James Irrigation District Solar Project #1

Final Initial Study – Mitigated Negative Declaration

prepared by

James Irrigation District
8749 9th Street
San Joaquin, California 93660
Contact: Manny Amorelli

prepared with the assistance of

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April 2022

RINCON CONSULTANTS, INC.
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Initial Study

1. Project Title

James Irrigation District Solar Project #1

2. Lead Agency Name and Address

James Irrigation District
8749 9th Street
San Joaquin, California 93660

3. Contact Person and Phone Number

Manny Amorelli, General Manager
(559) 693-4356

4. Project Location

The project site is an approximately 36.5-acre parcel located at the northeast corner of the intersection of West Adams Avenue and South Placer Avenue (Assessor's Parcel Number 030-170-32T) in unincorporated Fresno County. The project site consists of previously disturbed agricultural lands, and site access is provided by South Placer Ave. An existing uncovered irrigation canal runs parallel along the site's southern boundary, and an existing PG&E transmission line runs parallel to the site's western boundary. The site is relatively flat, ranging from approximately 160 to 170 feet above mean sea level in elevation. Based on a review of historical aerial photographs, the site and surrounding areas have been intensively used for agriculture and disturbed since at least 1946. No intact native vegetation communities are located on the project site (Rincon 2021a). Figure 1 depicts the regional location of the project, and Figure 2 depicts the project site location. Photographs of the project site are shown in Figure 3.

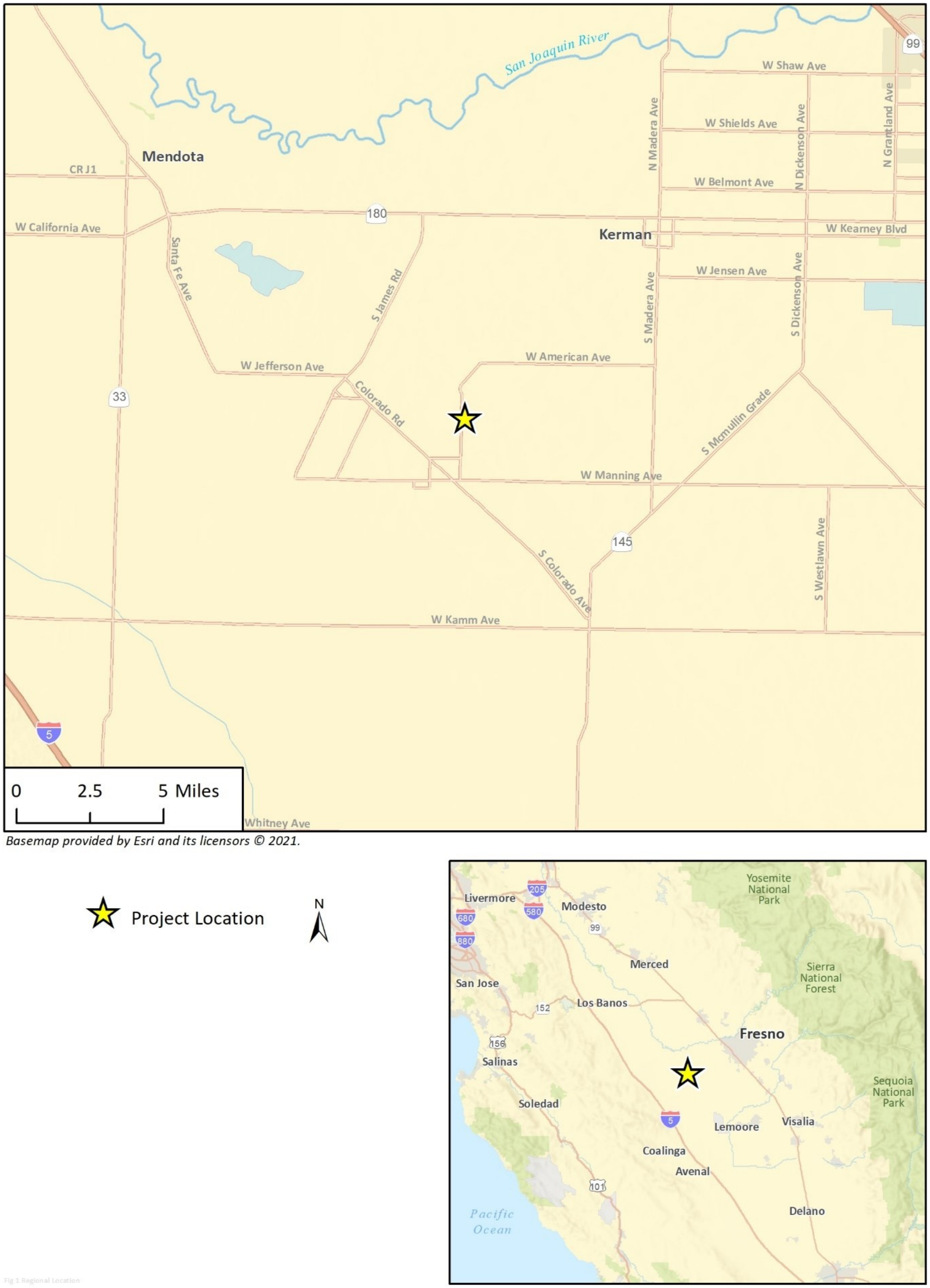
5. Project Sponsor's Name and Address

James Irrigation District
8749 9th Street
San Joaquin, California 93660

6. General Plan Designation

Exclusive Agricultural

Figure 1 Regional Location



Basemap provided by Esri and its licensors © 2021.

Figure 2 Project Location

Imagery provided by Microsoft Bing and its licensors © 2021.

Fig 2 Project Location

Figure 3 Site Photographs

Photograph 1. View of southwestern corner of the project site, facing northeast.

Photograph 2 View of northwestern corner of the project site, facing east.

Photograph 3. View of northern end of project site, facing north.

Photograph 4, Culvert at southeast corner or project site, facing southwest.

Photograph 5. View of southern end of project site, facing west.

Photograph 6. View of western end of project site and South Placer Avenue, facing west.

7. Zoning

Exclusive Agricultural (AE-20)

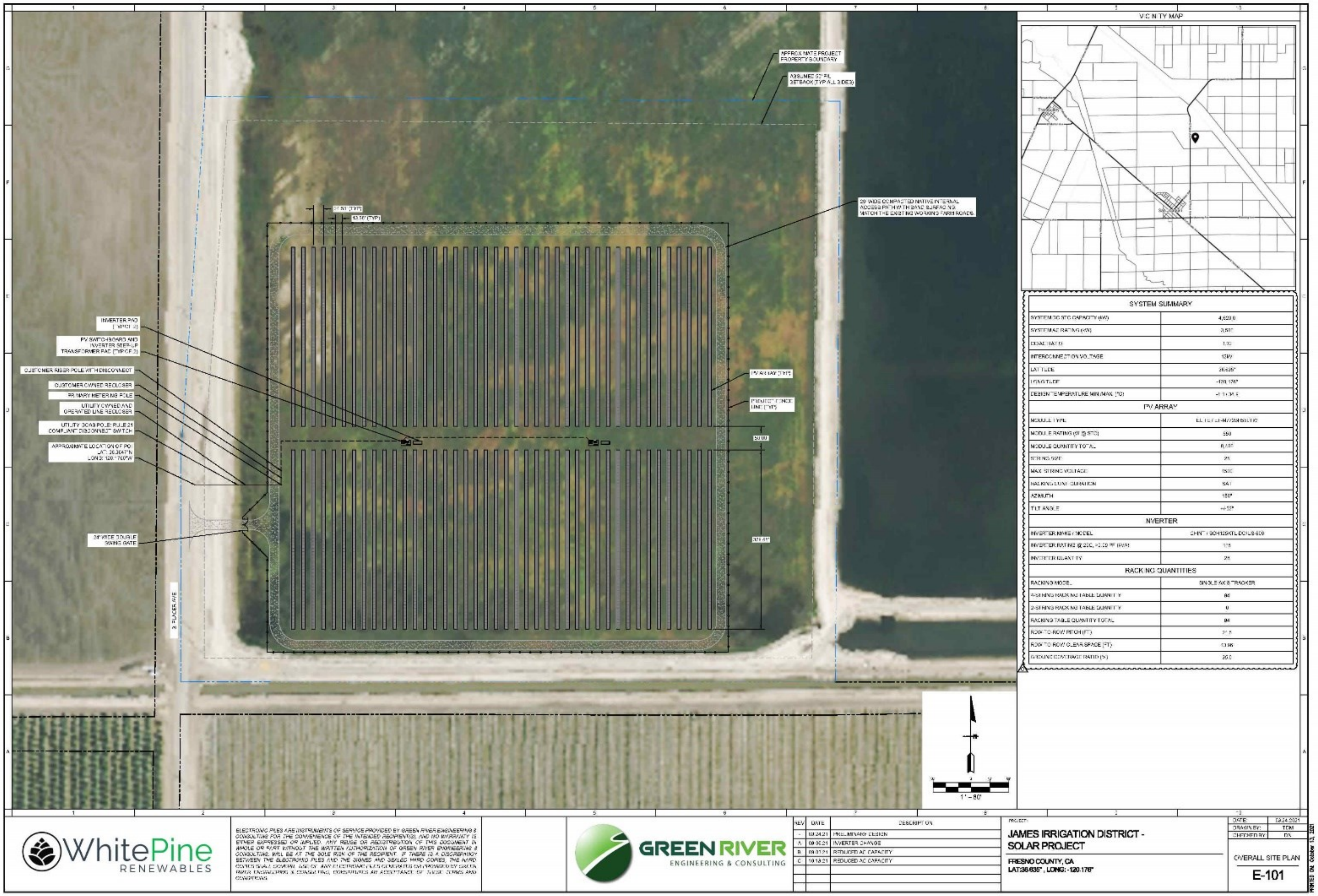
8. Description of Project

The proposed project involves the installation of a 3.5-megawatt (MW) solar array with single-axis tracking system, including 4.5 MW of direct current photovoltaic (PV) modules, steel support structures, 3.5 MW alternating current electrical inverters, cabling, and other system components. The project also includes two main service boards and two step-up transformers as well as metering facilities, conductors, and safety equipment for interconnection to Pacific Gas and Electric's (PG&E) distribution system via a new primary meter installed within the project site. The electricity generated by the proposed project would offset JID's aggregated electricity usage for the canal and well pumps across JID-owned parcels. The solar power generated on the project site would be used to generate bill credits for JID's meters in the Renewable Energy Self-Generation Bill Credit Transfer Program (RES-BCT) arrangement to offset their PG&E energy generation charges. The project's interconnection with PG&E would not require off-site construction because an existing PG&E generation tie line is located along the western boundary of the project site.

Electrical equipment, including the switchboard, inverter pad, and inverter step-up transformer, would be located on an approximately 50-foot-wide path that would run in an east-west direction between the two main sections of solar arrays. Access to the project site would be provided by an approximately 20-foot-wide unpaved driveway from South Placer Avenue that would be secured by an approximately 24-foot-wide double swing gate. The driveway would lead to an on-site, approximately 20-foot-wide compacted access path with sand surfacing that would proceed around the perimeter of the project site to provide access to the solar array for maintenance. A fence would also be installed around the perimeter of the project site. Figure 4 provides the proposed site plan.

The solar PV modules would be manufactured at an off-site location and transported to the project site via truck. Solar PV panels would be located on piles driven into the ground to depths of approximately eight feet and supports would be bolted onto the piles. All electrical equipment would be elevated above the base flood elevation line. Modules would be designed to minimize glare using an anti-reflective coating. No lighting would be required for the project.

Figure 4 Site Plan



SYSTEM SUMMARY	
SYSTEM DC STC CAPACITY (kW)	4,620.0
SYSTEM AC RATING (kW)	3,500
DC/AC RATIO	1.32
INTERCONNECTION VOLTAGE	12kV
LATITUDE	36.635°
LONGITUDE	-120.176°
DESIGN TEMPERATURE MIN/MAX (°C)	[illegible]
PV ARRAY	
MODULE TYPE	[illegible]
MODULE RATING (W @ STC)	550
MODULE QUANTITY TOTAL	8,400
STRING SIZE	25
MAX. STRING VOLTAGE	1500
RACKING CONFIGURATION	SAT
AZIMUTH	180°
TILT ANGLE	+/-52°
INVERTER	
INVERTER MAKE / MODEL	CHINT / SCH125KTL-DO/US-600
INVERTER RATING @ 25C, >0.99 PF (kVA)	125
INVERTER QUANTITY	28
RACKING QUANTITIES	
RACKING MODEL	SINGLE AXIS TRACKER
4-STRING RACKING TABLE QUANTITY	84
2-STRING RACKING TABLE QUANTITY	0
RACKING TABLE QUANTITY TOTAL	84
ROW-TO-ROW PITCH (FT)	21.5
ROW-TO-ROW CLEAR SPACE (FT)	13.96
GROUND COVERAGE RATIO (%)	35.0

REV	DATE	DESCRIPTION
-	03.24.21	PRELIMINARY DESIGN
A	08.06.21	INVERTER CHANGE
B	09.07.21	REDUCED AC CAPACITY
C	10.13.21	REDUCED AC CAPACITY

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Construction Activities

Project construction would take approximately four months and is anticipated to begin in May 2022 and conclude in August 2022. Construction activities would consist of two main phases – solar array installation and site restoration. Construction activities would occur for approximately nine hours per day from 7:00 a.m. to 4:00 p.m. and would occur five days per week, Monday through Friday. No grading, soil export/import, or vegetation clearing would be required.

Operation

The proposed project would be operated and monitored remotely. Maintenance activities would occur approximately 10 times per year for vegetation maintenance and/or repairs, and personnel trips would be completed via passenger vehicles. Maintenance events would not require the use of heavy-duty equipment.

Washing of the solar PV panels to remove debris and improve energy production would be required periodically. Approximately 7,650 gallons (0.03 acre-feet) of water would be utilized for panel washing annually and would be delivered via water truck.

Decommissioning

At the end of the project's useful life (anticipated to be 35 years or more), the project would be decommissioned. Currently, standard decommissioning practices include dismantling and repurposing, salvaging/recycling, or disposing of the solar energy improvements. However, actual decommissioning and site restoration for the project would be conducted in accordance with all applicable requirements in effect at the time of project decommissioning, and a final decommissioning plan, based on then-current technology, site conditions, and regulations, would be prepared prior to actual decommissioning.

Under current standard decommissioning practices, solar PV modules are removed, collected, and can be recycled. Some or all of the components (i.e., aluminum and steel components) are salvaged and/or recycled, as feasible. Components that cannot be salvaged are removed and disposed of in accordance with applicable laws and regulations.

9. Surrounding Land Uses and Setting

The project site is surrounded predominantly by agricultural uses to the north, south, east, and west. An irrigation canal runs parallel to the site's southern boundary. The nearest residence is located approximately 0.1 mile southwest of the project site.

10. Other Public Agencies Whose Approval is Required

The project will require issuance of a building permit from the County of Fresno.

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Environmental Factors Potentially Affected

This project would potentially affect the environmental factors checked below, involving at least one impact that is “Potentially Significant” or “Less than Significant with Mitigation Incorporated” as indicated by the checklist on the following pages.

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

Determination

Based on this initial evaluation:

☐ 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 to 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 “less than significant with mitigation incorporated” 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 potential 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.

Signature

3-16-22
Date

Manny Amorelli
Printed Name

General Manager
Title

Environmental Checklist

1 Aesthetics

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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 a 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 that would adversely affect daytime or nighttime views in the area?	☐	☐	■	☐

a. Would the project have a substantial adverse effect on a scenic vista?

The Fresno County General Plan Open Space and Conservation Element defines scenic vistas as an area designated, signed, and accessible to the public for purposes of viewing and sightseeing (County of Fresno 2000a). According to the Final Environmental Impact Report (EIR) for the Fresno County General Plan, Fresno County contains a variety of terrain and vistas that could be considered scenic, particularly views of rural farmland, the foothills and the Sierra Nevada (County of Fresno 2000b). There are no designated scenic vistas in the viewshed of the project site. Therefore, no impact to a scenic vista would result from implementation of the project.

NO IMPACT

b. *Would the project substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?*

The project site is not visible from a State-designated scenic highway, and no scenic resources, such trees, rock outcroppings, or historic buildings, are present on the project site. Therefore, no impact would occur.

NO IMPACT

c. *Would the project, 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 a 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?*

The project site is located in a non-urbanized area. Public views of the project site are primarily viewed by motorists traveling along South Placer Avenue and West Adams Avenue. As shown in Figure 3, the project site consists of previously disturbed agricultural lands with sparse vegetation that primarily includes weedy, non-native, ruderal species. Adjacent land uses feature agro-industrial equipment, such as water tanks, pumping systems, and silos. The surrounding landscape also includes other developed features such as power lines and road signage. The proposed project would introduce a solar array system with a low height profile into the visual landscape, and ruderal vegetation would continue to grow underneath the solar panels. The proposed solar PV array would have a similar visual character to that of the surrounding land uses and would therefore not result in a substantial degradation of the visual character or quality of the project site and its surroundings when completed. Impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

d. *Would the project create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area?*

Lighting

Construction and future decommissioning of the project would occur during daylight hours and would not require lighting. In addition, no permanent lighting is included as part of the proposed project. Therefore, the project would not create a new source of substantial light that would adversely affect daytime or nighttime views in the area, and no impact would occur.

Glare

The reflection of sunlight off solar panel surfaces would be the primary source of potential glare from the project. However, solar panels are comprised of cells designed to capture solar energy to convert it into usable energy. Therefore, solar panels are designed to absorb as much light as possible to maximize the efficiency of energy production. Additionally, PV panels are covered with a tempered glass layer treated with an anti-reflective coating that further reduces the reflectivity of the panels. When compared to common reflective surfaces, solar panels without an anti-reflective coating produce around the same amount of reflectivity as water, which is about half the amount of reflectivity as standard glass commonly used in residential or commercial applications (Shields 2010). Additional glare could be created by metal components of the proposed solar array system. The amount of glare created by such components would depend on the material type, surface area, and the orientation of the viewer. However, given the orientation of the panels and the low visual profile of the project, the period during which glare from panels or other metal components of the project could potentially be seen by motorists would be relatively short (i.e., a matter of minutes) and would be of relatively low intensity. Due to the relatively low intensity and low visibility of project-related glare during project operation, the project would not create a new source of substantial glare that would adversely affect daytime or nighttime views in the area. Impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

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2 Agriculture and Forestry Resources

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				
a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on 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?	☐	☐	☐	■

a. Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

b. Would the project conflict with existing zoning for agricultural use or a Williamson Act contract?

Although the project site has been historically used for agriculture, it is currently vacant and not actively used for agricultural activities. According to the California Department of Conservation's (2016) Farmland Mapping and Monitoring Program, the project site is classified as Urban and Built-Up Land. In addition, the project site is not currently under a Williamson Act land use contract (Data Basin 2022). Therefore, the project would not convert Prime Farmland, Unique Farmland, or

Farmland of Statewide Importance to non-agricultural use or conflict with any existing zoning for agricultural use or a Williamson Act contract. No impact would occur.

NO IMPACT

c. *Would the project 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. *Would the project result in the loss of forest land or conversion of forest land to non-forest use?*

The project site and the surrounding area are not designated, zoned, or used as forest or timberland. Therefore, the project would not conflict with existing zoning for, or cause rezoning of, forest land, timberland, or timberland zoned Timberland Production. In addition, the project would not result in the loss of forest land or conversion of forest land to non-forest use. No impact would occur.

NO IMPACT

e. *Would the project 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?*

As discussed under item (a), the project site has been historically used for agriculture but is currently vacant with no active agricultural operations. The surrounding properties are designated Urban and Built-Up Land and Other Land to the north and east and Prime Farmland to the south and west by the California Department of Conservation's (2016) Farmland Mapping and Monitoring Program. As stated under items (c) and (d), the project site and the surrounding area are not designated, zoned, or used as forestland.

