125	160	200	250	315	400	500	630	800	1000
50.94	49.89	50.01	46.49	41.57	44.87	46.32	45.37	38.14	36.06	29.37	33.61	38.16	42.62	47.76	34.51	37.13	35.03	113.92
20.53	19.72	19.01	51.49	58.81	58.61	65.77	55.22	54.25	53.84	51.02	50.00	52.06	51.70	48.01	47.69	46.73	42.62	113.83
57.20	51.80	48.63	45.78	40.93	42.52	44.58	43.13	34.25	32.23	30.53	28.71	29.53	27.88	26.20	25.67	25.35	29.14	114.14
63.74	58.97	51.90	49.13	48.41	52.09	54.00	45.67	48.45	49.68	54.67	48.93	46.56	48.24	38.46	30.20	27.19	30.31	113.84
62.22	56.57	59.56	62.46	62.83	69.18	72.98	63.58	62.67	65.15	65.20	61.56	59.20	55.76	59.49	63.98	58.53	52.74	114.03
54.42	49.57	56.35	64.13	57.32	61.46	57.87	48.94	61.65	57.16	46.32	57.09	51.58	63.51	66.78	63.17	49.32	34.04	113.92
44.42	45.21	35.79	35.11	41.87	33.39	33.56	32.92	25.79	29.37	28.54	27.09	27.73	26.44	26.56	26.76	25.50	30.45	113.82
58.27	62.65	62.67	54.05	54.21	43.91	41.09	34.29	33.16	24.59	23.53	29.15	114.01	49.23	32.66	51.34	29.81	69.72	25.66
71.60	69.85	64.70	61.52	53.62	48.40	34.74	33.79	58.54	56.18	52.39	49.47	113.95	62.18	62.68	52.31	39.86	69.67	31.27
54.60	58.03	64.37	66.08	65.53	63.46	58.62	57.18	62.33	55.08	57.48	59.21	56.12	59.29	68.26	63.75	50.08	45.94	113.99
48.98	65.15	66.64	62.63	60.92	63.48	60.14	60.82	61.02	59.59	57.83	59.71	58.87	57.92	61.10	59.57	52.67	46.82	114.12

1250	1600	2000	2500	3150	4000	5000	6300	8000	10000	12500	16000	20000
48.88	28.57	64.11	29.90	60.03	33.12	33.48	34.52	35.51	36.93	37.49	38.67	40.40
49.18	35.62	64.70	30.04	58.97	34.80	34.51	34.94	36.05	40.67	37.97	38.68	40.37
49.22	28.69	64.68	30.31	60.70	34.37	37.82	34.68	35.72	36.44	37.62	38.86	40.58
48.94	28.11	62.01	29.68	59.36	31.90	35.48	34.43	35.37	36.33	37.53	38.53	40.39
53.84	43.38	61.92	32.75	58.92	36.10	36.02	35.26	35.60	36.60	37.41	38.90	40.53
48.91	28.89	64.22	30.34	61.28	45.64	44.14	43.47	41.94	40.66	39.51	39.53	40.58
48.89	27.55	62.07	29.46	59.29	31.74	34.39	34.05	34.96	36.34	37.36	38.62	40.29
56.05	43.81	41.65	40.23	31.89	31.74	32.67	33.64	35.22	36.20	37.32	38.59	40.35
55.93	43.56	41.41	40.27	32.30	31.64	32.65	33.74	34.80	36.10	37.25	38.46	40.13
49.84	37.41	56.78	36.21	49.12	31.47	32.33	34.12	35.09	36.13	37.37	38.34	40.28
50.21	37.69	56.87	36.25	49.29	32.28	33.10	33.80	35.16	36.48	37.52	38.39	40.49

Measurement Location 5 (Front)

Measurement Location 5 (Back)

Summary

File Name on Meter	LxT_Data.140.s
File Name on PC	LxT_0004435-20220602 125319-LxT_Data.140.ldbin
Serial Number	0004435
Model	SoundTrack LxT®
Firmware Version	2.404
User	
Location	
Job Description	
Note	

Measurement

Description	
Start	2022-06-02 12:53:19
Stop	2022-06-02 13:08:21
Duration	00:15:02.0
Run Time	00:15:02.0
Pause	00:00:00.0
Pre-Calibration	2022-06-02 07:42:49
Post-Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting
Peak Weight	Z Weighting
Detector	Slow
Preamplifier	PRMLxT2B
Microphone Correction	Off
Integration Method	Exponential
Overload	143.8 dB

	A	**C**	**Z**	
Under Range Peak	100.0	97.0	**102.0**	dB
Under Range Limit	**38.3**	37.9	44.7	dB
Noise Floor	29.2	28.7	35.5	dB

	First	**Second**	**Third**
Instrument Identification			

Results

LA_{Seq}	69.2		
LASE	98.8		
EAS	842.258	µPa²h	
EAS8	26.893	mPa²h	
EAS40	134.463	mPa²h	
$LZ_{peak\ (max)}$	2022-06-02 13:05:39	122.6	dB
LAS_{max}	2022-06-02 13:03:18	82.9	dB
LAS_{min}	2022-06-02 13:01:30	41.3	dB
SEA	137.6 dB		

	Exceedance Counts	**Duration**	
LAS > 85.0 dB	0	0.0	s
LAS > 115.0 dB	0	0.0	s
LZ_{peak} > 135.0 dB	0	0.0	s
LZ_{peak} > 137.0 dB	0	0.0	s
LZ_{peak} > 140.0 dB	0	0.0	s

LC_{Seq}	88.7	dB
LA_{Seq}	69.2	dB

L_{CSeq} - L_{ASeq}	19.5 dB
L_{AIeq}	75.6 dB
L_{Aeq}	69.2 dB
L_{AIeq} - L_{Aeq}	6.4 dB

	A		C		Z	
	dB	**Time Stamp**	**dB**	**Time Stamp**	**dB**	**Time Stamp**
L_{eq}	69.2					
$L_{S(max)}$	82.9	2022/06/02 13:03:18				
$L_{S(min)}$	41.3	2022/06/02 13:01:30				
$L_{Peak(max)}$					122.6	2022/06/02 13:05:39

Overload Count	0
Overload Duration	0.0 s

Dose Settings

Dose Name	OSHA-1	OSHA-2	
Exchange Rate	5	5	dB
Threshold	90	80	dB
Criterion Level	90	90	dB
Criterion Duration	8	8	h

Results

Dose	0.13	0.13	%
Projected Dose	4.18	4.18	%
TWA (Projected)	67.1	67.1	dB
TWA (t)	42.1	42.1	dB
Lep (t)	54.2	54.2	dB

Statistics

LAS 5.00	75.8 dB
LAS 10.00	73.5 dB
LAS 33.30	66.4 dB
LAS 50.00	63.2 dB
LAS 66.60	59.9 dB
LAS 90.00	54.0 dB

Calibration History

Preamp	**Date**	**dB re. 1V/Pa**	**6.3**	**8.0**	**10.0**	**12.5**
PRMLxT2B	2022-06-02 07:42:49	-49.98	66.72	65.81	50.76	56.03
PRMLxT2B	2022-05-26 10:29:14	-49.91	24.06	23.03	22.41	21.34
PRMLxT2B	2022-05-24 06:54:31	-49.76	56.98	54.08	71.02	61.09
PRMLxT2B	2022-04-19 11:05:32	-49.92	100.60	83.47	76.95	59.25
PRMLxT2B	2022-03-25 09:07:56	-49.77	46.45	59.35	50.71	56.84
PRMLxT2B	2022-03-08 10:39:27	-49.82	52.04	48.46	51.30	62.27
PRMLxT2B	2022-03-03 10:19:29	-49.76	66.39	65.68	49.98	50.58
PRMLxT2B	2022-02-09 11:34:07	-49.60	68.53	60.70	64.55	70.07
PRMLxT2B	2022-02-09 11:33:53	-49.60	96.65	87.56	66.93	69.37
PRMLxT2B	2021-12-15 16:59:36	-49.55	42.40	51.88	46.87	51.67
PRMLxT2B	2021-12-15 16:59:21	-49.56	47.69	60.88	51.04	53.33