Construction of the project would involve temporary ground-disturbing activities, including the installation of piles for the solar array system. Installation of piles would not cause long-term impacts to the soil of the site, such as through paving, structural construction, or removal of substantial quantities of topsoil. In addition, during project operation, maintenance activities would occur approximately 10 times per year for vegetation maintenance and/or repairs and would not require the use of heavy-duty equipment. Because both construction and operation of the project would only temporarily impact on-site soils, the project would not convert Farmland to non-agricultural use. In addition, the project would not result in the conversion of nearby farmland to non-agricultural uses because it would not introduce uses on the project site that are incompatible with nearby agricultural uses, such as residents or school uses, that may be adversely affected by agricultural operations (dust generation, odors, or pesticide use). No impact would occur.

NO IMPACT

3 Air Quality

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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?	☐	☐	■	☐

Overview of Air Pollution

The federal and State Clean Air Acts (CAA) mandate the control and reduction of certain air pollutants. Under these laws, the U.S. Environmental Protection Agency (U.S. EPA) and the California Air Resources Board (CARB) have established the National Ambient Air Quality Standards (NAAQS) and the California Ambient Air Quality Standards (CAAQS) for “criteria pollutants” and other pollutants. Some pollutants are emitted directly from a source (e.g., vehicle tailpipe, an exhaust stack of a factory, etc.) into the atmosphere, including carbon monoxide, volatile organic compounds (VOC)/reactive organic gases (ROG),[1] nitrogen oxides (NO_X), particulate matter with diameters of ten microns or less (PM_{10}) and 2.5 microns or less ($PM_{2.5}$), sulfur dioxide, and lead. Other pollutants are created indirectly through chemical reactions in the atmosphere, such as ozone, which is created by atmospheric chemical and photochemical reactions primarily between ROG and NO_X. Secondary pollutants include oxidants, ozone, and sulfate and nitrate particulates (smog).

Air pollutant emissions are generated primarily by stationary and mobile sources. Stationary sources can be divided into two major subcategories:

- Point sources occur at a specific location and are often identified by an exhaust vent or stack. Examples include boilers or combustion equipment that produce electricity or generate heat.

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[1] CARB defines VOC and ROG similarly as, “any compound of carbon excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate,” with the exception that VOC are compounds that participate in atmospheric photochemical reactions. For the purposes of this analysis, ROG and VOC are considered comparable in terms of mass emissions, and the term ROG is used in this IS-MND.

- Area sources are widely distributed and include such sources as residential and commercial water heaters, painting operations, lawn mowers, agricultural fields, landfills, and some consumer products.

Mobile sources refer to emissions from motor vehicles, including tailpipe and evaporative emissions, and can also be divided into two major subcategories:

- On-road sources that may be legally operated on roadways and highways.
- Off-road sources include aircraft, ships, trains, and self-propelled construction equipment.

Air Quality Standards and Attainment

The project site is located is located in the San Joaquin Valley Air Basin (SJVAB), which is under the jurisdiction of the San Joaquin Valley Air Pollution Control District (SJVAPCD). As the local air quality management agency, the SJVAPCD is required to monitor air pollutant levels to ensure that the NAAQS and CAAQS are met and, if they are not met, to develop strategies to meet the standards. Depending on whether the standards are met or exceeded, the SJVAB is classified as being in “attainment” or “nonattainment.” In areas designated as non-attainment for one or more air pollutants, a cumulative air quality impact exists for those air pollutants, and the human health impacts associated with these criteria pollutants, presented in Table 1, are already occurring in that area as part of the environmental baseline condition. Under state law, air districts are required to prepare a plan for air quality improvement for pollutants for which the district is in non-compliance. The SJVAB is designated a nonattainment area for the state one-hour ozone standard as well as for the federal and state eight-hour ozone standards. The SJVAB is also designated as nonattainment for the state annual arithmetic mean and federal 24-hour $PM_{2.5}$ standards as well as the state 24-hour and annual arithmetic mean PM_{10} standards. The nonattainment statuses of the SJVAB are the result of several factors, such as increased population and unique topographical and meteorological conditions that exacerbate the formation and retention of high levels of air pollution in the SJVAB (SJVAPCD 2016). The SJVAB is unclassified or in attainment for all other ambient air quality standards (SJVAPCD 2018).

Table 1 Health Effects Associated with Non-Attainment Criteria Pollutants

Pollutant	Adverse Effects
Ozone	(1) Short-term exposures: (a) pulmonary function decrements and localized lung edema in humans and animals and (b) risk to public health implied by alterations in pulmonary morphology and host defense in animals; (2) long-term exposures: risk to public health implied by altered connective tissue metabolism and altered pulmonary morphology in animals after long-term exposures and pulmonary function decrements in chronically exposed humans; (3) vegetation damage; and (4) property damage.
Suspended particulate matter (PM_{10})	(1) Excess deaths from short-term and long-term exposures; (2) excess seasonal declines in pulmonary function, especially in children; (3) asthma exacerbation and possibly induction; (4) adverse birth outcomes including low birth weight; (5) increased infant mortality; (6) increased respiratory symptoms in children such as cough and bronchitis; and (7) increased hospitalization for both cardiovascular and respiratory disease (including asthma).
Suspended particulate matter ($PM_{2.5}$)	(1) Excess deaths from short- and long-term exposures; (2) excess seasonal declines in pulmonary function, especially in children; (3) asthma exacerbation and possibly induction; (4) adverse birth outcomes, including low birth weight; (5) increased infant mortality; (6) increased respiratory symptoms in children, such as cough and bronchitis; and (7) increased hospitalization for both cardiovascular and respiratory disease, including asthma.

Source: U.S. EPA 2021a

Air Quality Management

Because the SJVAB is currently designated nonattainment for the ozone and $PM_{2.5}$ NAAQS, the SJVAPCD is required to implement strategies to reduce pollutant levels to achieve attainment of the NAAQS. The SJVAPCD 2016 Ozone Plan and 2018 $PM_{2.5}$ Plan 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. The plans also include innovative alternative strategies for accelerating attainment through non-regulatory measures. The 2016 Ozone Plan determines that, with implementation of the proposed control strategy, the SJVAB can expect to reach attainment of the 2008 eight-hour ozone NAAQS by December 31, 2031 (SJVAPCD 2016). The 2018 $PM_{2.5}$ Plan for the 1997, 2006, and 2012 $PM_{2.5}$ NAAQS includes a strategy for bringing SJVAB into attainment by the respective deadlines of 2023, 2024, and 2025 (SJVAPCD 2021).

Methodology

Air pollutant emissions generated by project construction were estimated using the California Emissions Estimator Model (CalEEMod), version 2020.4.0. CalEEMod uses project-specific information, including the project's land uses, square footages for different uses, and location to model a project's air pollutant and greenhouse gas (GHG) emissions. The analysis reflects the construction and operation of the project as described under *Description of Project*.

Construction emissions modeled include emissions generated by construction equipment used on-site and emissions generated by vehicle trips associated with construction, such as worker and vendor trips. CalEEMod estimates construction emissions by multiplying the amount of time equipment is in operation by emission factors. Construction of the proposed project was analyzed based on the applicant-provided construction schedule and construction equipment list. Construction would occur on an approximately 20.1-acre portion of the project site over the course of approximately four months between May 2022 and August 2022. It is assumed that all construction equipment used would be diesel-powered, and no soil import or export would be required. In addition, the trip lengths for worker and vendor trips were increased from their default values to 30 miles because workers would likely travel to the project site from the closest major city, which is Fresno. This analysis assumes that the project would comply with all applicable regulatory standards. In particular, the project would comply with SJVAPCD Rule 8201 Construction, Demolition, Excavation, Extraction, And Other Earthmoving Activities. See Appendix A for the project's construction-related air pollutant emissions modeling and calculations.

Operational emissions of the project were not modeled in CalEEMod because the project would be operated and monitored remotely. Approximately 10 vehicle trips to the site would occur per year for vegetation maintenance and/or facility repairs, but no heavy equipment would be used during these visits. Therefore, minimal emissions would be generated by operational activities, and the significance of the project's operational emissions is evaluated qualitatively.

After 35 years, the solar array and associated equipment would likely be decommissioned and removed from the site via a series of activities that would be similar in nature and duration to project construction activities. Therefore, the project's decommissioning emissions were assumed to be approximately equal to the project's construction emissions for the purposes of this analysis.

Air Emission Thresholds

The SJVAPCD has adopted guidelines for quantifying and determining the significance of air quality emissions in its *Guidance for Assessing and Mitigating Air Quality Impacts* (GAMAQI; SJVAPCD 2015a). The SJVAPCD recommends the use of quantitative thresholds to determine the significance of temporary construction-related emissions of criteria air pollutant emissions, which are shown in Table 2.

Table 2 Air Quality Thresholds of Significance

Pollutant	NO_X	ROG	PM_{10}	$PM_{2.5}$	SO_X	CO
Construction Thresholds (Tons Per Year)	10	10	15	15	27	100

NO_X= nitrogen oxides; CO= carbon monoxide; SO_X = sulfur oxides; ROG = reactive organic gases; PM_{10} = particulate matter with a diameter of 10 microns or less; $PM_{1.5}$ = particulate matter with a diameter of 2.5 microns or less

Source: SJVAPCD 2015a

In addition to the annual SJVAPCD thresholds presented above, SJVAPCD has published the *Ambient Air Quality Analysis Project Daily Emissions Assessment* guidance, which is summarized in Section 8.4.2, *Ambient Air Quality Screening Tools*, of the SJVAPCD's GAMAQI (2015). The Ambient Air Quality Screening Tools guidance provides a screening threshold to evaluate construction activities of 100 pounds per day for any of the following pollutants: NO_X, ROG, PM_{10}, $PM_{2.5}$, SO_X, and carbon monoxide. Pursuant to the SJVAPCD's GAMAQI (2015), project impacts may be significant if on-site emissions from construction activities exceed the 100-pounds-per-day screening level after implementation of all enforceable mitigation measures. An ambient air quality assessment, which includes refined dispersion modeling, would be necessary if an exceedance occurs.

The SJVAPCD also recommends quantitative thresholds for evaluating a project's air quality impacts related to toxic air contaminants (TACs). Health effects from carcinogenic air toxics are usually described in terms of cancer risk. The SJVAPCD recommends a carcinogenic (cancer) risk threshold of 20 in a million. The Chronic Hazard Index is the sum of the individual substance chronic hazard indices for all TACs affecting the same target organ system. The SJVAPCD recommends a Chronic Hazard Index significance threshold of 1.0 and an Acute Hazard Index of 1.0.

a. Would the project conflict with or obstruct implementation of the applicable air quality plan?

Construction, operation, and decommissioning of the project would result in emissions of criteria pollutants including ozone precursors, such as ROG and NO_X, as well as particulate matter. The SJVAPCD has prepared several air quality attainments plans to achieve ozone and particulate matter standards, the most recent of which include the 2016 Plan for the 2008 8-Hour Ozone Standard and the 2018 Plan for the 1997, 2006, and 2012 $PM_{2.5}$ Standards. The SJVAB is in attainment for carbon monoxide, sulfur dioxide, and lead; therefore, the SJVAPCD has not developed attainment plans for these pollutants. The SJVAPCD has determined that projects with emissions above the thresholds of significance for criteria pollutants would conflict with and obstruct implementation of the SJVAPCD's air quality plans (SJVAPCD 2015b). As discussed under item (b), the project would not exceed the SJVAPCD's significance thresholds for criteria air pollutant emissions. Therefore, the project would not conflict with applicable air plans, and no impact would occur.

NO IMPACT

b. *Would the project 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?*

Construction Emissions

Project construction would generate temporary air pollutant emissions associated with fugitive dust (PM_{10} and $PM_{2.5}$) and exhaust emissions from heavy construction equipment and construction vehicles. Table 3 summarizes the estimated annual emissions of criteria air pollutants during project construction. As shown therein, construction-related emissions would not exceed SJVAPCD thresholds.

Table 3 Project Construction Emissions

	Annual Construction Emissions (tons/year)					
Construction Year	**ROG**	**NO_x**	**CO**	**SO_x**	**PM_{10}**	**$PM_{2.5}$**
2022	<1	<1	1	<1	<1	<1
SJVAPCD Thresholds of Significance	10	10	100	27	15	15
Threshold Exceeded?	**No**	**No**	**No**	**No**	**No**	**No**

ROG = reactive organic gas, NO_X = nitrogen oxides, CO = carbon monoxide, SO_X = sulfur oxides, PM_{10} = particulate matter 10 microns in diameter or less, $PM_{2.5}$ = particulate matter 2.5 microns or less in diameter

Notes: All calculations were made using CalEEMod v.2020.4.0. See Appendix AQ-1 for calculations. Some numbers may not add up due to rounding. Emission data is pulled from CalEEMod's "mitigated" results, which is a term of art for the modeling output and is not equivalent to mitigation measures that may apply to the CEQA impact analysis. The CalEEMod "mitigated" results account for compliance with regulations (Rule 8021) and project design features.

The SJVAB is a nonattainment area for the state one-hour ozone standard, the federal and state eight-hour ozone standards, the state $PM_{2.5}$ standard, and the state PM_{10} standard. The current nonattainment statuses of the SJVAB are the result of cumulative emissions from motor vehicles, off-road equipment, commercial and industrial facilities, and other emission sources. Projects that emit these pollutants or their precursors (e.g., ROG and NO_X for ozone) potentially contribute to this poor air quality. Therefore, project-related construction emissions must be compared to the SJVAPCD's 100-pounds-per-day ambient air quality screening threshold for ROG, NO_x, sulfur dioxide, carbon monoxide, PM_{10}, and $PM_{2.5}$. As shown in Table 4, maximum daily emissions associated with project construction would not exceed the SJVAPCD's 100-pounds-per-day screening threshold during construction. Therefore, an ambient air quality assessment is not required for construction activities. Because the SJVAPCD annual and daily thresholds would not be exceeded, project construction would not 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. Impacts would be less than significant.

Table 4 Maximum Daily Project Construction Emissions

	Emissions (lbs/day)					
	ROG	**NO_X**	**CO**	**SO_2**	**PM_{10}**	**$PM_{2.5}$**
Maximum Daily Emissions	1	12	16	<1	2	1
Screening Threshold	100	100	100	100	100	100
Screening Threshold Exceeded?	**No**	**No**	No	**No**	**No**	**No**

lbs/day = pounds per day, ROG = reactive organic gas, NO_X = nitrogen oxides, CO = carbon monoxide, SO_X = sulfur oxides, PM_{10} = particulate matter 10 microns in diameter or less, $PM_{2.5}$ = particulate matter 2.5 microns or less in diameter

Notes: All calculations were made using CalEEMod v.2020.4.0. See Appendix AQ-1 for calculations. Some numbers may not add up due to rounding. Emission data is pulled from CalEEMod's "mitigated" results, which is a term of art for the modeling output and is not equivalent to mitigation measures that may apply to the CEQA impact analysis. The CalEEMod "mitigated" results account for compliance with regulations (Rule 8021) and project design features. Emissions presented are the highest of the winter and summer modeled emissions.

Operational Emissions

The proposed project would be operated and monitored remotely. Occasional passenger vehicle trips to the site for vegetation maintenance or repairs would occur approximately ten times per year. However, no heavy equipment would be required for vegetation maintenance. In addition, the project does not include the construction of structures or installation of lighting. Therefore, the project's operational emissions would be *de minimis*, and project operation would not result in a cumulatively considerable net increase of any criteria pollutant for which the project region is in non-attainment. Impacts would be less than significant.

Decommissioning Emissions

After 35 years, the solar array and associated equipment would likely be decommissioned and removed from the site via a series of activities that would be similar in nature and duration to project construction activities. As discussed above, the project's construction-related emissions would not exceed the SJVAPCD's daily or annual thresholds. Because the project's decommissioning activities would be similar to its construction activities, decommissioning emissions also would not exceed the SJVAPCD's daily or annual thresholds. Therefore, project decommissioning would not 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. Impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

c. Would the project expose sensitive receptors to substantial pollutant concentrations?

Certain population groups, such as children, the elderly, and people with health problems, are particularly sensitive to air pollution. Therefore, the majority of sensitive receptor locations are schools, hospitals, and residences. The nearest sensitive receptor to the project site is a single-family residence located approximately 600 feet south of the project site. Localized air quality impacts to sensitive receptors typically result from carbon monoxide hotspots and TACs, which are discussed in the following subsections.

Carbon Monoxide Hotspots

A carbon monoxide hotspot is a localized concentration of carbon monoxide that is above a carbon monoxide ambient air quality standard. Localized carbon monoxide hotspots can occur at intersections with heavy peak hour traffic. Specifically, hotspots can be created at intersections where traffic levels are sufficiently high such that the local carbon monoxide concentration exceeds the federal one-hour standard of 35.0 ppm or the federal and state eight-hour standard of 9.0 ppm (CARB 2016).

The entire SJVAB is in conformance with state and federal carbon monoxide standards. In 2020, the maximum eight-hour average carbon monoxide concentration measured at the Fresno-Garland station, located approximately 25 miles northwest of project site, was 2.2 ppm, which is well below the state and federal 8-hour carbon monoxide standard of 9.0 ppm (SJVAPCD 2020). When operational, the proposed project would only require approximately ten vehicle trips per year for vegetation clearing and/or repairs because it would be operated remotely. Based on the low background level of carbon monoxide in the project area and the project's low number of vehicle trips, the project would not create new carbon monoxide hotspots or contribute substantially to existing carbon monoxide hotspots. Therefore, the proposed project would not expose sensitive receptors to substantial carbon monoxide concentrations, and localized air quality impacts related to carbon monoxide hot spots would be less than significant.

Toxic Air Contaminants

TACs are defined by California law as air pollutants that may cause or contribute to an increase in mortality or an increase in serious illness, or which may pose a present or potential hazard to human health. The following subsections discuss the project's potential to result in impacts related to TAC emissions during construction and operation.

Construction

Construction-related activities would result in temporary project-generated emissions of diesel particulate matter (DPM) exhaust emissions from off-road, heavy-duty diesel equipment for site preparation, grading, building construction, and other construction activities. DPM was identified as a TAC by CARB in 1998. The potential cancer risk from the inhalation of DPM (discussed in the following paragraphs) outweighs the potential non-cancer health impacts (CARB 2020) and is therefore the focus of this analysis.

Generation of DPM from construction projects typically occurs in a single area for a short period. Construction of the proposed project would occur over approximately four months. The dose to which receptors are exposed is the primary factor used to determine health risk. Dose is a function of the concentration of a substance or substances in the environment and the extent of exposure that person has with the substance. Dose is positively correlated with time, meaning that a longer exposure period would result in a higher exposure level for the Maximally Exposed Individual. The risks estimated for a Maximally Exposed Individual are higher if a fixed exposure occurs over a longer period of time. According to the California Office of Environmental Health Hazard Assessment, health risk assessments, which determine the exposure of sensitive receptors to toxic emissions, should be based on a 70-year exposure period; however, such assessments should be limited to the period/duration of activities associated with the project. Thus, the duration of proposed construction activities (i.e., four months) is approximately one percent of the total exposure period used for 30-year health risk calculations. Current models and methodologies for conducting health-risk assessments are associated with longer-term exposure periods of 9, 30, and

70 years, which do not correlate well with the temporary and highly variable nature of construction activities, resulting in difficulties in producing accurate estimates of health risk (BAAQMD 2017).

The maximum PM_{10} and $PM_{2.5}$ emissions would occur during the solar array installation phase, which would last for approximately 76 days. DPM generated by project construction would not create conditions where the probability is greater than 20 in one million of contracting cancer for the Maximally Exposed Individual (the SJVAPCD's carcinogenic risk threshold) or to generate ground-level concentrations of non-carcinogenic TACs that exceed a Chronic or Acute Hazard Index greater than one for the Maximally Exposed Individual (the SHVAPCD's hazard index thresholds). Therefore, project construction would not expose sensitive receptors to substantial TAC concentrations, and impacts would be less than significant.

Operation

The proposed project does not include any stationary sources of TAC emissions, and operations and maintenance trips would be conducted using gasoline-powered vehicles, which do not generate TAC emissions. Therefore, project operation would not expose sensitive receptors to substantial TAC concentrations, and no impact would occur.

LESS THAN SIGNIFICANT IMPACT

d. Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

The project would generate oil and diesel fuel odors during construction and decommissioning activities from equipment use. The odors would be temporary and limited to these periods. With respect to operation, the SJVAPCD's GAMAQI (2015) identifies land uses associated with odor complaints to be wastewater treatment facilities, sanitary landfills, food processing facilities, and feed lot/dairy facilities. Solar PV systems are not listed in the guidance as a major odor-generating land use, and the project does not include components that would generate odors during operation. Therefore, the proposed project would not generate other emissions (such as those leading to odors) adversely affecting a substantial number of people, and impacts would be less than significant.

4 Biological Resources

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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 Wildlife 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, or regulations, or by the California Department of Fish and Wildlife 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?	☐	☐	☐	■

The following section is based primarily on the Biological Resources Assessment prepared by Rincon Consultants, Inc. (Rincon) for the proposed project in March 2022, which is included as Appendix B.

Existing Conditions

The project site contains a former agricultural field that is periodically cleared of vegetation. Based on a review of historical aerial photographs, the site and surrounding areas have been intensively used for agriculture and disturbed since at least 1946. Soils on site consist of Merced clay loam; Merced clay; and Temple clay loam. All soils mapped within the project site are listed as hydric soils. No intact native vegetation communities are present within the project site, and no sensitive vegetation communities were observed within the project site. Two land cover types were identified within the project site during the field survey: Agricultural and Developed (Appendix B). The surrounding lands consist predominantly of heavily impacted agricultural fields and orchards.

The project site provides habitat for wildlife species which commonly occur in Fresno County. Avian species observed on or adjacent to the site during the reconnaissance survey include red-tailed hawk (*Buteo jamaicensis*), common raven (*Corvus corax*), mourning dove (*Zenaida macroura*), great egret (*Ardea alba*), and white-faced ibis (*Plegadis chihi*). Terrestrial species observed/detected include botta's pocket gopher (*Thomomys bottae),* California ground squirrel (*Otospermophilus beecheyi*), and domestic dogs.

Methodology

The literature review included the background reports database research on special status biological resource occurrences within the *Jamesan, California* United States Geological Survey (USGS) 7.5-minute quadrangle and surrounding eight quadrangles. Sources included the CDFW California Natural Diversity Data Base (CNDDB); Biogeographic Information and Observation System; United States Fish and Wildlife Service (USFWS) National Wetlands Inventory; USFWS Information for Planning and Consultation; and USFWS Critical Habitat Portal. Other resources included the California Native Plant Society's online Inventory of Rare and Endangered Plants of California; CDFW's Special Vascular Plants, Bryophytes, and Lichens List, and CDFW's Connectivity Areas-California Essential Habitat Connectivity Map. Aerial photographs, topographic maps, soil survey maps, geologic maps, and climatic data in the area were also examined. A review of the information contained within these databases, supported by the expert opinion of Rincon's biological staff, resulted in a list of special status species and other resources to be evaluated for their presence or potential to occur at the project site. In addition, a biological reconnaissance survey of the project site was conducted on December 9, 2021 and evaluated existing site conditions and the potential presence of special-status biological resources, including special-status plant and wildlife species, sensitive plant communities, jurisdictional waters and wetlands, wildlife movement, and habitat for nesting birds. The potential presence of special-status species is based on a literature review and reconnaissance site visit designed to assess habitat suitability only.

a. *Would the project 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 Wildlife or U.S. Fish and Wildlife Service?*

Special status are species are those plants and animals listed, proposed for listing, or candidates for listing as Threatened or Endangered by the USFWS under the federal Endangered Species Act; those listed or candidates for listing as Rare, Threatened, or Endangered under the California Endangered Species Act or Native Plant Protection Act; those identified as Fully Protected by the California Fish and Game Code (Sections 3511, 4700, 5050, and 5515); those identified as Species of Special Concern or Watch List species by the CDFW; and plants occurring on lists 1 and 2 of the California Native Plant Society California Rare Plant Rank system per the following definitions:

- **Rank 1A:** Plants presumed extinct in California;
- **Rank 1B.1:** Rare or endangered in California and elsewhere; seriously endangered in California (over 80 percent of occurrences threatened/high degree and immediacy of threat);
- **Rank 1B.2:** Rare or endangered in California and elsewhere; fairly endangered in California (20 to 80 percent of occurrences threatened);
- **Rank 1B.3:** Rare or endangered in California and elsewhere, not very endangered in California (less than 20 percent of occurrences threatened or no current threats known);
- **Rank 2:** Rare, threatened or endangered in California, but more common elsewhere.

The literature review identified 16 special-status plant species and 27 special-status wildlife species documented within the *Jamesan, California* USGS 7.5-minute quad and the eight surrounding quads.

Special-Status Plants

Sixteen special status plant species known to occur in the region were evaluated for their potential to occur in the study area. None of these 16 species are expected to occur within the project site. Species could be excluded based on known range and elevation, the lack of the species' specific habitat requirements within the study area, or due to the disturbed nature of the site and its lack of connectivity to natural vegetation communities (Appendix B). Therefore, the project would result in no impacts to special-status plant species.

Special-Status Wildlife

Of the 27 special-status wildlife species documented in the project site vicinity, 26 of these species are not expected to occur within the project site due to absence of suitable habitat. The one wildlife species with potential to occur within the site during foraging or dispersal is the Swainson's hawk (*Buteo swainsoni*) (Appendix B).

The white-faced ibis is on CDFW's watch list. One white-faced ibis was observed flying over the project site during the biological reconnaissance survey. It was only observed flying overhead and did not land on or nearby the project site. White-faced ibis use shallow freshwater marshes for foraging and dense tule thickets for nesting. No foraging or nesting habitat is present within or adjacent to the project site. The species is present in the region of the study area and may be spotted during dispersal but would be unlikely to use the project site due to lack of foraging and nesting habitat. No occurrences have been documented by the CNDDB within five miles of the project site (Appendix B). Despite the observation of this species flying overhead, the white-faced ibis is not likely to be present on the project site.

The Swainson's hawk is listed as a state threatened species. There are several records of Swainson's hawks nesting within five miles of the project site, last recorded in 2018. No Swainson's hawks or raptor nests were observed during the biological reconnaissance survey, and there are no trees present within the project site or in the immediate vicinity. Suitable nesting habitat within one mile of the project site is limited to isolated trees on the west side of Clayton Avenue. There is limited habitat for the species within the project site, but a stand of isolated trees along a canal to the west of the project site could provide marginal foraging and nesting habitat for the species. Therefore, Swainson's hawk has a moderate potential to forage within the project site and a low potential to nest in the vicinity of the project site (Appendix B).

In addition, non-game migratory birds protected under the California Fish and Game Code Section 3503, such as native avian species common to grasslands, agricultural, developed, and ruderal areas, have the potential to breed and forage throughout the project. Nesting by a variety of common birds protected by the Migratory Bird Treaty Act and California Fish and Game Code Section 3503 could occur in virtually any location throughout the study area on the ground surface or within native or non-native vegetation (Appendix B).

Impacts to the aforementioned special-status and protected species may occur through removal of vegetation if active nests are present. Impacts may also occur if active nests are present in undeveloped and landscaped areas adjacent to active construction or staging through disturbance and nest abandonment (Appendix B). Therefore, impacts to special-status wildlife would be potentially significant, and implementation of Mitigation Measure BIO-1 would be required to reduce impacts to a less-than-significant level.

Mitigation Measure

The following mitigation measure would be required to reduce impacts to biological resources to a less than significant level.

BIO-1 Avoidance and Minimization of Impacts to Swainson's Hawk, Other Raptors and Nesting Birds

If construction activities occur during the non-nesting season (September 16 to January 31), no mitigation is required. If construction activities occur during the nesting bird season (February 1 to September 15), the following measures shall be implemented to reduce impacts to Swainson's hawk, other protected raptor species, tricolored birds, and other nesting birds protected by the Migratory Bird Treaty Act and California Fish and Game Code.

- A preconstruction nesting bird survey shall be conducted no more than 14 days prior to initiation of ground disturbance and vegetation removal. The survey shall be conducted within the project site and include a 150-foot buffer for passerines, 500-foot buffer for other raptors, and 0.5-mile buffer for active Swainson's hawk nests. The survey shall be conducted by a biologist familiar with the identification of avian species known to occur in the region.
- If the nesting bird survey results are negative, no further action shall be required. If nests are found, an appropriate avoidance buffer shall be determined and demarcated by the biologist with high visibility material. For Swainson's hawk nests, an avoidance buffer of up to 0.5-mile shall be established by a qualified biologist based on the nest location in relation

to the project activity, the line-of-sight from the nest to the project activity and observed hawk behavior at the nest.

- All construction personnel shall be notified as to the existence of the buffer zones and to avoid entering buffer zones during the nesting season. No ground disturbing activities shall occur within the buffer until the avian biologist has confirmed that breeding/nesting is complete, and the young have fledged the nest. Encroachment into the buffer shall occur only at the discretion of the qualified biologist.
- Results of the preconstruction nesting bird survey shall be submitted in a brief letter report to JID no more than 30 days after completion of the survey.

Significance after Mitigation

Implementation of Mitigation Measure BIO-1 would minimize the potential for project construction activities to disturb Swainson's hawk, other raptors, and nesting birds through by requiring nesting bird surveys prior to construction and the implementation of avoidance buffers if nests are found. Implementation of Mitigation Measure BIO-1 would reduce project impacts to nesting birds to a less-than-significant level.

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED

b. Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

Four sensitive natural communities are documented within the nine USGS quadrangles surrounding the project area: Coastal and Valley Freshwater Marsh, Valley Sink Scrub, Valley Sacaton Grassland, and Northern Claypan Vernal Pool. However, none of these sensitive plant communities or USFWS-designated critical habitat are present within the project site (Appendix B). Therefore, no impacts to sensitive natural communities or critical habitat would occur.

NO IMPACT

c. Would the project 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?

No jurisdictional wetlands or waters are mapped within the project site. The project site was previously used as agricultural land and flood-irrigated agricultural production. One unnamed canal exists south of the project site and is classified as R5UBFx (Riverine [R], Unknown Perennial [5], Unconsolidated Bottom [UB], Semipermanently Flooded [F], and Excavated [x]). However, the proposed project would not impact this canal directly or indirectly (Appendix B). Therefore, the project would not have a substantial adverse effect on state or federally protected wetlands, and no impact would occur.

NO IMPACT

d. Would the project 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?

Wildlife movement corridors, or habitat linkages, are generally defined as connections between habitat patches that allow for physical and genetic exchange between otherwise isolated animal populations. Such linkages may serve a local purpose, such as providing a linkage between foraging and denning areas, or they may be regional in nature. Some habitat linkages may serve as migration corridors, wherein animals periodically move away from an area and then subsequently return. Other corridors may be important as dispersal corridors for young animals. A group of habitat linkages in an area can form a wildlife corridor network (Appendix B).

In the vicinity of the project site, disked fields and existing roads could provide local scale opportunities for wildlife movement, particularly disturbance-tolerant species such as coyote. There are no Natural Landscape Blocks or Essential Connectivity Areas mapped within the project site and surrounding land has long been disrupted by intensive agriculture. Because no significant wildlife movement corridors or habitat linkages are present within the project site, the project would not substantially alter existing wildlife movement or interfere with established resident or migratory wildlife corridors (Appendix B). Therefore, impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

e. Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

The Fresno County General Plan includes open space, conservation, and land use elements. The proposed project activities would not in conflict with any elements of the General Plan because the proposed project is consistent with the agricultural zoning of the project site. In addition, no native trees were observed on site or are proposed for removal. Therefore, the project would not conflict with any local policies or ordinances protecting biological resources. No impact would occur.

NO IMPACT

f. Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

The project site is not within any applicable habitat conservation plan areas. Therefore, the project would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. No impact would occur.

NO IMPACT

5 Cultural Resources

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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 formal cemeteries?	☐	☐	■	☐

The following section is based primarily on the Cultural Resources Assessment prepared by Rincon for the proposed project in February 2022, which is included as Appendix C.

This section provides an analysis of the project's impacts on cultural resources, including historical and archaeological resources as well as human remains. CEQA requires a lead agency determine whether a project may have a significant effect on historical resources (Public Resources Code [PRC] Section 21084.1). A historical resource is a resource listed in, or determined to be eligible for listing in, the California Register of Historical Resources (CRHR); a resource included in a local register of historical resources; or any object, building, structure, site, area, place, record, or manuscript a lead agency determines to be historically significant (CEQA Guidelines Section 15064.5[a][1-3]).

A resource shall be considered historically significant if it:

1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
2. Is associated with the lives of persons important in our past;
3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
4. Has yielded, or may be likely to yield, information important in prehistory or history.

In addition, if it can be demonstrated that a project would cause damage to a unique archaeological resource, the lead agency may require reasonable efforts be made to permit any or all of these resources to be preserved in place or left in an undisturbed state. PRC Section 21083.2(g) defines a unique archaeological resource as an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it:

1. Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information;

2. Has a special and particular quality such as being the oldest of its type or the best available example of its type; or
3. Is directly associated with a scientifically recognized important prehistoric or historic event or person.

To the extent that unique archaeological resources cannot be left undisturbed, mitigation measures are required (PRC Section 21083.2[a-b]).

Methodology

The Cultural Resources Assessment conducted by Rincon for the proposed project included a records search of the California Historical Resources Information System at the Southern San Joaquin Valley Information Center (SSJVIC), a Sacred Lands File (SLF) search from the Native American Heritage Commission (NAHC), and background and archival research. In addition, a pedestrian survey of the project site was conducted (Appendix C).

The SSJVIC records search was performed to identify previously conducted cultural resources studies, as well as previously recorded cultural resources within the project site and a 0.5-mile radius surrounding it. The records search included a review of available records at the SSJVIC, as well as the National Register of Historic Places, the CRHR, the Office of Historic Preservation Historic Properties Directory, the California Inventory of Historic Resources, the Archaeological Determinations of Eligibility list, and historical maps. The SSJVIC records search identified one cultural resources study conducted within a 0.5-mile radius of the project site, which did not evaluate the project site. The SSJVIC search also identified two previously recorded cultural resources within a 0.5-mile radius of the project site, neither of which are recorded within the project site. Both resources have been recommended as ineligible for listing on the National Register of Historic Places (Baloian 2015a and 2015b).

On January 12, 2022, the NAHC responded to Rincon's SLF request, stating the SLF was returned with negative results for sacred lands in the vicinity of the project site.

a. Would the project cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?

No buildings are present within the project site. The pedestrian survey did not identify potential cultural resources that may qualify as historical resources within the project site (Appendix C). Therefore, the project would not cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines Section 15064.5, and no impact would occur.

b. Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

As part of the Cultural Resources Assessment (Appendix C), Rincon conducted a pedestrian survey of the project site on February 15, 2022. Rincon's assessment did not identify archaeological resources or archaeological deposits within the project site. However, the lack of surface evidence of archaeological materials does not preclude their subsurface existence. As discussed further in Section 18, *Tribal Cultural Resources*, JID received a response from the Dumna Wo Wah Tribal Government during Assembly Bill 52 consultation outreach efforts identifying the project site as sensitive for tribal cultural resources. Although there is an absence of recorded prehistoric or historic-period archaeological remains within the immediate vicinity and a high level of existing disturbance to the project site, Rincon identified the project site as having a moderate potential for encountering intact subsurface archaeological deposits of Native American origin based on the information provided by the Dunma Wo Wah Tribal Government (Appendix C). In addition, unanticipated archaeological discoveries are a possibility during project-related ground disturbance given that subsurface conditions are not fully known until excavation commences. If unanticipated archaeological resources are present underground, ground-disturbing construction activities could result in the damage or destruction of these resources. Therefore, in the unlikely event of an unanticipated discovery, impacts to unknown archaeological resources would be potentially significant. Implementation of Mitigation Measures CR-1 through CR-3 would be required to reduce project impacts to a less-than-significant level.

Mitigation Measure

CR-1 Worker Environmental Awareness Program

Due to the identified level of sensitivity of the project site, an environmental professional shall conduct a Worker Environmental Awareness Program training on archaeological sensitivity for all construction personnel prior to the commencement of any ground-disturbing activities within the surveyed area. The training material should be developed by an archaeologist who meets or exceeds the Secretary of Interior's Professional Qualification Standards for archaeology (National Park Service 1983). Archaeological sensitivity training shall include a description of the types of cultural material that may be encountered, cultural sensitivity issues, regulatory issues, and the proper protocol for treatment of the materials in the event of a find.

CR-2 Archaeological Monitoring

JID shall retain an archaeologist meeting the Secretary of the Interior's Professional Qualification Standards for archaeology (National Park Service 1983) to conduct monitoring of all project-related ground disturbing activities. The monitor will have the authority to halt and redirect work should any archaeological resources be identified during monitoring. If archaeological resources are encountered during ground-disturbing activities, work within 60 feet of the find will halt, and the find will be evaluated for listing in the CRHR and National Register of Historic Places. Archaeological monitoring may be reduced to spot-checking or eliminated at the discretion of the monitor, in consultation with JID, as warranted by conditions such as encountering bedrock, sediments being excavated are fill, or negative findings during the first 60 percent of rough grading. If monitoring is reduced to spot-checking, spot-checking will occur when ground-disturbance moves to a new location within the project site and when ground disturbance will extend to depths not previously reached (unless those depths are within bedrock).

CR-3 Unanticipated Discovery of Cultural Resources

In the event that archaeological resources are encountered during ground-disturbing activities and monitoring has been reduced or halted, work in the immediate area should be halted and an archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards for archeology (National Park Service 1983) should be contacted immediately to evaluate the find. If the find is prehistoric, then a Native American representative should also be contacted to participate in the evaluation of the find. If necessary, the evaluation may require preparation of a treatment plan and archaeological testing for CRHR eligibility. If the discovery proves to be eligible for the CRHR and cannot be avoided by the proposed project, additional work, such as data recovery excavation, may be warranted to mitigate any significant impacts to historical resources.

Significance After Mitigation

Mitigation Measure CR-1 through CR-3 require the implementation of a worker environmental awareness program, archaeological and Native American monitoring, and avoidance measures for and evaluation of any unanticipated discoveries of cultural resources, which would reduce potential impacts to archeological resources to a less-than-significant level.

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED

c. Would the project disturb any human remains, including those interred outside of formal cemeteries?

No cemeteries, formal or otherwise, have been recorded within or are known to exist within the project site. Human burials outside of formal cemeteries often occur in prehistoric archaeological contexts. In addition to being potential archaeological resources, human burials have specific provisions for treatment in PRC Section 5097. Additionally, California Health and Safety Code Sections 7050.5, 7051, and 7054 contain specific provisions for the protection of human burial remains. Existing regulations address the illegality of interfering with human burial remains and protects them from disturbance, vandalism, or destruction. PRC Section 5097.98 also addresses the disposition of Native American burials, protects such remains, and establishes the NAHC as the entity to resolve any related disputes.

If human remains are found, California Health and Safety Code Section 7050.5 states no further disturbance shall occur until the County coroner has made a determination of origin and disposition pursuant to PRC Section 5097.98. In the event of an unanticipated discovery of human remains, the County coroner must be notified immediately. If the human remains are determined to be prehistoric, the coroner would notify the NAHC, which would determine and notify a most likely descendant (MLD). The MLD must complete the inspection of the site within 48 hours of being granted access to the site and may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials. Compliance with PRC Section 5097.98 and California Health and Safety Code Section 7050.5 would reduce potential impacts to unknown human remains to a less-than-significant level.