16.0	20.0	25.0	31.5	40.0	50.0	63.0	80.0	100	125	160	200	250	315	400	500	630	800	1000
50.94	49.89	50.01	46.49	41.57	44.87	46.32	45.37	38.14	36.06	29.37	33.61	38.16	42.62	47.76	34.51	37.13	35.03	113.92
20.53	19.72	19.01	51.49	58.81	58.61	65.77	55.22	54.25	53.84	51.02	50.00	52.06	51.70	48.01	47.69	46.73	42.62	113.83
57.20	51.80	48.63	45.78	40.93	42.52	44.58	43.13	34.25	32.23	30.53	28.71	29.53	27.88	26.20	25.67	25.35	29.14	114.14
63.74	58.97	51.90	49.13	48.41	52.09	54.00	45.67	48.45	49.68	54.67	48.93	46.56	48.24	38.46	30.20	27.19	30.31	113.84
62.22	56.57	59.56	62.46	62.83	69.18	72.98	63.58	62.67	65.15	65.20	61.56	59.20	55.76	59.49	63.98	58.53	52.74	114.03
54.42	49.57	56.35	64.13	57.32	61.46	57.87	48.94	61.65	57.16	46.32	57.09	51.58	63.51	66.78	63.17	49.32	34.04	113.92
44.42	45.21	35.79	35.11	41.87	33.39	33.56	32.92	25.79	29.37	28.54	27.09	27.73	26.44	26.56	26.76	25.50	30.45	113.82
58.27	62.65	62.67	54.05	54.21	43.91	41.09	34.29	33.16	24.59	23.53	29.15	114.01	49.23	32.66	51.34	29.81	69.72	25.66
71.60	69.85	64.70	61.52	53.62	48.40	34.74	33.79	58.54	56.18	52.39	49.47	113.95	62.18	62.68	52.31	39.86	69.67	31.27
54.60	58.03	64.37	66.08	65.53	63.46	58.62	57.18	62.33	55.08	57.48	59.21	56.12	59.29	68.26	63.75	50.08	45.94	113.99
48.98	65.15	66.64	62.63	60.92	63.48	60.14	60.82	61.02	59.59	57.83	59.71	58.87	57.92	61.10	59.57	52.67	46.82	114.12

1250	1600	2000	2500	3150	4000	5000	6300	8000	10000	12500	16000	20000
48.88	28.57	64.11	29.90	60.03	33.12	33.48	34.52	35.51	36.93	37.49	38.67	40.40
49.18	35.62	64.70	30.04	58.97	34.80	34.51	34.94	36.05	40.67	37.97	38.68	40.37
49.22	28.69	64.68	30.31	60.70	34.37	37.82	34.68	35.72	36.44	37.62	38.86	40.58
48.94	28.11	62.01	29.68	59.36	31.90	35.48	34.43	35.37	36.33	37.53	38.53	40.39
53.84	43.38	61.92	32.75	58.92	36.10	36.02	35.26	35.60	36.60	37.41	38.90	40.53
48.91	28.89	64.22	30.34	61.28	45.64	44.14	43.47	41.94	40.66	39.51	39.53	40.58
48.89	27.55	62.07	29.46	59.29	31.74	34.39	34.05	34.96	36.34	37.36	38.62	40.29
56.05	43.81	41.65	40.23	31.89	31.74	32.67	33.64	35.22	36.20	37.32	38.59	40.35
55.93	43.56	41.41	40.27	32.30	31.64	32.65	33.74	34.80	36.10	37.25	38.46	40.13
49.84	37.41	56.78	36.21	49.12	31.47	32.33	34.12	35.09	36.13	37.37	38.34	40.28
50.21	37.69	56.87	36.25	49.29	32.28	33.10	33.80	35.16	36.48	37.52	38.39	40.49

Measurement Location 6 (Front)

Measurement Location 6 (Back)

Summary

File Name on Meter	LxT_Data.139.s
File Name on PC	LxT_0004435-20220602 121452-LxT_Data.139.ldbin
Serial Number	0004435
Model	SoundTrack LxT®
Firmware Version	2.404
User	
Location	
Job Description	
Note	