LESS THAN SIGNIFICANT IMPACT

6 Energy

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				
a. Result in a 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?	☐	☐	☐	■

As a state, California is one of the lowest per capita energy users in the United States, ranked 50th in the nation, due to its energy efficiency programs and mild climate (United States Energy Information Administration 2021). Electricity is primarily consumed by the built environment for lighting, appliances, heating and cooling systems, fireplaces, and other uses such as industrial processes in addition to being consumed by alternative fuel vehicles. The proposed project would generate electricity that would be supplied to the PG&E distribution system and would not require the usage of natural gas. Therefore, this section focuses on petroleum energy consumption. Petroleum fuels are primarily consumed by on-road and off-road equipment in addition to some industrial processes, with California being one of the top petroleum-producing states in the nation (CEC 2021a). Gasoline, which is used by light-duty cars, pickup trucks, and sport utility vehicles, is the most used transportation fuel in California with 12.6 billion gallons sold in 2020 (CEC 2021b). Diesel, which is used primarily by heavy-duty trucks, delivery vehicles, buses, trains, ships, boats and barges, farm equipment, and heavy-duty construction and military vehicles, is the second most used fuel in California with 1.7 billion gallons sold in 2020 (CEC 2021b). Table 5 summarizes the petroleum fuel consumption for Fresno County, in which the project site is located, as compared to statewide consumption.

Table 5 2020 Annual Gasoline and Diesel Consumption

Fuel Type	Fresno County (gallons)	California (gallons)	Proportion of Statewide Consumption[1]
Gasoline	347,000,000	12,572,000,000	3%
Diesel	66,000,000	1,700,000,000	4%

[1] For reference, the population of Fresno County (1,026,681 persons) is approximately three percent of the population of California (39,466,855 persons) (California Department of Finance 2021).

Source: CEC 2021b

Energy consumption is directly related to environmental quality in that the consumption of nonrenewable energy resources releases criteria air pollutant and GHG emissions into the atmosphere. The environmental impacts of air pollutant and GHG emissions associated with the project's energy consumption are discussed in detail in Section 3, *Air Quality*, and Section 8, *Greenhouse Gas Emissions*, respectively.

a. *Would the project result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?*

Construction Energy Demand

The proposed project would use diesel and gasoline-fueled construction vehicles and equipment during the construction phase. Construction equipment, worker trips, and vendor trips information provided by White Pine Renewables as well as information from the air pollutant and GHG emissions modeling were used to estimate energy consumption associated with the proposed project (see Section 3, *Air Quality*, for additional modeling details). As shown in Table 6, project construction would require approximately 3,784 gallons of gasoline and approximately 8,345 gallons of diesel fuel. These energy estimates are conservative because they assume the construction equipment operates daily during the construction phases.

Table 6 Estimated Fuel Consumption during Construction

	Fuel Consumption (gallons)	
Source	**Gasoline**	**Diesel**
Construction Equipment & Vendor Trips	0	8,345
Construction Worker Vehicle Trips	3,784	0

See Appendix D for energy calculation sheets.

Energy use during construction would be temporary in nature, and equipment used would be typical of similar-sized projects in the region. In addition, construction contractors would be required to comply with the provisions of California Code of Regulations Title 13 Sections 2449 and 2485, which prohibit diesel-fueled commercial motor vehicles and off-road diesel vehicles from idling for more than five minutes and would minimize unnecessary fuel consumption. Construction equipment would be subject to the U.S. EPA Construction Equipment Fuel Efficiency Standard, which would also minimize inefficient, wasteful, or unnecessary fuel consumption. These practices would result in efficient use of energy necessary to construct the project. Furthermore, in the interest of cost-efficiency, construction contractors also would not utilize fuel in a manner that is wasteful or unnecessary. Therefore, the project would not result in a potentially significant environmental impact due to the inefficient, wasteful, and unnecessary consumption of energy resources during construction, and no impact would occur.

Operational Energy Demand

The proposed project would be operated and monitored remotely with occasional passenger vehicle trips to the site for vegetation maintenance and/or repairs approximately ten times per year. These trips would require minimal fuel consumption, and vehicles used to complete these trips would be subject to federal and state fuel efficiency regulations, which would minimize the potential for wasteful or inefficient fuel consumption.

The project site would experience an annual average solar radiation of 5.96 hours per day, which is approximately 25 percent of the day (National Renewable Energy Laboratories 2022). Therefore, the project would achieve approximately 2,175 operational hours per year. Based on the proposed capacity of 3.5 MW (3,500 kilowatts), the proposed solar array system would thus generate approximately 7,613,900 kilowatt-hours of renewable energy per year,[2] which would offset an equivalent portion JID's current usage of nonrenewable energy resources for systemwide electricity demands. Thus, the minimal amount of nonrenewable fuel consumption required during project operation would be substantially offset by the generation of renewable electricity from the project. Therefore, project operation would not result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources. No impact would occur.

Decommissioning Energy Demand

After 35 years, the solar array and associated equipment would likely be decommissioned and removed from the site via a series of activities that would be similar in nature and duration to project construction activities. The project's decommissioning energy demand would therefore be similar to its construction energy demand, as shown in Table 6. Project decommissioning activities would be required to comply with the latest regulations in effect at the time, such as the California Code of Regulations and the U.S. EPA Construction Equipment Fuel Efficiency Standard. These practices would increase the energy efficiency of activities necessary to decommission the project. Also, as with project construction, decommissioning contractors would not utilize fuel in a manner that is wasteful or unnecessary. Therefore, project decommissioning would not result in a potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources. No impact would occur.

NO IMPACT

b. *Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?*

The project involves the construction and decommissioning of a solar array and would produce a new renewable energy source in Fresno County. The project would interconnect to Pacific Gas and Electric's (PG&E) distribution system via a new primary meter installed within the project site. The 7,613,900 kWh per year electricity generation by the proposed project would offset James Irrigation District's (JID) aggregated electricity usage for the canal and well pumps across JID-owned parcels. JID would collect credits from PG&E for solar power generated on the project site, which would be used to offset JID's electricity charges from PG&E under the Net Energy Metering Aggregation tariff. In addition, project would directly support California's RPS goal of increasing the percentage of electricity procured from renewable sources to at least 50 percent.

In terms of mobile energy usage, the National Highway Traffic and Safety Administration required manufacturers of light-duty vehicles to meet a combined estimated average fuel economy level of 34.1 miles per gallon (mpg) by the model year 2016 for passenger vehicles and light trucks. Over 30 plus years, the National Energy Conservation Policy Act regulatory program has improved the fuel economy throughout the United States vehicle fleet. In addition, it protected against inefficient, wasteful, and unnecessary use of energy. The project construction and decommission workers would comply with vehicle standards; therefore, the project would not impede the efficient use of mobile fuel.

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[2] (3.5 MW grid size) x (2,175 operational hours per year) x (1,000 kilowatt-hours/MW) = 7,613,900 kilowatt-hours produced per year

The project would support the state's energy goals by providing a new renewable energy source. The renewable source would offset James Irrigation District fuel usage and comply with fuel and energy efficiency regulations. Therefore, the project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency, and no impact would occur.

NO IMPACT

7 Geology and Soils

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				
a. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
1. 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?	☐	☐	☐	■
2. Strong seismic ground shaking?	☐	☐	■	☐
3. Seismic-related ground failure, including liquefaction?	☐	☐	■	☐
4. 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 wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	■	☐
f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	■	☐

a.1. Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving 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?

Alquist-Priolo Earthquake Fault Zones are regulatory zones established throughout California by the California Geological Survey. These zones identify areas where potential surface rupture along an active fault could prove hazardous and identify where special studies are required to characterize the fault rupture hazard potential to habitable structures (California Department of Conservation 2019). The nearest active faults are the Nunez Fault located approximately 32 miles southwest of the project site, the Ortigalita Fault located approximately 40 miles southeast of the project site, and the San Andreas Fault located approximately 44 miles southeast of the project site (California Department of Conservation 2022). The project does not involve the construction of habitable structures or placement of permanent on-site personnel because it will be operated and monitored remotely. Therefore, the project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death, involving rupture of a known earthquake fault. No impact would occur.

NO IMPACT

a.2. Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking?

Due to the project site's proximity to nearby fault zones, it may be subjected to seismic ground shaking in the event of an earthquake. Strong seismic ground shaking could potentially result in damage to the proposed solar array system. However, the project would be required to comply with the seismic design parameters for the project consistent with 2019 California Building Code standards, as outlined in the geotechnical report prepared for the project by BSK Associates, which is included as Appendix E. With incorporation of applicable seismic safety measures into project design and construction, the project would not cause potential substantial adverse effects, including the risk of loss, injury, or death, involving strong seismic ground shaking. Impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

a.3. Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction?

Liquefaction is the process whereby soil is temporarily transformed to a fluid form during intense and prolonged ground shaking. The Fresno County General Plan Final EIR states no specific countywide assessments of liquefaction hazards have been formed. However, soil types within the San Joaquin Valley are not conducive to liquefaction because they are either too coarse or too high in clay content (County of Fresno 2000b). Additionally, project design and construction would incorporate standard safety measures from the California Building Code to address potential impacts from liquefaction as well as all recommendations outlined in the geotechnical report (Appendix E). Thus, the project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death, involving seismic-related ground failure, including liquefaction. Impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

a.4. Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving landslides?

The project site is relatively flat and not located in an area designated by the Fresno County General Plan Final EIR as a high landslide risk (County of Fresno 2000b). Additionally, the project would not involve the construction of habitable structures or placement of permanent on-site personnel because it will be operated and monitored remotely. Therefore, the project would not directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury or death involving landslides. There would be no impact.

NO IMPACT

b. Would the project result in substantial soil erosion or the loss of topsoil?

The project site is located on land that primarily consists of the Temple soil series (University of California, Davis 2022). This soil's loss tolerance factor, which the maximum amount of erosion at which the quality of soil as a medium for plant growth can be maintained measured in tons per acre, is a rated a five on a one-to-five scale. Thus, the soil on the project site consists of deep soils that are the least subject to damage by erosion (United States Department of Agriculture 2022). Additionally, no grading, soil export/import, or vegetation clearing would be required during project construction, and the project would follow recommendations outlined in Section 4.6, *Excavation Stability,* of the geotechnical report, included in Appendix E. Therefore, the project would not result in substantial soil erosion or the loss of topsoil. Impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

c. Would the project 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?

The project site is relatively flat and sits on alluvium (University of California, Davis 2022). According to the Fresno County General Plan Background Report, there is no risk of large landslides in the valley area of the Fresno County due to its relatively flat topography (County of Fresno 2000c). In addition, as discussed under items (a)(iii) and (a)(iv), the site is not located on an unstable geologic unit or soil. The project would not 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. Therefore, impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

d. Would the project 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?

Expansive soils are those that greatly increase in volume when they absorb water and shrink when they dry out (County of Fresno 2000). The project site is located on soils that primarily consist of Temple clay loam with some Merced clay and Merced clay loam on the southwest and southeast borders of the project site (United States Department of Agriculture 2019). The Fresno County General Plan Background Report identifies some Temple-Merced complex clays as having high to moderately high shrink-swell potential. However, the geotechnical engineering report prepared for the project site determined that the upper ten feet of on-site soils are considered to have low expansion potential (Appendix E). Additionally, the project does not involve the construction of habitable structures or placement of permanent on-site personnel because it would be operated and monitored remotely. Furthermore, as previously stated, the project would be required to comply with all applicable building code regulations, including those which have established standards to eliminate the potential for structural damage due to expansive soils. Furthermore, the project would comply with all applicable recommendations contained in the geotechnical engineering report, including the recommendation to place one foot of non-expansive engineered fill below shallow foundations (Appendix E). Therefore, the project would not be located on expansive soil, creating substantial direct or indirect risks to life or property. Impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

e. Would the project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

The project does not include the installation of septic tanks or alternative wastewater disposal systems on the project site and would not have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems. Therefore, no impact would occur.

NO IMPACT

f. Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Rincon evaluated the paleontological sensitivity of the geologic units that underlie the project site using the results of the paleontological locality search and a review of existing information in the scientific literature concerning known fossils within those geologic units. Following the literature review, a paleontological sensitivity classification was assigned to the geologic units within the project area. The Society of Vertebrate Paleontology (SVP; 2010) has developed a system for assessing paleontological sensitivity and describes sedimentary rock units as having high, low, undetermined, or no potential for containing scientifically significant nonrenewable paleontological resources. This criterion is based on rock units within which vertebrate or significant invertebrate fossils have been determined by previous studies to be present or likely to be present. The potential for impacts to significant paleontological resources is based on the potential for ground disturbance to directly impact paleontologically sensitive geologic units.

The project site is located in the Great Central Valley geomorphic province, one of the eleven major geomorphic provinces in California (California Geological Survey 2002). The Great Central Valley is an over 400-mile-long, asymmetrical, northwestwardly-trending structural trough formed between the uplands of the Coast Ranges to the west and the Sierra Nevada to the east. The valley is filled with up to six vertical miles of sediment, including marine, alluvial, and lacustrine (lake) deposits that have been deposited almost continuously since the Jurassic period (approximately 160 million years ago). The project site lies within the *Jameson* USGS 7.5-minute topographic quadrangle and is mapped at a scale of 1:250,000 by Jennings and Strand (1958). The project site contains one geologic unit mapped at ground surface - Recent (late Holocene) basin deposits (Qb), which consist of late Holocene-aged sediments laid down during flooding events. Late Holocene sediments are too young to preserve scientifically significant paleontological resources (SVP 2010), but they may grade into older, more paleontologically sensitive sediments in the subsurface. However, the project site is located far from the edges of the basin that forms the Great Central Valley, so the late Holocene layers, which have a low paleontological sensitivity, are likely tens to hundreds of feet thick at the project site. Ground-disturbing activities associated with the project would consist of driving piles to depths of approximately eight feet, where the sediment is expected to be late Holocene in age and thus low in paleontological sensitivity. Therefore, the project would not directly or indirectly destroy a unique paleontological resource or site or unique geologic features, and impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

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8 Greenhouse Gas Emissions

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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?	☐	☐	☐	■

Overview of Climate Change and Greenhouse Gases

Climate change is the observed increase in the average temperature of the Earth's atmosphere and oceans along with other substantial changes in climate (such as wind patterns, precipitation, and storms) over an extended period of time. Climate change is the result of numerous, cumulative sources of greenhouse gas (GHG) emissions contributing to the "greenhouse effect," a natural occurrence which takes place in Earth's atmosphere and helps regulate the temperature of the planet. The majority of radiation from the sun hits Earth's surface and warms it. The surface, in turn, radiates heat back towards the atmosphere in the form of infrared radiation. Gases and clouds in the atmosphere trap and prevent some of this heat from escaping into space and re-radiate it in all directions.

GHG emissions occur both naturally and as a result of human activities, such as fossil fuel burning, decomposition of landfill wastes, raising livestock, deforestation, and some agricultural practices. GHGs produced by human activities include carbon dioxide (CO_2), methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Different types of GHGs have varying global warming potentials (GWP). The GWP of a GHG is the potential of a gas or aerosol to trap heat in the atmosphere over a specified timescale (generally, 100 years). Because GHGs absorb different amounts of heat, a common reference gas (CO_2) is used to relate the amount of heat absorbed to the amount of the gas emitted, referred to as "carbon dioxide equivalent" (CO_2e), which is the amount of GHG emitted multiplied by its GWP. Carbon dioxide has a 100-year GWP of one. By contrast, methane has a GWP of 30, meaning its global warming effect is 30 times greater than CO_2 on a molecule per molecule basis (Intergovernmental Panel on Climate Change [IPCC] 2021).[3]

The United Nations IPCC expressed that the rise and continued growth of atmospheric CO_2 concentrations is unequivocally due to human activities in the IPCC's Sixth Assessment Report (2021). Human influence has warmed the atmosphere, ocean, and land, which has led the climate to

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[3] The Intergovernmental Panel on Climate Change's (2021) *Sixth Assessment Report* determined that methane has a GWP of 30. However, the 2017 Climate Change Scoping Plan published by the California Air Resources Board uses a GWP of 25 for methane, consistent with the Intergovernmental Panel on Climate Change's (2007) *Fourth Assessment Report*. Therefore, this analysis utilizes a GWP of 25.

warm at an unprecedented rate in the last 2,000 years. It is estimated that between the period of 1850 through 2019, a total of 2,390 gigatonnes of anthropogenic CO_2 was emitted. It is likely that anthropogenic activities have increased the global surface temperature by approximately 1.07 degrees Celsius between the years 2010 through 2019 (IPCC 2021). Furthermore, since the late 1700s, estimated concentrations of CO_2, methane, and nitrous oxide in the atmosphere have increased by over 43 percent, 156 percent, and 17 percent, respectively, primarily due to human activity (U.S. EPA 2021b). Emissions resulting from human activities are thereby contributing to an average increase in Earth's temperature. Potential climate change impacts in California may include loss of snowpack, sea level rise, more extreme heat days per year, more high ozone days, more large forest fires, and more drought years (State of California 2018).

Regulatory Framework

California Global Warming Solutions Act of 2006

In response to climate change, California implemented Assembly Bill (AB) 32, the "California Global Warming Solutions Act of 2006." AB 32 required the reduction of statewide GHG emissions to 1990 emissions levels (essentially a 15 percent reduction below 2005 emission levels) by 2020 and the adoption of rules and regulations to achieve the maximum technologically feasible and cost-effective GHG emissions reductions. On September 8, 2016, the Governor signed Senate Bill 32 into law, extending AB 32 by requiring the State to further reduce GHG emissions to 40 percent below 1990 levels by 2030 (the other provisions of AB 32 remain unchanged). On December 14, 2017, the California Air Resources Board (CARB) adopted the 2017 Scoping Plan, which provides a framework for achieving the 2030 target. The 2017 Scoping Plan relies on the continuation and expansion of existing policies and regulations, such as the Cap-and-Trade Program and the Low Carbon Fuel Standard, and implementation of recently adopted policies and legislation, such as SB 1383 (aimed at reducing short-lived climate pollutants including methane, hydrofluorocarbon gases, and anthropogenic black carbon) and SB 100 (discussed further below). The 2017 Scoping Plan also puts an increased emphasis on innovation, adoption of existing technology, and strategic investment to support its strategies. As with the 2013 Scoping Plan Update, the 2017 Scoping Plan does not provide project-level thresholds for land use development. Instead, it recommends local governments adopt policies and locally appropriate quantitative thresholds consistent with a statewide per capita goal of six metric tons (MT) of CO_2e by 2030 and two MT of CO_2e by 2050 (CARB 2017).

Senate Bill 100

Other relevant state laws and regulations include SB 100, which was adopted on September 10, 2018 and supports the reduction of GHG emissions from the electricity sector by accelerating the state's Renewables Portfolio Standard Program. SB 100 requires electricity providers to increase procurement from eligible renewable energy resources to 33 percent of total retail sales by 2020, 60 percent by 2030, and 100 percent by 2045.

San Joaquin Valley Air Pollution Control District Climate Change Action Plan

In August 2008, the SJVAPCD Governing Board adopted the Climate Change Action Plan (CCAP) (SJVAPCD 2008a). The CCAP directed the SJVAPCD Air Pollution Control Officer to develop guidance to assist lead agencies, project proponents, permit applicants, and interested parties in assessing and reducing the impacts of project-specific GHG emissions on global climate change. In 2009, the SJVAPCD adopted the *Guidance for Valley Land-use Agencies in Addressing GHG Emission Impacts* *for New Projects Under CEQA* and the *District Policy – Addressing GHG Emission Impacts for Stationary Source Projects Under CEQA When Serving as the Lead Agency*. The guidance and policy rely on the use of performance-based standards, otherwise known as Best Performance Standards, to assess significance of project-specific GHG emissions on global climate change during the CEQA review process (SJVAPCD 2009a and 2009b).

The use of Best Performance Standards is a method for streamlining the process of determining the significance of a project's GHG emissions under CEQA and is not a required emission reduction measure. Projects that implement Best Performance Standards are determined to have a less-than-significant GHG emissions impact. Otherwise, the demonstration of a 29-percent reduction in GHG emissions from business-as-usual is required to determine that a project would have a less-than-significant impact and would be consistent with the 2020 GHG emissions reduction targets under AB 32. However, the guidance does not limit a lead agency's authority in establishing its own process and guidance for determining significance of project-related impacts on global climate change (SJVAPCD 2008b).

SJVAPCD's adopted Best Performance Standards are specifically directed at reducing GHG emissions from stationary sources that require a permit from the SJVAPCD. Therefore, the adopted Best Performance Standards would not generally be applicable to the project because the project would not be a stationary source of emissions.

Methodology

GHG emissions associated with project construction and operation were estimated using CalEEMod, version 2020.4.0, with the assumptions described under Section 3, *Air Quality*. In addition, construction emissions were amortized over the project's estimated 35-year lifetime pursuant to guidance from the Association of Environmental Professionals (2016).

Operation of the project would generate renewable energy over its anticipated 35-year lifetime. This energy would offset GHG emissions that are currently produced by JID's systemwide electricity consumption from PG&E, which is supplied by a mix of renewable and nonrenewable power generation resources. The annual energy generation and associated offset GHG emissions of the proposed solar array system were estimated based on solar radiation at the project site and annual operational time as well as PG&E's current power generation portfolio.[4] See Appendix A for the project's construction-related GHG emissions modeling and calculations.

Significance Thresholds

Most individual projects do not generate sufficient GHG emissions to directly influence climate change. However, physical changes caused by a project can contribute incrementally to cumulative effects that are significant, even if individual changes resulting from a project are limited. The issue of climate change typically involves an analysis of whether a project's contribution towards an impact would be cumulatively considerable. "Cumulatively considerable" means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, other current projects, and probable future projects (CEQA Guidelines, Section 15064[h][1]).

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[4] PV cell capacity is rated in terms of megawatts or kilowatts and indicates the amount of instantaneous power produced when operating at peak sun exposure. The total amount of electricity produced is measured in watt-hours and is dependent on operational time. The operational time of a solar panel is defined by the amount of time that the photovoltaic cells are actively converting solar energy into power, which depends on solar radiation. Solar radiation is the measure of energy emitted from the sun and varies daily depending on the time of day, season, local landscape, and geography.

According to CEQA Guidelines Section 15183.5, projects can tier off of a qualified GHG reduction plan, which allows for project-level evaluation of GHG emissions through the comparison of the project's consistency with the GHG reduction policies included in a qualified GHG reduction plan. However, JID has not developed a qualified GHG reduction plan that can used for project-level evaluation. Another approach is to use a quantitative threshold recommended by the local air district. However, the SJVAPCD has not adopted a numeric threshold to address project-level GHG emissions, and SJVAPCD's Best Performance Standards approach does not include measures to address the 2030 target established by SB 32. Therefore, for the purposes of this analysis, the project's GHG emissions would be less than significant if the project would contribute to a net decrease in GHG emissions.

a. *Would the project generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment?*

The project would generate GHG emissions directly and indirectly during construction, operation, and decommissioning of the project. Table 7 presents total estimated emissions from construction and decommissioning activities. As shown therein, estimated GHG emissions would be 79 MT CO_2e and during project construction and 56 MT CO_2e during project decommissioning. Total GHG emissions generated from project activities would be approximately 135 MT CO_2e, or approximately 4 MT CO_2e per year when amortized over the 35-year project lifetime. Operation of the project is not expected to be a substantial source of GHG emissions because the project would be unmanned operated remotely, and minimal vehicle trips would be needed for maintenance and repair purposes. Therefore, operational GHG emissions would be *de minimis* and are excluded from this analysis.

Table 7 Estimated Project-Related GHG Emissions

	Project Emissions (MT of CO_2e)
Construction Emissions	79
Decommissioning Emissions	56
Total Emissions	**135**
Amortized over 35 Years	4 per year
Annual Displaced GHG Emissions	(623)
Net Annual GHG Emissions	**(618)**
Total Displaced GHG Emissions[1]	(21,806)
Net Total GHG Emissions	**(21,630)**

[1] Assumes a 35-year project lifetime

MT = metric ton; CO_2e = carbon dioxide equivalent

See Appendix A for calculations

Although the project would emit approximately 4 MT CO_2e per year when the construction and decommissioning emissions are amortized over the project's 35-year lifetime, the project would offset these emissions by supplying renewable energy to the PG&E grid, thereby replacing some of energy supplied by PG&E from nonrenewable resources with clean energy. Based on the project's anticipated annual electricity generation and the GHG emissions generated using PG&E's 2020 power mix, the project has the potential to result in a net reduction of 623 MT of CO_2e per year

(Appendix A). Therefore, the proposed project would result in a net decrease of approximately 618 MT of CO_2e per year, as shown in Table 7. Furthermore, the project would result in an overall lifetime GHG emissions reduction of approximately 21,630 MT of CO_2e. Therefore, the project would result in a beneficial impact to regional, statewide, and global GHG emissions, and no adverse environmental impact would occur.

NO IMPACT

b. Would the project conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

The primary plans, policies, and regulations adopted for the purposes of reducing GHG emissions applicable to the proposed project consist of SB 100 and the 2017 Scoping Plan. SB 100 accelerated the state's Renewables Portfolio Standard Program by increasing California's procurement of electricity from renewable sources to 33 percent of total retail sales by 2020, 60 percent by 2030, and 100 percent by 2045. The project would generate approximately 7.6 gigawatt-hours of electricity each year, or approximately 266 gigawatt-hours over the project's lifetime.[5] This additional solar-generated energy would be added to the power grid and would offset electricity generated by fossil-fuel sources, thereby directly furthering the goals of SB 100. In addition, the project would be consistent with the following goals outlined in the 2017 Scoping Plan Update for the electricity sector:

- Per SB 350, increase the Renewable Portfolio Standard to 50 percent of retail sales by 2030 and ensure grid reliability.
- Per SB 350, efforts to evaluate, develop, and deploy regionalization of the grid and integration of renewables via regionalization of the California Independent System Operator shall continue while maintaining the accounting accuracy and rigor of California's GHG policies.

Furthermore, as discussed under item (a), the proposed project would offset the use of fossil fuel energy sources with renewable solar energy generation, which would result in a net reduction in GHG emissions of approximately 618 MT of CO_2e per year and 21,630 MT of CO_2e over the project's lifetime. This net reduction would further the State's overall goal of the 2017 Scoping Plan to reduce GHG emissions by 40 percent below 1990 levels by 2030. Therefore, the project would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions. The project's impact related GHG emissions would be beneficial, and no adverse environmental impacts would occur.

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[5] ([(3.5 MW grid size) x (2,175 operational hours per year)] / (1,000 MW/GW)) x 35 years = 266 GWh over the project lifetime (See Section 6, *Energy*, for the calculation of the project's estimated operational hours.)

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9 Hazards and Hazardous Materials

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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 0.25 mile of an existing or proposed school?	☐	☐	☐	■
d. Be located on a site that is included on a list of hazardous material 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 in 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?	☐	☐	■	☐

a. *Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?*

b. *Would the project 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?*

Construction of the proposed project would temporarily increase the transport and use of hazardous materials during the use of construction vehicles and equipment. Construction activities could cause an upset or accident condition. If such conditions result in a release of hazardous materials into the environment, potential impacts could occur. Limited quantities of miscellaneous hazardous substances, such as diesel fuel, oil, solvents, and other similar materials, would be brought onto the project site, used, and stored during the construction period. These materials would be disposed off-site in accordance with applicable laws pertaining to the handling and disposal of hazardous waste. The transport, use, and storage of hazardous materials during construction would be conducted in accordance with applicable federal and State laws, such as the Hazardous Materials Transportation Act, California Hazardous Material Management Act, and California Code of Regulations, Title 22. Once the project is constructed, the project would be unmanned and remotely operated. No hazardous materials would be used or stored on site. While the solar PV panels may contain small quantities of hazardous materials, they would be completely encapsulated within the panels and would not be removed from the panels or exposed to air or water on site during operation. Therefore, the project would not create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials or 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. Impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

c. *Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school?*

There are no existing or proposed schools within 0.25 mile of the project site. In addition, the project would not involve the handling of hazardous materials and would not generate hazardous emissions. Therefore, no impact would occur.

NO IMPACT

d. *Would the project be located on a site that is included on a list of hazardous material 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?*

The following databases were checked for known hazardous materials contamination at the project site:

- State Water Resources Control Board (SWRCB) GeoTracker database (SWRCB 2022a)
- U.S. EPA Envirofacts database (U.S. EPA 2022a)
- U.S. EPA Comprehensive Environmental Response, Compensation, and Liability Information System (Superfund site) database (U.S. EPA 2022b)
- California Department of Toxic Substances Control EnviroStor database (California Department of Toxic Substances Control 2022)

- SWRCB Disposal Sites Identified with Waste Constituents Above Hazardous Waste Levels Outside the Waste Management Unit (SWRCB 2022b)
- List of "active" Cease and Desist Orders and Clean-Up and Abatement Orders from State Water Board (California Environmental Protection Agency 2022a)
- California Environmental Protection Agency's List of Hazardous Waste Facilities Subject to Corrective Action Pursuant to Section 25187.5 of the Health and Safety Code, identified by the California Department of Toxic Substances Control (California Environmental Protection Agency 2022b)

Based on the database review, the project site and properties in its immediate vicinity are not included on the list of hazardous material sites compiled pursuant to Government Code Section 65962.5. The nearest listed sites are located in the City of San Joaquin, approximately 1.8 miles southwest of the project site (SWRCB 2022b). Therefore, no impact would occur.

NO IMPACT

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?

The nearest public airport is the William Robert Johnston Municipal Airport, located approximately 13.5 miles northwest of the project site. The project site is not located within an airport land use plan or within two miles of a public airport. The project does not include the construction of housing and would not require on-site personnel during operation. Therefore, the project would not result in a safety hazard or excessive noise for people residing or working in the project area, and no impact would occur.

NO IMPACT

f. Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

The proposed project is within the jurisdiction of the Master Emergency Services Plan under the County of Fresno (Fresno County Office of Emergency Services 2017). The proposed project would not involve the development of structures or infrastructure that would potentially impair implementation of or physically interfere with the Master Emergency Services Plan. Access to the site would be provided by South Placer Avenue, and the minimal, infrequent vehicle trips associated with vegetation clearing and repair activities during project operation would not disturb traffic patterns along South Placer Avenue or West Adams Avenue in such a manner that could affect emergency response or evacuations as a result of this project. Therefore, the project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan, and no impact would occur.

NO IMPACT

g. *Would the project expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?*

The project site is located in a Local Responsibility Area and is not within a Very High Fire Hazard Severity Zone (California Department of Forestry and Fire Protection 2022). In addition, the project site is surrounded by irrigated agricultural lands. The project consists of solar PV panels and associated equipment and would not place users of the project or surrounding occupants in a high fire hazard severity zone. The project would include installation of a solar PV array with a 20-foot-wide compacted access path installed along the perimeter of the project site and an approximately 50-foot-wide compacted access path that would run in an east-west direction between the two main sections of solar PV panels to allow for access to the facility. After construction, the facility would be operated and monitored remotely, and staff would only be present on-site for maintenance on an as-needed basis. Vegetation within the project site would be maintained approximately 10 times per year to minimize wildfire risk. These maintenance events would not require the use of heavy-duty equipment that may result in spillage of diesel or other flammable material. Therefore, the project would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires, and impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

10 Hydrology and Water Quality

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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 off-site;	☐	☐	■	☐
(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?	☐	☐	■	☐

a. *Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?*

Construction

As stormwater flows over a construction site, it can pick up sediment, debris, and chemicals and transport them to receiving water bodies. Although no grading would be required during project construction, contaminants released during construction could be transported to the existing uncovered irrigation canal that runs adjacent to the project site's southern boundary. However, on-site construction activities would be required to comply with the requirements of the statewide National Pollutant Discharge Elimination System (NPDES) Construction General Permit (Order No. 2009-0009-DWQ) because project construction would disturb more than one acre of land. Compliance with the Construction General Permit would require the creation and implementation of a Storm Water Pollution Prevention Plan (SWPPP) that would include best management practices to prevent polluted stormwater runoff during construction. With regulatory compliance, project construction would not the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality, and impacts would be less than significant.

Operation

The project site is located in a floodplain designated as Zone A (Federal Emergency Management Agency [FEMA] 2009). Zone A is characterized as a special flood hazard area subject to inundation by the one percent annual chance flood. However, all electrical equipment would be located above the base flood elevation line. Thus, the project would not release pollutants into discharged stormwater or degrade surface or groundwater quality in the event of flooding. The project would be required to obtain a Floodplain Development permit prior to ground disturbance in order to operate within the Special Flood Hazard Area (FEMA 2020). With regulatory compliance, project operation would not the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality, and impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

b. *Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?*

e. *Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?*

The project site overlies the Tulare Lake Basin (USGS 2022a) and is currently undeveloped. The project site also falls within the jurisdiction of the Water Quality Control Plan for the Tulare Lake Basin Third Edition (Central Valley Regional Water Quality Control Board 2018). The project would minimally increase impervious surface areas on the site through the introduction of PV panels and associated electrical equipment. However, the land below the solar PV panels would remain undeveloped and the proposed access paths would be unpaved. Precipitation falling onto the solar PV panels would run off to the pervious ground below where it would follow existing drainage patterns and infiltrate into the groundwater basin. Additionally, the project would require minimal water usage during construction and operation and therefore would not substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project would impede sustainable groundwater management of the basin. The water quality objectives in the Water Quality Control Plan for the Tulare Lake Basin are enforced through state and Regional Water Quality Control Board policies with which the project would be required to comply, such as the implementation of a SWPPP with best management practices that would limit indirect discharges to groundwater. Consequently, the project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. Therefore, impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

c.(i) Would the project 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 result in substantial erosion or siltation on- or off-site?

c.(ii) Would the project 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 substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

c.(iii) Would the project 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 that would 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?

c.(iv) Would the project 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 impede or redirect flood flows?

As discussed under item (b) the project would result in a minimal alteration of drainage patterns at the project site by introducing solar PV panels and associated electrical equipment. The project would leave a majority of the site as pervious surfaces because impervious surfaces would only be added at the footings for PV panels, fencing, and inverter and transformer pads. Precipitation that falls on the solar PV panels would run off to the pervious ground below where it would follow existing drainage patterns. In addition, the project would not interfere with flooding patterns because the bottom of the PV modules, inverters, and all electrical equipment would be located above the base line flood elevation. As a result, the project would not alter existing drainage patterns of the project site in a manner which would result in substantial erosion, increase flooding on or off site, exceed the capacity of existing or planned stormwater drainage systems, provide substantial additional sources of pollutant runoff, or impede or redirect flood flows. Therefore, impacts related to existing drainage patterns would be less than significant.

LESS THAN SIGNIFICANT IMPACT

d. In flood hazard, tsunami, or seiche zones, would the project risk release of pollutants due to project inundation?

The project is not located near a coast or a large inland body of water and is therefore not subject to potential effects from tsunamis and seiches. The project site is located in a floodplain designated as Zone A (FEMA 2009). Zone A is characterized as a special flood hazard area subject to inundation by the one percent annual chance flood. However, the bottom of the PV modules, inverters, and all electrical equipment would be elevated above the base flood elevation line. Therefore, the project would not have the potential to risk release of pollutants due to project inundation, and impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

11 Land Use and Planning

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				
a. Physically divide an established community?	☐	☐	☐	■
b. Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	■

a. Would the project physically divide an established community?

The project involves the installation of a solar array system on an undeveloped parcel that was previously used for agricultural activities in a rural area of unincorporated Fresno County. Site access would be provided via South Placer Avenue, and there are no proposed design features, such as roads or walls, that would physically divide an established community. Therefore, no impact would occur.

NO IMPACT

b. Would the project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

The project site consists of previously disturbed agricultural land on an undeveloped parcel. The project site is designated and zoned by Fresno County as Exclusive Agricultural. JID has sole discretionary authority over the proposed project. As discussed throughout this IS-MND, the proposed project would not result in significant environmental impacts, including those that could result from conflicts with land use plans, policies , or regulations such as the Fresno County General Plan, Fresno County Ordinance Code, Fresno Council of Governments Regional Transportation Plan and Sustainable Communities Strategy, and Fresno County Congestion Management Plan (see Section1, *Aesthetics*; Section 4, *Biological Resources*; Section 13, *Noise*; and Section 17, *Transportation*, for specific analyses). Therefore, the project would not cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect, and no impact would occur.

NO IMPACT

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12 Mineral Resources

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				
a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	■
b. Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	■

a. Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

b. Would the project result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?

There are no known mineral resources or resource recovery sites located on the project site (County of Fresno 2021a). In addition, the project site is not located in a mineral resource zone as defined by the California Geological Survey (California Department of Conservation 2015). Furthermore, the project site is not located on, adjacent to, or near mineral resources or recovery sites according to the USGS Mineral Resources Data System (USGS 2022b). The project would not entail construction of structures or facilities for the purposes of extraction or exploration of mineral resources. Therefore, the project would not result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state or result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan. No impact would occur with respect to mineral resources.

NO IMPACT

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13 Noise

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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?	☐	☐	☐	■

Overview of Noise and Vibration

Noise

Sound is a vibratory disturbance created by a moving or vibrating source, which is capable of being detected by the hearing organs. Noise is defined as sound that is loud, unpleasant, unexpected, or undesired and may therefore be classified as a more specific group of sounds. The effects of noise on people can include general annoyance, interference with speech communication, sleep disturbance, and, in the extreme, hearing impairment (California Department of Transportation [Caltrans] 2013). Noise levels are commonly measured in decibels (dB) using the A-weighted sound pressure level (dBA). The A-weighting scale is an adjustment to the actual sound pressure levels so that they are consistent with the human hearing response. Decibels are measured on a logarithmic scale that quantifies sound intensity in a manner similar to the Richter scale used to measure earthquake magnitudes. A doubling of the energy of a noise source, such as doubling of traffic volume, would increase the noise level by 3 dB; dividing the energy in half would result in a 3 dB decrease (Caltrans 2013).

Sound changes in both level and frequency spectrum as it travels from the source to the receiver. The most obvious change is the decrease in the noise level as the distance from the source increases. The manner by which noise reduces with distance depends on factors such as the type of sources (e.g., point or line), the path the sound will travel, site conditions, and obstructions. Noise levels from a point source (e.g., construction, industrial machinery, air conditioning units) typically attenuate, or drop off, at a rate of 6 dBA per doubling of distance. Noise from a line source (e.g., roadway, pipeline, railroad) typically attenuates at about 3 dBA per doubling of distance (Caltrans 2013). Noise levels may also be reduced by intervening structures; the amount of attenuation provided by this "shielding" depends on the size of the object and the frequencies of the noise levels.

The impact of noise is not a function of loudness alone. The time of day when noise occurs and the duration of the noise are also important factors of project noise impact. Most noise that lasts for more than a few seconds is variable in its intensity. Consequently, a variety of noise descriptors have been developed. The noise descriptor used in this report is the equivalent noise level (L_{eq}). L_{eq} is one of the most frequently used noise metrics; it considers both duration and sound power level. The L_{eq} is defined as the single steady-state A-weighted sound level equal to the average sound energy over a time period. When no time period is specified, a 1-hour period is assumed. The L_{max} is the highest noise level within the sampling period, and the L_{min} is the lowest noise level within the measuring period. Normal conversational levels are in the 60 to 65-dBA L_{eq} range; ambient noise levels greater than 65 dBA L_{eq} can interrupt conversations (Federal Transit Administration [FTA] 2018).

Groundborne Vibration

Groundborne vibration of concern in environmental analysis consists of the oscillatory waves that move from a source through the ground to adjacent buildings or structures and vibration energy may propagate through the buildings or structures. Vibration may be felt, may manifest as an audible low-frequency rumbling noise (referred to as groundborne noise), and may cause windows, items on shelves, and pictures on walls to rattle. Although groundborne vibration is sometimes noticeable in outdoor environments, it is almost never annoying to people who are outdoors. The primary concern from vibration is that it can be intrusive and annoying to building occupants at vibration-sensitive land uses and may cause structural damage.

Typically, ground-borne vibration generated by manmade activities attenuates rapidly as distance from the source of the vibration increases. Vibration amplitudes are usually expressed in peak particle velocity (PPV) or root mean squared (RMS) vibration velocity. The PPV and RMS velocity are normally described in inches per second (in/sec). PPV is defined as the maximum instantaneous positive or negative peak of a vibration signal. PPV is often used as it corresponds to the stresses that are experienced by buildings (Caltrans 2020).