Measurement

Description	
Start	2022-06-02 12:14:52
Stop	2022-06-02 12:29:55
Duration	00:15:03.0
Run Time	00:15:03.0
Pause	00:00:00.0
Pre-Calibration	2022-06-02 07:42:49
Post-Calibration	None
Calibration Deviation	---

Overall Settings

RMS Weight	A Weighting		
Peak Weight	Z Weighting		
Detector	Slow		
Preamplifier	PRMLxT2B		
Microphone Correction	Off		
Integration Method	Exponential		
Overload	143.8 dB		

	A	**C**	**Z**	
Under Range Peak	100.0	97.0	**102.0**	dB
Under Range Limit	**38.3**	37.9	44.7	dB
Noise Floor	29.2	28.7	35.5	dB

	First	**Second**	**Third**
Instrument Identification			

Results

LA_{Seq}	72.0		
LASE	101.6		
EAS	1.607	mPa^2h	
EAS8	51.250	mPa^2h	
EAS40	256.251	mPa^2h	
$LZ_{peak\ (max)}$	2022-06-02 12:26:40	122.8	dB
LAS_{max}	2022-06-02 12:20:37	83.1	dB
LAS_{min}	2022-06-02 12:23:34	53.6	dB
SEA	138.3 dB		

	Exceedance Counts	**Duration**	
LAS > 85.0 dB	0	0.0	s
LAS > 115.0 dB	0	0.0	s
LZ_{peak} > 135.0 dB	0	0.0	s
LZ_{peak} > 137.0 dB	0	0.0	s
LZ_{peak} > 140.0 dB	0	0.0	s

LC_{Seq}	90.9	dB
LA_{Seq}	72.0	dB

L_{CSeq} - L_{ASeq}	18.9 dB
L_{AIeq}	77.9 dB
L_{Aeq}	72.0 dB
L_{AIeq} - L_{Aeq}	5.8 dB

	A		C		Z	
	dB	**Time Stamp**	**dB**	**Time Stamp**	**dB**	**Time Stamp**
L_{eq}	72.0					
$L_{S(max)}$	83.1	2022/06/02 12:20:37				
$L_{S(min)}$	53.6	2022/06/02 12:23:34				
$L_{Peak(max)}$					122.8	2022/06/02 12:26:40

Overload Count	0
Overload Duration	0.0 s

Dose Settings

Dose Name	OSHA-1	OSHA-2	
Exchange Rate	5	5	dB
Threshold	90	80	dB
Criterion Level	90	90	dB
Criterion Duration	8	8	h

Results

Dose	0.22	0.22	%
Projected Dose	6.95	6.95	%
TWA (Projected)	70.8	70.8	dB
TWA (t)	45.8	45.8	dB
Lep (t)	57.0	57.0	dB

Statistics

LAS 5.00	77.7	dB
LAS 10.00	76.0	dB
LAS 33.30	71.4	dB
LAS 50.00	68.8	dB
LAS 66.60	66.0	dB
LAS 90.00	60.1	dB

Calibration History

Preamp	**Date**	**dB re. 1V/Pa**	**6.3**	**8.0**	**10.0**	**12.5**
PRMLxT2B	2022-06-02 07:42:49	-49.98	66.72	65.81	50.76	56.03
PRMLxT2B	2022-05-26 10:29:14	-49.91	24.06	23.03	22.41	21.34
PRMLxT2B	2022-05-24 06:54:31	-49.76	56.98	54.08	71.02	61.09
PRMLxT2B	2022-04-19 11:05:32	-49.92	100.60	83.47	76.95	59.25
PRMLxT2B	2022-03-25 09:07:56	-49.77	46.45	59.35	50.71	56.84
PRMLxT2B	2022-03-08 10:39:27	-49.82	52.04	48.46	51.30	62.27
PRMLxT2B	2022-03-03 10:19:29	-49.76	66.39	65.68	49.98	50.58
PRMLxT2B	2022-02-09 11:34:07	-49.60	68.53	60.70	64.55	70.07
PRMLxT2B	2022-02-09 11:33:53	-49.60	96.65	87.56	66.93	69.37
PRMLxT2B	2021-12-15 16:59:36	-49.55	42.40	51.88	46.87	51.67
PRMLxT2B	2021-12-15 16:59:21	-49.56	47.69	60.88	51.04	53.33