High levels of groundborne vibration may cause damage to nearby building or structures; at lower levels, groundborne vibration may cause minor cosmetic (i.e. non-structural damage) such as cracks. These vibration levels are nearly exclusively associated with high impact activities such as blasting, pile-driving, vibratory compaction, demolition, drilling, or excavation. The American Association of State Highway and Transportation Officials (AASHTO) has determined vibration levels with potential to damage nearby buildings and structures; these levels are identified in Table 8.

Table 8 AASHTO Maximum Vibration Levels for Preventing Damage

Type of Situation	Limiting Velocity (in/sec)
Historic sites or other critical locations	0.1
Residential buildings, plastered walls	0.2–0.3
Residential buildings in good repair with gypsum board walls	0.4–0.5
Engineered structures, without plaster	1.0–1.5

in/sec = inches per second

Source: Caltrans 2020

Numerous studies have been conducted to characterize the human response to vibration. The vibration annoyance potential criteria recommended for use by Caltrans, which are based on the general human response to different levels of groundborne vibration velocity levels, are described in Table 9.

Table 9 Vibration Annoyance Potential Criteria

	Vibration Level (in/sec PPV)	
Human Response	Transient Sources	Continuous/Frequent Intermittent Sources[1]
Severe	2.0	0.4
Strongly perceptible	0.9	0.10
Distinctly perceptible	0.25	0.04
Barely perceptible	0.04	0.01

[1] Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.

in/sec = inches per second; PPV = peak particle velocity

Source: Caltrans 2020

Project Noise Setting

Noise exposure goals for various types of land uses reflect the varying noise sensitivities associated with those uses. The Noise Element of the Fresno County General Plan (2000) identifies residential, school, library, church, hospital, and nursing home uses as noise-sensitive land uses within the County. Other sensitive receivers include transient lodging, motel, and hotel uses.

Vibration-sensitive receivers, which are similar to noise-sensitive receivers, include residences and institutional uses, such as schools, churches, and hospitals. However, vibration-sensitive receivers also include buildings where vibrations may interfere with vibration-sensitive equipment that is affected by vibration levels that may be well below those associated with human annoyance (e.g., recording studies or medical facilities with sensitive equipment).

According to the Fresno County General Plan Background Report recorded average noise levels ranging from the low 40s dBA to the low-to-mid 50s dBA within the western area of the county (County of Fresno 2000c). The nearest sensitive receivers to the project site are residential uses. The closest residential property line is located approximately 485 feet south of the southern project boundary.

Regulatory Setting

Fresno County General Plan Noise Element

The Fresno County General Plan's Health and Safety Element identifies goals, policies, and implementation programs that guide development in unincorporated Fresno County with regard to noise. The policies in the Health and Safety Element set noise standards and seek to protect noise-sensitive land uses from excessive noise either through noise-reducing project design features or by allowing noise-sensitive land uses to be located only in areas with ambient noise levels below specified thresholds (County of Fresno 2000a). The following goals and policies are applicable to the projects:

Goal HS-G: To protect residential and other noise-sensitive uses from exposure to harmful or annoying noise levels; to identify maximum acceptable noise levels compatible with various land use designations; and to develop a policy framework necessary to achieve and maintain a healthful noise environment.

Policy HS-G.1: The County shall require that all proposed development incorporate design elements necessary to minimize adverse noise impacts on surrounding land uses.

Policy HS-G.4: So that noise mitigation may be considered in the design of new projects, the County shall require an acoustical analysis as part of the environmental review process where:

b. Proposed projects are likely to produce noise levels exceeding the levels shown in the County's Noise Control Ordinance at existing or planned noise sensitive uses.

Policy HS-G.5: Where noise mitigation measures are required to achieve acceptable levels according to land use compatibility or the Noise Control Ordinance, the County shall place emphasis of such measures upon site planning and project design. These measures may include, but are not limited to, building orientation, setbacks, earthen berms, and building construction practices. The County shall consider the use of noise barriers, such as sound walls, as a means of achieving the noise standards after other design-related noise mitigation measures have been evaluated or integrated into the projects.

Policy HS-G.6: The County shall regulate construction-related noise to reduce impacts on adjacent uses in accordance with the County's Noise Control Ordinance.

Fresno County Ordinance Code

Section 8.40.040 (Exterior Noise Standards) in Chapter 8.40 (Noise Control) of the Fresno County Ordinance Code prohibits the creation of noise that causes exterior noise levels at single- or multiple-family residences, schools, hospitals, churches, or public libraries situated in either the incorporated or unincorporated area to exceed the noise level standards as set forth below in Table 10.

Table 10 Fresno County Exterior Noise Standards

Category	Cumulative Number of Minutes in any One-Hour Time Period	Noise Level Standard (dBA L_{eq}) Daytime 7:00 a.m.to 10:00 p.m.	Noise Level Standard (dBA L_{eq}) Nighttime 10:00 p.m. to 7:00 a.m.
1	30	50	45
2	15	55	50
3	5	60	55
4	1	65	60
5	0	70	65

Notes: In the event the measured ambient noise level exceeds the applicable noise level standard in any category above, the applicable standard shall be adjusted so as to equal the ambient noise level. Each of the noise level standards specified above shall be reduced by 5 dBA for simple tone noises, noises consisting primarily of speech or music, or for recurring impulsive noises. If the intruding noise source is continuous and cannot reasonably be discontinued or stopped for a time period whereby the ambient noise level can be measured, the noise level measured while the source is in operation shall be compared directly to the noise level standards.

Source: Fresno County Code of Ordinances Section 8.40.040

Under Section 8.40.060 of the Fresno County Noise Ordinance, noise sources associated with construction are exempt from compliance with the noise standards, provided such activities do not take place before 6:00 a.m. or after 9:00 p.m. on any day except Saturday or Sunday, or before 7:00 a.m. or after 5:00 p.m. on Saturday or Sunday.

Notwithstanding the provisions of Section 8.40.040, noise sources associated with the operation of electrical substations shall not exceed 50 dBA when measured within 50 feet of the affected residence, school, hospital, church, or public library.

Noise Level Increases over Ambient Noise Levels

The operational and construction noise limits used in this analysis are set at reasonable levels at which a substantial noise level increase as compared to ambient noise levels would occur. Operational noise limits are lower than construction noise limits to account for the fact that permanent noise level increases associated with continuous operational noise sources typically result in adverse community reaction at lower magnitudes of increase than temporary noise level increases associated with construction activities that occur during daytime hours and do not affect sleep. Furthermore, these noise limits are tailored to specific land uses; for example, the noise limits for residential land uses are lower than those for commercial land uses. The difference in noise limits for each land use indicates that the noise limits inherently account for typical ambient noise levels associated with each land use. Therefore, an increase in ambient noise levels that exceeds these absolute limits would also be considered a substantial increase above ambient noise levels. As such, a separate evaluation of the magnitude of noise level increases over ambient noise levels would not provide additional analytical information regarding noise impacts and, therefore, is not included in this analysis.

a. *Would the project result in 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?*

Construction and Decommissioning Noise

Construction and decommissioning activity would generate temporary noise in the project site vicinity, exposing nearby sensitive receivers to increased noise levels. Noise would be generated by heavy-duty diesel construction equipment used for solar array installation and decommissioning. Each phase of construction has a specific equipment mix and associated noise characteristics, depending on the equipment used during that phase. Construction noise was estimated using reference noise levels and equipment use factors from the FHWA Roadway Construction Noise Model (RCNM; 2006).

Noise impacts from construction equipment are typically assessed from the center of the equipment activity area over the time period of a construction day. Due to the size of the project site and the use of vibratory pile driving equipment, modeling conservatively assumes simultaneous operation of a vibratory pile driver, a front-end loader, and a trencher operating simultaneously during pile installation at the nearest proposed pile location. Maximum hourly noise levels were estimated to be 88 dBA L_{eq} at a distance of 100 feet (RCNM calculations are included in Appendix F).

Pursuant to Section 8.40.060 of the Fresno County Ordinance Code, noise sources associated with construction are exempt from noise standards, provided such activities do not take place before 6:00 a.m. or after 9:00 p.m. on any day except Saturday or Sunday, or before 7:00 a.m. or after 5:00 p.m. on Saturday or Sunday. However, for purposes of analyzing impacts from this project, the FTA *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018) criteria were used. The FTA provides reasonable criteria for assessing construction noise impacts based on the potential for adverse community reaction. For residential uses, the daytime noise threshold is 80 dBA L_{eq} (FTA 2018).

The closest sensitive receiver to project construction would be a residence located approximately 600 feet south of the nearest pile to be driven on the project site. Construction noise levels would be approximately 72 dBA L_{eq} at this residence, which would not exceed the FTA daytime construction noise threshold of 80 dBA L_{eq}. After 35 years, the solar array and associated equipment would likely be decommissioned and removed from the site via a series of activities that would be similar in nature and duration to project construction activities. Decommissioning activities would generate similar, if not lower, noise levels as project construction activities because a vibratory pile driver would not be operating. Therefore, decommissioning noise levels would be approximately 10 dBA lower than construction noise levels and would also not exceed the daytime construction noise threshold of 80 dBA L_{eq}. Therefore, construction and decommissioning noise impacts would be less than significant.

Operational Noise

Stationary noise sources during project operation would include PV solar panel tracking motors and associated electrical equipment, such as transformers and inverters. Electrical equipment produces a discrete low-frequency humming noise. The noise from transformers is specifically produced by alternating current flux in the core, which causes it to vibrate. Operational noise would result in a significant impact if it would exceed County of Fresno's daytime exterior noise level standard for stationary noise sources of 50 dBA L_{eq} at the boundary of areas planned and zoned for residential or other noise-sensitive land uses (see Table 10). (Because the operation of the project is dependent on sunlight, substantial operational noise would not be generated during nighttime hours. Therefore, the nighttime exterior noise level standards are not utilized in this analysis.)

PV solar panel tracking systems use motors to make brief, incremental adjustments to track the arc of the sun to maximize the solar effect. While these motors may generate noise of up to 44 dBA at 50 feet (Ldn Consulting 2015), these motors would operate briefly throughout an hour (e.g., several minutes per hour) as the sun moves west across the sky, and then would reset at night to face an easterly direction. Given that these motors would operate only for several minutes per hour and be dispersed throughout the project site, noise associated with this project component would be negligible at the nearest noise-sensitive receivers.

Step-up transformers would be co-located with the inverters centrally on the project site between the two main sections of solar panels. The project would install two CPS SCH275KTL-DO/US-800 string inverters and two transformer pads. The CPS SCH275KTL-DO/US-800 string inverters would generate a noise level of 80 dBA at 3 feet (see Appendix F for equipment specifications). Noise from the proposed step-up transformers was modeled using the noise reference level of 80 dBA L_{eq} at 6 feet, consistent with manufacturer specifications for an ABB step-up transformer under the conservative "all cooling fans on" scenario (see Appendix F for equipment specifications). The combined noise levels from the inverters and transformers, which are assumed to operate simultaneously, were analyzed at the closest noise-sensitive receiver, which is a residence located approximately 1,000 feet and 1,300 feet from the two proposed inverter and transformer locations on the project site. At these distances, the combined noise level of the inverter and transformer equipment would be approximately 39 dBA L_{eq} at the nearest noise-sensitive receiver. This noise level would be below County of Fresno's daytime standard of 50 dBA L_{eq} for noise-sensitive land uses. Therefore, operational noise impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

b. *Would the project result in generation of excessive groundborne vibration or groundborne noise levels?*

Construction activities known to generate excessive ground-borne vibration, such as vibratory pile driving, would be conducted as part of the project during solar array post installation. Vibratory pile driving construction equipment may be used within 750 feet of the nearest off-site structure (a single-family residence), when accounting for the equipment size and setbacks. A secondary source of vibration during project construction would be the dozer used to construct unpaved access roads at a distance of 710 feet from the nearest structure. Vibratory pile driving creates a vibration level of approximately 0.734 in/se. PPV at a distance of 25 feet, and a dozer creates a vibration level of approximately 0.089 in/sec PPV at a distance of 25 feet (Caltrans 2020). These vibration levels would attenuate to approximately 0.0045 in/sec PPV for vibratory pile driving and approximately 0.0006 in/sec PPV for dozer operation at the nearest off-site structure. These vibration levels would be lower than the threshold of 0.2 in/sec PPV for residential structures. Therefore, temporary impacts associated with construction vibration would be less than significant. Operation of the project would not include substantial vibration sources. Therefore, no operational vibration impacts would occur.

LESS THAN SIGNIFICANT

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?*

The airport nearest to the project site is the William Robert Johnston Municipal Airport located approximately 13.5 miles to the northwest. The project would not be located within the noise contours of the William Robert Johnston Municipal Airport, and the intermittent flights at the San Joaquin Airport would not create substantial noise levels at the project site. Therefore, the project would not expose people residing or working in the project area to excessive noise levels from airport operations. No impact would occur.

NO IMPACT

14 Population and Housing

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				
a. Induce substantial unplanned population growth in an area, either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure)?	☐	☐	☐	■
b. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	■

a. Would the project induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

The project would not include any new homes or businesses and would not directly induce substantial unplanned population growth. The project would be unmanned and operated remotely with periodic maintenance and repair activities approximately ten times per year. As a result, the project would require few to no new employees during operation. In addition, the project does not include features that would indirectly induce unplanned population growth, such as extended roads or utilities serving undeveloped areas. Furthermore, although the project would develop a new energy supply source, which could indirectly support population growth, energy generated by the project is intended to offset JID's current non-renewable electricity usage and its associated GHG emissions, not to create a new source of base-load power in response to growth in demand for electricity. Therefore, the project would not induce substantial unplanned population growth in the area, and no impact would occur.

NO IMPACT

b. Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

No housing or other occupied structures are present on the project site. Therefore, the project would not displace any housing or people, and no impact would occur.

NO IMPACT

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15 Public Services

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
1 Fire protection?	☐	☐	■	☐
2 Police protection?	☐	☐	■	☐
3 Schools?	☐	☐	☐	■
4 Parks?	☐	☐	☐	■
5 Other public facilities?	☐	☐	☐	■

a.1. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered fire protection facilities, or the need for new or physically altered fire protection facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives?

The project site currently contains undeveloped agricultural land. Fire protection for the project site is provided by the Fresno County Fire Protection District, and the nearest fire station is the Fresno County Fire Protection District Station #95 located approximately 5.7 miles northwest of the project site at 25101 W Morton Ave in Tranquility. The project would include installation of a solar PV array with a 20-foot-wide compacted access path installed along the perimeter of the project site and an approximately 50-foot-wide compacted access path that would run in an east-west direction between the two main sections of solar PV panels to allow for access to the facility. Vegetation within the project site would be maintained approximately 10 times per year to minimize wildfire risk. The project is not located in a State Responsibility Area or Very High Fire Hazard Severity Zone (California Department of Forestry and Fire Protection 2022). In addition, as discussed in Section 14, *Population and Housing*, the proposed project does not include housing or permanent on-site employees and therefore would not result in substantial population growth. Therefore, minimal fire protection services would be required for the project, and the project would not result in the need for new or physically altered facilities for fire protection that could cause significant environmental impacts in order to maintain acceptable service ratios, response times or other performance objectives. Impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

a.2. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered police protection facilities, or the need for new or physically altered police protection facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives?

Police protection services for the project site are provided by the Fresno County Sheriff's Department. The project site is located in Patrol Area 1 of the Fresno County Sheriff's Department, and the nearest Patrol Area 1 Substation is located at 21925 West Manning Ave in San Joaquin, approximately 2.5 miles south of the project site (Fresno County Sheriff's Office 2022). The proposed project includes installation of a solar array system with no permanent on-site personnel. In addition, as mentioned in under *Description of Project*, the project site would be secured by a fence and gate. Furthermore, as discussed in Section 14, *Population and Housing*, the proposed project does not include housing or permanent on-site employees and therefore would not result in substantial population growth. Therefore, minimal police protection services would be required for the project, and the project would not result in the need for new or physically altered facilities for police protection that could cause significant environmental impacts in order to maintain acceptable service ratios, response times or other performance objectives. Impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

a.3. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered schools, or the need for new or physically altered schools, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios or other performance objectives?

a.4. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered parks, or the need for new or physically altered parks, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios or other performance objectives?

a.5. Would the project result in substantial adverse physical impacts associated with the provision of other new or physically altered public facilities, or the need for other new or physically altered public facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives?

As discussed in Section 14, *Population and Housing*, the proposed project does not include housing or permanent on-site employees and therefore would not result in substantial population growth. As a result, the project would not increase demand of schools, parks, or other public facilities such as libraries and would not result in the need for new or physically altered facilities that could cause significant environmental impacts in order to maintain acceptable service ratios, response times or other performance objectives. No impact would occur.

NO IMPACT

16 Recreation

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
a. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	■
a. Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	■

a. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

b. Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

The proposed project involves the installation of a solar array system and does not include construction of recreational facilities. Furthermore, as discussed in Section 14, *Population and Housing*, the project would not directly or indirectly result in population growth. Therefore, no increase in use of existing neighborhood and regional parks or other recreational facilities would occur, and no construction or expansion of recreational facilities would be required. No impact would occur.

NO IMPACT

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17 Transportation

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project:				
a. Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☐	■	☐
b. 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 use (e.g., farm equipment)?	☐	☐	☐	■
d. Result in inadequate emergency access?	☐	☐	☐	■

a. Would the project conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

Regional and local plans and policies addressing the circulation system include the Fresno County General Plan Circulation Element, Fresno Council of Governments Regional Transportation Plan and Sustainable Communities Strategy, and Fresno County Congestion Management Plan. Access to the project site during construction and operation would be provided by South Placer Avenue, which is a two-lane road. No transit stops are located adjacent to the project site. There are no sidewalks or bicycle lanes along West Adams Avenue and South Placer Avenue. Based on information provided by White Pine Renewables, maximum daily construction traffic would consist of approximately 40 roundtrip construction worker commutes, two roundtrip material delivery trips, and one other roundtrip truck trip (e.g., water truck). Construction traffic would be temporary and limited to the duration of the construction schedule (approximately four months). After construction is complete, operation of the project would not generate substantial amounts of traffic because the project would be monitored and operated remotely. Periodic vehicle trips would occur to the project site approximately 10 times per year for vegetation maintenance, repairs, and panel washing. The minimal level of additional trips generated as a result of the project would not have the potential to conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities. Impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

b. *Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?*

CEQA Guidelines Section 15064.3(b) identifies criteria for evaluating transportation impacts. Specifically, the guidelines state vehicle miles travelled (VMT) exceeding an applicable threshold of significance may indicate a significant impact. According to Section 15064.3(b)(3) of the CEQA Guidelines, a lead agency may include a qualitative analysis of operational and construction traffic. Pursuant to Section 15064.3(c) although a lead agency may elect to immediately apply the provisions of the updated guidelines. The Fresno Council of Governments has published a guidance document for evaluating VMT impacts, which includes a recommended screening criterion of 500 average daily trips (ADT). Projects that generate fewer than 500 ADT are presumed to result in a less-than-significant VMT impact (Fresno Council of Governments 2020). For the specific purpose of evaluating the VMT impacts of the proposed project, JID has chosen to apply the screening criteria and thresholds recommended by the Fresno Council of Governments' VMT guidance.

A VMT calculation is typically conducted on a daily or annual basis, for long-range planning purposes. As discussed under item (a), traffic on local roadways may be temporarily increased during project construction due to the presence of construction vehicles and equipment. Increases in VMT from construction would be short-term, minimal and temporary and would be under the recommended screening threshold of 500 trips per day. In addition, maintenance of the proposed project would consist of 10 vehicle trips per year, which also would not exceed the recommended screening threshold of 500 trips per day. Therefore, the project would not conflict or be inconsistent with CEQA Guidelines Section 15064.3(b), and no impact would occur.