16.0	20.0	25.0	31.5	40.0	50.0	63.0	80.0	100	125	160	200	250	315	400	500	630	800	1000
50.94	49.89	50.01	46.49	41.57	44.87	46.32	45.37	38.14	36.06	29.37	33.61	38.16	42.62	47.76	34.51	37.13	35.03	113.92
20.53	19.72	19.01	51.49	58.81	58.61	65.77	55.22	54.25	53.84	51.02	50.00	52.06	51.70	48.01	47.69	46.73	42.62	113.83
57.20	51.80	48.63	45.78	40.93	42.52	44.58	43.13	34.25	32.23	30.53	28.71	29.53	27.88	26.20	25.67	25.35	29.14	114.14
63.74	58.97	51.90	49.13	48.41	52.09	54.00	45.67	48.45	49.68	54.67	48.93	46.56	48.24	38.46	30.20	27.19	30.31	113.84
62.22	56.57	59.56	62.46	62.83	69.18	72.98	63.58	62.67	65.15	65.20	61.56	59.20	55.76	59.49	63.98	58.53	52.74	114.03
54.42	49.57	56.35	64.13	57.32	61.46	57.87	48.94	61.65	57.16	46.32	57.09	51.58	63.51	66.78	63.17	49.32	34.04	113.92
44.42	45.21	35.79	35.11	41.87	33.39	33.56	32.92	25.79	29.37	28.54	27.09	27.73	26.44	26.56	26.76	25.50	30.45	113.82
58.27	62.65	62.67	54.05	54.21	43.91	41.09	34.29	33.16	24.59	23.53	29.15	114.01	49.23	32.66	51.34	29.81	69.72	25.66
71.60	69.85	64.70	61.52	53.62	48.40	34.74	33.79	58.54	56.18	52.39	49.47	113.95	62.18	62.68	52.31	39.86	69.67	31.27
54.60	58.03	64.37	66.08	65.53	63.46	58.62	57.18	62.33	55.08	57.48	59.21	56.12	59.29	68.26	63.75	50.08	45.94	113.99
48.98	65.15	66.64	62.63	60.92	63.48	60.14	60.82	61.02	59.59	57.83	59.71	58.87	57.92	61.10	59.57	52.67	46.82	114.12

1250	1600	2000	2500	3150	4000	5000	6300	8000	10000	12500	16000	20000
48.88	28.57	64.11	29.90	60.03	33.12	33.48	34.52	35.51	36.93	37.49	38.67	40.40
49.18	35.62	64.70	30.04	58.97	34.80	34.51	34.94	36.05	40.67	37.97	38.68	40.37
49.22	28.69	64.68	30.31	60.70	34.37	37.82	34.68	35.72	36.44	37.62	38.86	40.58
48.94	28.11	62.01	29.68	59.36	31.90	35.48	34.43	35.37	36.33	37.53	38.53	40.39
53.84	43.38	61.92	32.75	58.92	36.10	36.02	35.26	35.60	36.60	37.41	38.90	40.53
48.91	28.89	64.22	30.34	61.28	45.64	44.14	43.47	41.94	40.66	39.51	39.53	40.58
48.89	27.55	62.07	29.46	59.29	31.74	34.39	34.05	34.96	36.34	37.36	38.62	40.29
56.05	43.81	41.65	40.23	31.89	31.74	32.67	33.64	35.22	36.20	37.32	38.59	40.35
55.93	43.56	41.41	40.27	32.30	31.64	32.65	33.74	34.80	36.10	37.25	38.46	40.13
49.84	37.41	56.78	36.21	49.12	31.47	32.33	34.12	35.09	36.13	37.37	38.34	40.28
50.21	37.69	56.87	36.25	49.29	32.28	33.10	33.80	35.16	36.48	37.52	38.39	40.49