NO IMPACT

c. *Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible use (e.g., farm equipment)?*

d. *Would the project result in inadequate emergency access?*

The project includes installation of a driveway on the western boundary to allow site access from South Placer Avenue. As discussed under item(a), construction and operational traffic would be minimal. No geometric design features or incompatible land uses would be introduced to the project site and local roadway network as a result of the project. In addition, the project does not include modifications to the local roadway network that could result in inadequate emergency access and includes construction of 20-foot-wide access path around the perimeter of the solar PV array and a 50-foot-wide access path that would run in an east-west direction between the two main sections of solar arrays to allow for on-site emergency access. Therefore, the project would not substantially increase hazards due to a geometric design feature or incompatible use or result in inadequate emergency access. No impact would occur.

NO IMPACT

18 Tribal Cultural Resources

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in a Public Resources Code Section 21074 as either a site, feature, place, or 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:				
a. 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)?	☐	■	☐	☐
b. 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.	☐	■	☐	☐

On July 1, 2015, California Assembly Bill 52 of 2014 (AB 52) went into effect, expanding CEQA by defining a new resource category of “tribal cultural resources.” AB 52 establishes that “a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment” (PRC Section 21084.2). It further states the lead agency shall establish measures to avoid impacts that would alter the significant characteristics of a tribal cultural resource, when feasible (PRC Section 21084.3). PRC Section 21074 (a)(1)(A-B) defines tribal cultural resources as “sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe” and is:

1. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in PRC Section 5020.1(k), or
2. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in PRC Section 5024.1(c). In applying

these criteria, the lead agency shall consider the significance of the resource to a California Native American tribe.

AB 52 establishes a formal consultation process for California tribes regarding those resources. The consultation process must be completed before a CEQA document can be certified. Under AB 52, lead agencies are required to "begin consultation with a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project," specifically with those Native American tribes that have requested notice of projects proposed within the jurisdiction of the lead agency.

Pursuant to Public Resources 21080.3.1 and AB 52, JID sent notification letters via email and certified mail on February 17, 2022 to the following 10 Native American tribes that are traditionally and culturally affiliated with the project site:

- Big Sandy Rancheria of Western Mono Indians
- Cold Springs Rancheria of Mono Indians
- Dumna Wo-Wah Tribal Government
- Kings River Choinumni Farm Tribe
- North Valley Yokuts Tribe
- Santa Rosa Rancheria Tachi Yokut Tribe
- Table Mountain Rancheria
- Traditional Choinumni Tribe
- Tule River Indian Tribe
- Wuksache Indian Tribe/Eshom Valley Band

On February 17, 2022, the Tribal Chairman of the Dumna Wo Wah Tribal Government responded to JID stating that the Tribe had encampments within and around the project site in the 1800s. The Chairman stated that the Chief would bury cultural and/or spiritual objects within the area of the project site and would traverse the area for gatherings and use the vicinity for medicinal use and camping. Because the area is within the traditional use area and identified as sensitive for tribal cultural resources, the Dumna Wo Wah Tribal Government requested tribal monitoring for the project. ~~As of February 25, 2022, JID has not received responses from any other Tribes, and t~~ The Dumna Wo Wah Tribal Government ~~has~~ did not provide~~d~~ any further comment. Native American Tribes wishing to partake in AB 52 consultation ~~are~~ were required to respond by March 21, 2022. ~~Pursuant to AB 52, tribal consultations must be complete prior to finalization of the CEQA documentation. The final results of the JID's AB 52 consultation efforts will be included in the Final IS-MND.~~ No other responses from Native American Tribes were received in response to JID's notification letters.

a. *Would the project cause a substantial adverse change in the significance of a tribal cultural resource as defined in Public Resources Code Section 21074 that is 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)?*

b. *Would the project cause a substantial adverse change in the significance of a tribal cultural resource as defined in Public Resources Code 21074 that is 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?*

The SLF search was returned on January 12, 2022 with negative results for sacred lands within the project site, and no Native American Tribes ~~have~~ requested consultation under AB 52 ~~as of February 25, 2022~~. Although the Dumna Wo Wah Tribal Government has expressed concerns due to the sensitivity of the project site and requested tribal monitoring by the Dumna Wo Wah Tribal Government monitors, no official consultation request has been received. No other Native American Tribes responded to JID's notification letters. ~~However, the AB 52 consultation process is ongoing and not completed. Furthermore, t~~ There is always the possibility of encountering unanticipated tribal cultural resource deposits and/or human remains during ground-disturbing activities associated with construction (such as grading and excavation), especially if those activities occur in less-disturbed buried sediments. Consequently, impacts to tribal cultural resources would be potentially significant. ~~Implementation of~~ Mitigation Measures TCR-1 and TCR-2, as well as Mitigation Measures CR-1 through CR-3 as discussed in Section 5, *Cultural Resources*, would be ~~required~~ implemented to reduce impacts to tribal cultural resources to a less-than-significant level.

Mitigation Measure

TCR-1 Unanticipated Discovery of Tribal Cultural Resources

In the event that cultural resources of Native American origin are identified during ground-disturbing activities, all ground-disturbing work within 50 feet of the find shall be temporarily suspended or redirected until a qualified archaeologist has evaluated the nature and significance of the find; an appropriate Native American representative(s), based on the nature of the find, is consulted; and mitigation measures are put in place for the disposition and protection of any find pursuant to Public Resources Code Section 21083.2. If JID, in consultation with local Native Americans, determines the resource is a tribal cultural resource and thus significant under CEQA, a mitigation plan shall be prepared and implemented in accordance with State guidelines and in consultation with local Native American group(s) prior to continuation of any ground-disturbing work within the vicinity of the find. The plan shall include avoidance of the resource or, if avoidance of the resource is infeasible, shall outline the appropriate treatment of the resource in coordination with the appropriate local Native American tribal representative and, if applicable, a qualified archaeologist. Examples of appropriate mitigation for tribal cultural resources include, but are not limited to, protecting the cultural character and integrity of the resource, protecting traditional use of the resource, protecting the confidentiality of the resource, or heritage recovery.

TCR-2 Native American Monitoring

JID shall retain a Native American consultant to conduct Native American monitoring of all project-related ground disturbing activities. Native American monitoring should be provided by a locally affiliated tribal member. Monitors will have the authority to halt and redirect work should any tribal cultural resources be identified during monitoring. Native American monitoring may be reduced to spot-checking or eliminated at the discretion of the monitor, in consultation with JID, as warranted by conditions such as encountering bedrock, sediments being excavated are fill, or negative findings during the first 60 percent of rough grading. If monitoring is reduced to spot-checking, spot-checking will occur when ground-disturbance moves to a new location within the project site and when ground disturbance will extend to depths not previously reached (unless those depths are within bedrock).

Significance After Mitigation

Mitigation Measures TCR-1 and TCR-2 require Native American monitoring of ground disturbance activities related to the project as well as the implementation of avoidance measures for and evaluation of any unanticipated discoveries of tribal cultural resources, which would reduce potential impacts to tribal cultural resources to a less-than-significant level.

LESS THAN SIGNIFICANT WITH MITIGATION INCORPORATED

19 Utilities and Service Systems

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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?	☐	☐	■	☐

a. Would the project 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?

Water

The project would not require permanent on-site personnel, and no water service connections or groundwater wells would be installed. The minimal quantities of water required during construction and panel washing activities would be delivered to the site via water trucks as needed.

Consequently, the project would not require or result in the relocation or construction of new or expanded water facilities, and impacts would be less than significant.

Wastewater Treatment

The project would not require permanent on-site personnel and does not include the installation of on-site restroom facilities. Therefore, no wastewater would be generated, and no impact to wastewater treatment facilities would occur.

Stormwater Drainage

The project site is currently undeveloped and was formerly used for agricultural activities. As discussed in Section 10, *Hydrology and Water Quality*, implementation of the proposed project would not substantially increase impervious surfaces on the project site because the land below the solar PV panels would remain undeveloped and because the proposed access paths would be unpaved. Stormwater would run off the surfaces of the solar PV panels and fall onto the unpaved, pervious ground surface, where it would follow existing stormwater drainage patterns. Therefore, no new or expanded stormwater drainage facilities would be required, and no impact would occur.

Electric Power

The proposed project is itself an electric power facility, the environmental effects of which are analyzed and mitigated throughout this IS-MND. No additional new or expanded electric power facilities would be required other than those analyzed herein. Consequently, no additional impact to electric power facilities would occur.

Natural Gas

The proposed project would not involve any components requiring natural gas service. Consequently, no impact related to natural gas facilities would occur.

Telecommunications

The proposed project includes remote data collection systems for monitoring production, system health, and weather conditions, the environmental effects of which are analyzed and mitigated throughout this IS-MND. No additional new or expanded telecommunications facilities would be required other than those analyzed herein. Therefore, no additional impact to telecommunications facilities would occur.

NO IMPACT

b. Would the project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?

As discussed under item (a), the project would not require permanent on-site personnel and does not include the installation of water service connections or groundwater wells. Water demand during construction would be temporary and minimal and primarily for dust suppression. In addition, the project would use approximately 7,650 gallons (0.03 acre-feet) of water per year for panel washing, which would be delivered to the site by water trucks. The minimal quantities of water required during construction and periodic panel washing activities would not substantially impact regional water supplies. Therefore, the project would have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years, and impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

c. *Would the project 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?*

As discussed under item (a), the project would not require permanent on-site personnel and does not include the construction of on-site restroom facilities. Therefore, no wastewater would be generated, and no impact related to wastewater treatment would occur.

NO IMPACT

d. *Would the project 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. *Would the project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?*

The nearest landfill to the project site is the American Avenue Disposal Site, which is located approximately three miles to the northeast of the project site at 18950 West American Avenue in Kerman. The project site is currently undeveloped; therefore, no demolition waste would be generated during construction. The proposed project would adhere to state and local regulations pertaining to construction waste diversion and recycling. In addition, the project site would be operated and monitored remotely with personnel on-site only for periodic panel washing, vegetation maintenance, and as-needed repairs. Therefore, the project would not generate solid waste in excess of state or local standards, in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste regulation goals and would comply with applicable statutes and regulations related to solid waste. Impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

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20 Wildfire

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
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 downslopes or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	■

a. *If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project substantially impair an adopted emergency response plan or emergency evacuation plan?*

b. *If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project, 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. *If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project 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. If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project expose people or structures to significant risks, including downslopes or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

According to the California Department of Forestry and Fire Protection (2022), the project site is not located in a State Responsibility Area or a Very Fire Hazard Severity Zone. Because the project is not located in or near an SRA or a VHFHSZ, no impacts related to wildfire would occur.

NO IMPACT

21 Mandatory Findings of Significance

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
Does the project:				
a. 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. 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. Have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	■	☐

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?

As discussed in Section 4, *Biological Resources*, the project would not 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, or substantially reduce the number or restrict the range of a rare or endangered plant or animal. Furthermore, as discussed in Section 5, *Cultural Resources*, the project site does not contain any known cultural resources, and there is no evidence that important examples of the major periods of California history or prehistory are present at the site. As a result, the proposed project would not eliminate an important example of major periods of California history or prehistory. Impacts would be less than significant.

LESS THAN SIGNIFICANT IMPACT

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)?*

As described in the discussion of environmental checklist Sections 1 through 20, with respect to all environmental issues, the proposed project would not result in significant and unmitigable impacts to the environment. All anticipated impacts associated with project construction and operation would be either less than significant or less than significant with mitigation incorporated. This is largely due to the fact project construction activities would be temporary, and project operational activities would not significantly alter the environmental baseline condition.

Cumulatively considerable impacts could occur if the construction of other projects occurs at the same time as the proposed project and in the same vicinity, such that the effects of similar impacts of multiple projects combine to expose adjacent sensitive receptors to greater levels of impact than would occur under the proposed project. For example, if the construction of other projects in the area occurs at the same time as construction of the proposed project, potential impacts associated with noise and traffic to residents in the project area may be more substantial. There are no other planned or pending projects within the immediate vicinity of the project site that could combine with the project to result in cumulative construction-related impacts (County of Fresno 2022b).

The project would not require permanent on-site personnel during operation; therefore, it would not contribute to cumulative impacts related to direct or indirect population growth, such as impacts to public services, recreation, and population and housing. Impacts related to cultural resources, geology and soils, hazards and hazardous materials, land use and planning, mineral resources, and tribal cultural resources are inherently restricted to the project site and would not contribute to cumulative impacts associated with existing and future developments. In addition, air quality and GHG impacts are cumulative by nature, and as discussed in Section 3 *Air Quality*, and Section 8, *Greenhouse Gas Emissions*, the project would not generate air pollutant emissions in excess of SJVAPCD thresholds and would have a beneficial project-level impact in terms of GHG emissions; therefore, it would not contribute to the existing significant cumulative air quality impacts related to the SJVAB's nonattainment status for ozone, PM_{10}, and $PM_{2.5}$ or the existing significant cumulative climate change impact. Furthermore, the project's operational impacts to resources such as aesthetics, agriculture and forestry resources, biological resources, hydrology and water quality, noise, transportation, and utilities and service systems would be minimal and would not have the potential to constitute a cumulatively considerable contribution to cumulative impacts that may occur due to existing and future development in the region. Therefore, the proposed project would not result in a cumulatively considerable contribution to a significant impact.

NO IMPACT

c. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

In general, impacts to human beings are associated with such issues as air quality, hazards and hazardous materials, and noise impacts. As detailed under Section 3, *Air Quality*, Section 9, *Hazards and Hazardous Materials*, and Section 13, *Noise*, the proposed project would not result, either directly or indirectly, in substantial adverse effects related to air quality, hazardous materials, and noise. Therefore, impacts to human beings would be less than significant.

LESS THAN SIGNIFICANT IMPACT

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Appendix A

Air Quality and Greenhouse Gas Modeling

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

James Irrigation District Solar Project - AQ Construction Only

San Joaquin Valley Unified APCD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	20.10	Acre	20.10	875,556.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.7	**Precipitation Freq (Days)**	45
Climate Zone	3			**Operational Year**	2022
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Construction only model

Land Use - Construction activity area.

Construction Phase - Based on applicant construction schedule

Off-road Equipment - Construction equipment provided by the applicant

Trips and VMT - Number of trips provided by the applicant. Assuming trip length of 30 miles since Fresno is the closest urban city.

Grading - Soil is balanced

Construction Off-road Equipment Mitigation - Based on applicant information

Water Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	5
tblConstructionPhase	NumDays	370.00	76.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	VendorTripLength	6.60	30.00
tblTripsAndVMT	VendorTripNumber	144.00	3.00
tblTripsAndVMT	WorkerTripLength	16.80	30.00
tblTripsAndVMT	WorkerTripNumber	368.00	40.00

2.0 Emissions Summary

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	0.0503	0.4511	0.5822	1.0900e-003	0.0368	0.0224	0.0592	9.8600e-003	0.0206	0.0304	0.0000	98.2232	98.2232	0.0206	2.0200e-003	99.3418
Maximum	**0.0503**	**0.4511**	**0.5822**	**1.0900e-003**	**0.0368**	**0.0224**	**0.0592**	**9.8600e-003**	**0.0206**	**0.0304**	**0.0000**	**98.2232**	**98.2232**	**0.0206**	**2.0200e-003**	**99.3418**

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	0.0503	0.4511	0.5822	1.0900e-003	0.0368	0.0224	0.0592	9.8600e-003	0.0206	0.0304	0.0000	98.2232	98.2232	0.0206	2.0200e-003	99.3417
Maximum	**0.0503**	**0.4511**	**0.5822**	**1.0900e-003**	**0.0368**	**0.0224**	**0.0592**	**9.8600e-003**	**0.0206**	**0.0304**	**0.0000**	**98.2232**	**98.2232**	**0.0206**	**2.0200e-003**	**99.3417**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

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

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**5-1-2022**	**7-31-2022**	0.4330	0.4330
2	**8-1-2022**	**9-30-2022**	0.0706	0.0706
		Highest	0.4330	0.4330

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0749	0.0000	1.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.6000e-004	3.6000e-004	0.0000	0.0000	3.8000e-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	**0.0749**	**0.0000**	**1.8000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**3.6000e-004**	**3.6000e-004**	**0.0000**	**0.0000**	**3.8000e-004**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0749	0.0000	1.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.6000e-004	3.6000e-004	0.0000	0.0000	3.8000e-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	**0.0749**	**0.0000**	**1.8000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**3.6000e-004**	**3.6000e-004**	**0.0000**	**0.0000**	**3.8000e-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	Solar Array Installation	Building Construction	5/1/2022	8/15/2022	5	76	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 20.1

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
Solar Array Installation	Cranes	0	7.00	231	0.29
Solar Array Installation	Forklifts	0	8.00	89	0.20
Solar Array Installation	Generator Sets	0	8.00	84	0.74
Solar Array Installation	Other Construction Equipment	1	8.00	172	0.42
Solar Array Installation	Rough Terrain Forklifts	2	8.00	100	0.40
Solar Array Installation	Skid Steer Loaders	1	8.00	65	0.37
Solar Array Installation	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Solar Array Installation	Trenchers	1	8.00	78	0.50
Solar Array Installation	Welders	0	8.00	46	0.45

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
Solar Array Installation	5	40.00	3.00	0.00	30.00	30.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Solar Array 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	0.0393	0.4212	0.4782	7.0000e-004		0.0219	0.0219		0.0202	0.0202	0.0000	61.8164	61.8164	0.0200	0.0000	62.3162
Total	**0.0393**	**0.4212**	**0.4782**	**7.0000e-004**		**0.0219**	**0.0219**		**0.0202**	**0.0202**	**0.0000**	**61.8164**	**61.8164**	**0.0200**	**0.0000**	**62.3162**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.7000e-004	0.0213	4.0800e-003	9.0000e-005	3.1000e-003	2.8000e-004	3.3800e-003	8.9000e-004	2.7000e-004	1.1600e-003	0.0000	8.8315	8.8315	5.0000e-005	1.3200e-003	9.2259
Worker	0.0103	8.6100e-003	0.0999	3.0000e-004	0.0337	1.8000e-004	0.0339	8.9600e-003	1.6000e-004	9.1200e-003	0.0000	27.5754	27.5754	5.8000e-004	7.0000e-004	27.7997
Total	**0.0111**	**0.0299**	**0.1040**	**3.9000e-004**	**0.0368**	**4.6000e-004**	**0.0373**	**9.8500e-003**	**4.3000e-004**	**0.0103**	**0.0000**	**36.4069**	**36.4069**	**6.3000e-004**	**2.0200e-003**	**37.0256**

3.2 Solar Array 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	tons/yr										MT/yr					
Off-Road	0.0393	0.4212	0.4782	7.0000e-004		0.0219	0.0219		0.0202	0.0202	0.0000	61.8163	61.8163	0.0200	0.0000	62.3161
Total	**0.0393**	**0.4212**	**0.4782**	**7.0000e-004**		**0.0219**	**0.0219**		**0.0202**	**0.0202**	**0.0000**	**61.8163**	**61.8163**	**0.0200**	**0.0000**	**62.3161**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	7.7000e-004	0.0213	4.0800e-003	9.0000e-005	3.1000e-003	2.8000e-004	3.3800e-003	8.9000e-004	2.7000e-004	1.1600e-003	0.0000	8.8315	8.8315	5.0000e-005	1.3200e-003	9.2259
Worker	0.0103	8.6100e-003	0.0999	3.0000e-004	0.0337	1.8000e-004	0.0339	8.9600e-003	1.6000e-004	9.1200e-003	0.0000	27.5754	27.5754	5.8000e-004	7.0000e-004	27.7997
Total	**0.0111**	**0.0299**	**0.1040**	**3.9000e-004**	**0.0368**	**4.6000e-004**	**0.0373**	**9.8500e-003**	**4.3000e-004**	**0.0103**	**0.0000**	**36.4069**	**36.4069**	**6.3000e-004**	**2.0200e-003**	**37.0256**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Non-Asphalt Surfaces	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Non-Asphalt Surfaces	0.497843	0.051755	0.169937	0.171238	0.031366	0.008103	0.013571	0.025518	0.000682	0.000319	0.024236	0.001539	0.003893

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

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	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	0.0749	0.0000	1.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.6000e-004	3.6000e-004	0.0000	0.0000	3.8000e-004
Unmitigated	0.0749	0.0000	1.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.6000e-004	3.6000e-004	0.0000	0.0000	3.8000e-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	0.0183					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0566					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.0000e-005	0.0000	1.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.6000e-004	3.6000e-004	0.0000	0.0000	3.8000e-004
Total	**0.0749**	**0.0000**	**1.8000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**3.6000e-004**	**3.6000e-004**	**0.0000**	**0.0000**	**3.8000e-004**

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	0.0183					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0566					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.0000e-005	0.0000	1.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.6000e-004	3.6000e-004	0.0000	0.0000	3.8000e-004
Total	**0.0749**	**0.0000**	**1.8000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**3.6000e-004**	**3.6000e-004**	**0.0000**	**0.0000**	**3.8000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

Use Water Efficient Irrigation System

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

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

James Irrigation District Solar Project - AQ Construction Only

San Joaquin Valley Unified APCD Air District, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	20.10	Acre	20.10	875,556.00	0

1.2 Other Project Characteristics

Urbanization Rural

Wind Speed (m/s) 2.7

Precipitation Freq (Days) 45

Climate Zone 3

Operational Year 2022

Utility Company Pacific Gas and Electric Company

CO2 Intensity (lb/MWhr) 203.98

CH4 Intensity (lb/MWhr) 0.033

N2O Intensity (lb/MWhr) 0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Construction only model

Land Use - Construction activity area.

Construction Phase - Based on applicant construction schedule

Off-road Equipment - Construction equipment provided by the applicant

Trips and VMT - Number of trips provided by the applicant. Assuming trip length of 30 miles since Fresno is the closest urban city.

Grading - Soil is balanced

Construction Off-road Equipment Mitigation - Based on applicant information

Water Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	5
tblConstructionPhase	NumDays	370.00	76.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	VendorTripLength	6.60	30.00
tblTripsAndVMT	VendorTripNumber	144.00	3.00
tblTripsAndVMT	WorkerTripLength	16.80	30.00
tblTripsAndVMT	WorkerTripNumber	368.00	40.00

2.0 Emissions Summary

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	1.3482	11.8288	15.8629	0.0295	0.9954	0.5883	1.5837	0.2658	0.5415	0.8073	0.0000	2,920.3223	2,920.3223	0.5990	0.0577	2,952.4939
Maximum	**1.3482**	**11.8288**	**15.8629**	**0.0295**	**0.9954**	**0.5883**	**1.5837**	**0.2658**	**0.5415**	**0.8073**	**0.0000**	**2,920.3223**	**2,920.3223**	**0.5990**	**0.0577**	**2,952.4939**

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	1.3482	11.8288	15.8629	0.0295	0.9954	0.5883	1.5837	0.2658	0.5415	0.8073	0.0000	2,920.3223	2,920.3223	0.5990	0.0577	2,952.4939
Maximum	**1.3482**	**11.8288**	**15.8629**	**0.0295**	**0.9954**	**0.5883**	**1.5837**	**0.2658**	**0.5415**	**0.8073**	**0.0000**	**2,920.3223**	**2,920.3223**	**0.5990**	**0.0577**	**2,952.4939**

	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**

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	0.4104	2.0000e-005	2.0600e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		4.4000e-003	4.4000e-003	1.0000e-005		4.6900e-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	**0.4104**	**2.0000e-005**	**2.0600e-003**	**0.0000**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**1.0000e-005**		**4.4000e-003**	**4.4000e-003**	**1.0000e-005**	**0.0000**	**4.6900e-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	0.4104	2.0000e-005	2.0600e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		4.4000e-003	4.4000e-003	1.0000e-005		4.6900e-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	**0.4104**	**2.0000e-005**	**2.0600e-003**	**0.0000**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**1.0000e-005**		**4.4000e-003**	**4.4000e-003**	**1.0000e-005**	**0.0000**	**4.6900e-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	Solar Array Installation	Building Construction	5/1/2022	8/15/2022	5	76	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 20.1

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
Solar Array Installation	Cranes	0	7.00	231	0.29
Solar Array Installation	Forklifts	0	8.00	89	0.20
Solar Array Installation	Generator Sets	0	8.00	84	0.74
Solar Array Installation	Other Construction Equipment	1	8.00	172	0.42
Solar Array Installation	Rough Terrain Forklifts	2	8.00	100	0.40
Solar Array Installation	Skid Steer Loaders	1	8.00	65	0.37
Solar Array Installation	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Solar Array Installation	Trenchers	1	8.00	78	0.50
Solar Array Installation	Welders	0	8.00	46	0.45

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
Solar Array Installation	5	40.00	3.00	0.00	30.00	30.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Solar Array 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	1.0332	11.0840	12.5832	0.0185		0.5763	0.5763		0.5302	0.5302		1,793.1809	1,793.1809	0.5800		1,807.6797
Total	**1.0332**	**11.0840**	**12.5832**	**0.0185**		**0.5763**	**0.5763**		**0.5302**	**0.5302**		**1,793.1809**	**1,793.1809**	**0.5800**		**1,807.6797**

3.2 Solar Array 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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0205	0.5345	0.1071	2.4200e-003	0.0833	7.3900e-003	0.0907	0.0240	7.0700e-003	0.0311		256.1624	256.1624	1.4000e-003	0.0383	267.5954
Worker	0.2945	0.2103	3.1726	8.5600e-003	0.9121	4.6300e-003	0.9167	0.2418	4.2700e-003	0.2461		870.9790	870.9790	0.0177	0.0195	877.2188
Total	**0.3150**	**0.7448**	**3.2797**	**0.0110**	**0.9954**	**0.0120**	**1.0074**	**0.2658**	**0.0113**	**0.2771**		**1,127.1414**	**1,127.1414**	**0.0191**	**0.0577**	**1,144.8142**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0332	11.0840	12.5832	0.0185		0.5763	0.5763		0.5302	0.5302	0.0000	1,793.1809	1,793.1809	0.5800		1,807.6797
Total	**1.0332**	**11.0840**	**12.5832**	**0.0185**		**0.5763**	**0.5763**		**0.5302**	**0.5302**	**0.0000**	**1,793.1809**	**1,793.1809**	**0.5800**		**1,807.6797**

3.2 Solar Array 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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0205	0.5345	0.1071	2.4200e-003	0.0833	7.3900e-003	0.0907	0.0240	7.0700e-003	0.0311		256.1624	256.1624	1.4000e-003	0.0383	267.5954
Worker	0.2945	0.2103	3.1726	8.5600e-003	0.9121	4.6300e-003	0.9167	0.2418	4.2700e-003	0.2461		870.9790	870.9790	0.0177	0.0195	877.2188
Total	**0.3150**	**0.7448**	**3.2797**	**0.0110**	**0.9954**	**0.0120**	**1.0074**	**0.2658**	**0.0113**	**0.2771**		**1,127.1414**	**1,127.1414**	**0.0191**	**0.0577**	**1,144.8142**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Non-Asphalt Surfaces	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Non-Asphalt Surfaces	0.497843	0.051755	0.169937	0.171238	0.031366	0.008103	0.013571	0.025518	0.000682	0.000319	0.024236	0.001539	0.003893

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.4104	2.0000e-005	2.0600e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		4.4000e-003	4.4000e-003	1.0000e-005		4.6900e-003
Unmitigated	0.4104	2.0000e-005	2.0600e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		4.4000e-003	4.4000e-003	1.0000e-005		4.6900e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1001					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.3101					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.9000e-004	2.0000e-005	2.0600e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		4.4000e-003	4.4000e-003	1.0000e-005		4.6900e-003
Total	**0.4104**	**2.0000e-005**	**2.0600e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**4.4000e-003**	**4.4000e-003**	**1.0000e-005**		**4.6900e-003**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1001					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.3101					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.9000e-004	2.0000e-005	2.0600e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		4.4000e-003	4.4000e-003	1.0000e-005		4.6900e-003
Total	**0.4104**	**2.0000e-005**	**2.0600e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**4.4000e-003**	**4.4000e-003**	**1.0000e-005**		**4.6900e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

Use Water Efficient Irrigation System

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

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

James Irrigation District Solar Project - AQ Construction Only

San Joaquin Valley Unified APCD Air District, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	20.10	Acre	20.10	875,556.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.7	**Precipitation Freq (Days)**	45
Climate Zone	3			**Operational Year**	2022
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics - Construction only model

Land Use - Construction activity area.

Construction Phase - Based on applicant construction schedule

Off-road Equipment - Construction equipment provided by the applicant

Trips and VMT - Number of trips provided by the applicant. Assuming trip length of 30 miles since Fresno is the closest urban city.

Grading - Soil is balanced

Construction Off-road Equipment Mitigation - Based on applicant information

Water Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	5
tblConstructionPhase	NumDays	370.00	76.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	VendorTripLength	6.60	30.00
tblTripsAndVMT	VendorTripNumber	144.00	3.00
tblTripsAndVMT	WorkerTripLength	16.80	30.00
tblTripsAndVMT	WorkerTripNumber	368.00	40.00

2.0 Emissions Summary

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	1.3473	11.9045	15.1950	0.0285	0.9954	0.5883	1.5837	0.2658	0.5415	0.8073	0.0000	2,822.7597	2,822.7597	0.5984	0.0600	2,855.6019
Maximum	**1.3473**	**11.9045**	**15.1950**	**0.0285**	**0.9954**	**0.5883**	**1.5837**	**0.2658**	**0.5415**	**0.8073**	**0.0000**	**2,822.7597**	**2,822.7597**	**0.5984**	**0.0600**	**2,855.6019**

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	1.3473	11.9045	15.1950	0.0285	0.9954	0.5883	1.5837	0.2658	0.5415	0.8073	0.0000	2,822.7597	2,822.7597	0.5984	0.0600	2,855.6019
Maximum	**1.3473**	**11.9045**	**15.1950**	**0.0285**	**0.9954**	**0.5883**	**1.5837**	**0.2658**	**0.5415**	**0.8073**	**0.0000**	**2,822.7597**	**2,822.7597**	**0.5984**	**0.0600**	**2,855.6019**

	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**

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	0.4104	2.0000e-005	2.0600e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		4.4000e-003	4.4000e-003	1.0000e-005		4.6900e-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	**0.4104**	**2.0000e-005**	**2.0600e-003**	**0.0000**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**1.0000e-005**		**4.4000e-003**	**4.4000e-003**	**1.0000e-005**	**0.0000**	**4.6900e-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	0.4104	2.0000e-005	2.0600e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		4.4000e-003	4.4000e-003	1.0000e-005		4.6900e-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	**0.4104**	**2.0000e-005**	**2.0600e-003**	**0.0000**	**0.0000**	**1.0000e-005**	**1.0000e-005**	**0.0000**	**1.0000e-005**	**1.0000e-005**		**4.4000e-003**	**4.4000e-003**	**1.0000e-005**	**0.0000**	**4.6900e-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	Solar Array Installation	Building Construction	5/1/2022	8/15/2022	5	76	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 20.1

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
Solar Array Installation	Cranes	0	7.00	231	0.29
Solar Array Installation	Forklifts	0	8.00	89	0.20
Solar Array Installation	Generator Sets	0	8.00	84	0.74
Solar Array Installation	Other Construction Equipment	1	8.00	172	0.42
Solar Array Installation	Rough Terrain Forklifts	2	8.00	100	0.40
Solar Array Installation	Skid Steer Loaders	1	8.00	65	0.37
Solar Array Installation	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Solar Array Installation	Trenchers	1	8.00	78	0.50
Solar Array Installation	Welders	0	8.00	46	0.45

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
Solar Array Installation	5	40.00	3.00	0.00	30.00	30.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Solar Array 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	1.0332	11.0840	12.5832	0.0185		0.5763	0.5763		0.5302	0.5302		1,793.1809	1,793.1809	0.5800		1,807.6797
Total	**1.0332**	**11.0840**	**12.5832**	**0.0185**		**0.5763**	**0.5763**		**0.5302**	**0.5302**		**1,793.1809**	**1,793.1809**	**0.5800**		**1,807.6797**

3.2 Solar Array 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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0204	0.5722	0.1078	2.4200e-003	0.0833	7.4000e-003	0.0907	0.0240	7.0800e-003	0.0311		256.2205	256.2205	1.3900e-003	0.0383	267.6659
Worker	0.2937	0.2483	2.5040	7.6000e-003	0.9121	4.6300e-003	0.9167	0.2418	4.2700e-003	0.2461		773.3583	773.3583	0.0171	0.0217	780.2563
Total	**0.3141**	**0.8205**	**2.6118**	**0.0100**	**0.9954**	**0.0120**	**1.0074**	**0.2658**	**0.0114**	**0.2771**		**1,029.5788**	**1,029.5788**	**0.0185**	**0.0600**	**1,047.9222**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.0332	11.0840	12.5832	0.0185		0.5763	0.5763		0.5302	0.5302	0.0000	1,793.1809	1,793.1809	0.5800		1,807.6797
Total	**1.0332**	**11.0840**	**12.5832**	**0.0185**		**0.5763**	**0.5763**		**0.5302**	**0.5302**	**0.0000**	**1,793.1809**	**1,793.1809**	**0.5800**		**1,807.6797**

3.2 Solar Array 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	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0204	0.5722	0.1078	2.4200e-003	0.0833	7.4000e-003	0.0907	0.0240	7.0800e-003	0.0311		256.2205	256.2205	1.3900e-003	0.0383	267.6659
Worker	0.2937	0.2483	2.5040	7.6000e-003	0.9121	4.6300e-003	0.9167	0.2418	4.2700e-003	0.2461		773.3583	773.3583	0.0171	0.0217	780.2563
Total	**0.3141**	**0.8205**	**2.6118**	**0.0100**	**0.9954**	**0.0120**	**1.0074**	**0.2658**	**0.0114**	**0.2771**		**1,029.5788**	**1,029.5788**	**0.0185**	**0.0600**	**1,047.9222**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Non-Asphalt Surfaces	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Non-Asphalt Surfaces	0.497843	0.051755	0.169937	0.171238	0.031366	0.008103	0.013571	0.025518	0.000682	0.000319	0.024236	0.001539	0.003893

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.4104	2.0000e-005	2.0600e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		4.4000e-003	4.4000e-003	1.0000e-005		4.6900e-003
Unmitigated	0.4104	2.0000e-005	2.0600e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		4.4000e-003	4.4000e-003	1.0000e-005		4.6900e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1001					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.3101					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.9000e-004	2.0000e-005	2.0600e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		4.4000e-003	4.4000e-003	1.0000e-005		4.6900e-003
Total	**0.4104**	**2.0000e-005**	**2.0600e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**4.4000e-003**	**4.4000e-003**	**1.0000e-005**		**4.6900e-003**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.1001					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.3101					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.9000e-004	2.0000e-005	2.0600e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005		4.4000e-003	4.4000e-003	1.0000e-005		4.6900e-003
Total	**0.4104**	**2.0000e-005**	**2.0600e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**		**4.4000e-003**	**4.4000e-003**	**1.0000e-005**		**4.6900e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

Use Water Efficient Irrigation System

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

James Irrigation District Solar Project - GHG

San Joaquin Valley Unified APCD Air District, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	20.10	Acre	20.10	875,556.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.7	**Precipitation Freq (Days)**	45
Climate Zone	3			**Operational Year**	2030
Utility Company	Pacific Gas and Electric Company				
CO2 Intensity (lb/MWhr)	203.98	**CH4 Intensity (lb/MWhr)**	0.033	**N2O Intensity (lb/MWhr)**	0.004

1.3 User Entered Comments & Non-Default Data

Project Characteristics -

Land Use - Construction activity area.

Construction Phase - Based on applicant construction schedule

Off-road Equipment - Construction equipment provdied by the applicant

Trips and VMT - Information provided by the applicant

Grading - Soil is balanced

Construction Off-road Equipment Mitigation - Based on applicant information

Water Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	5
tblConstructionPhase	NumDays	370.00	76.00

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblTripsAndVMT	VendorTripNumber	144.00	2.00
tblTripsAndVMT	WorkerTripNumber	368.00	40.00

2.0 Emissions Summary

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	0.0462	0.4303	0.5390	8.9000e-004	0.0194	0.0220	0.0414	5.1500e-003	0.0203	0.0254	0.0000	78.7731	78.7731	0.0204	6.4000e-004	79.4754
Maximum	**0.0462**	**0.4303**	**0.5390**	**8.9000e-004**	**0.0194**	**0.0220**	**0.0414**	**5.1500e-003**	**0.0203**	**0.0254**	**0.0000**	**78.7731**	**78.7731**	**0.0204**	**6.4000e-004**	**79.4754**

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	0.0462	0.4303	0.5390	8.9000e-004	0.0194	0.0220	0.0414	5.1500e-003	0.0203	0.0254	0.0000	78.7731	78.7731	0.0204	6.4000e-004	79.4753
Maximum	**0.0462**	**0.4303**	**0.5390**	**8.9000e-004**	**0.0194**	**0.0220**	**0.0414**	**5.1500e-003**	**0.0203**	**0.0254**	**0.0000**	**78.7731**	**78.7731**	**0.0204**	**6.4000e-004**	**79.4753**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

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

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**5-1-2022**	**7-31-2022**	0.4123	0.4123
2	**8-1-2022**	**9-30-2022**	0.0672	0.0672
		Highest	0.4123	0.4123

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0749	0.0000	1.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.6000e-004	3.6000e-004	0.0000	0.0000	3.8000e-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	**0.0749**	**0.0000**	**1.8000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**3.6000e-004**	**3.6000e-004**	**0.0000**	**0.0000**	**3.8000e-004**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0749	0.0000	1.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.6000e-004	3.6000e-004	0.0000	0.0000	3.8000e-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	**0.0749**	**0.0000**	**1.8000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**3.6000e-004**	**3.6000e-004**	**0.0000**	**0.0000**	**3.8000e-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	Solar Array Installation	Building Construction	5/1/2022	8/15/2022	5	76	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 20.1

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
Solar Array Installation	Cranes	0	7.00	231	0.29
Solar Array Installation	Forklifts	0	8.00	89	0.20
Solar Array Installation	Generator Sets	0	8.00	84	0.74
Solar Array Installation	Other Construction Equipment	1	8.00	172	0.42
Solar Array Installation	Rough Terrain Forklifts	2	8.00	100	0.40
Solar Array Installation	Skid Steer Loaders	1	8.00	65	0.37
Solar Array Installation	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Solar Array Installation	Trenchers	1	8.00	78	0.50
Solar Array Installation	Welders	0	8.00	46	0.45

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
Solar Array Installation	5	40.00	2.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Solar Array 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	0.0393	0.4212	0.4782	7.0000e-004		0.0219	0.0219		0.0202	0.0202	0.0000	61.8164	61.8164	0.0200	0.0000	62.3162
Total	**0.0393**	**0.4212**	**0.4782**	**7.0000e-004**		**0.0219**	**0.0219**		**0.0202**	**0.0202**	**0.0000**	**61.8164**	**61.8164**	**0.0200**	**0.0000**	**62.3162**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.5000e-004	3.8600e-003	1.1500e-003	1.0000e-005	4.6000e-004	4.0000e-005	5.0000e-004	1.3000e-004	4.0000e-005	1.7000e-004	0.0000	1.3916	1.3916	1.0000e-005	2.1000e-004	1.4540
Worker	6.8000e-003	5.2100e-003	0.0597	1.7000e-004	0.0189	1.0000e-004	0.0190	5.0200e-003	9.0000e-005	5.1100e-003	0.0000	15.5652	15.5652	4.2000e-004	4.3000e-004	15.7051
Total	**6.9500e-003**	**9.0700e-003**	**0.0609**	**1.8000e-004**	**0.0194**	**1.4000e-004**	**0.0195**	**5.1500e-003**	**1.3000e-004**	**5.2800e-003**	**0.0000**	**16.9568**	**16.9568**	**4.3000e-004**	**6.4000e-004**	**17.1592**

3.2 Solar Array 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	tons/yr										MT/yr					
Off-Road	0.0393	0.4212	0.4782	7.0000e-004		0.0219	0.0219		0.0202	0.0202	0.0000	61.8163	61.8163	0.0200	0.0000	62.3161
Total	**0.0393**	**0.4212**	**0.4782**	**7.0000e-004**		**0.0219**	**0.0219**		**0.0202**	**0.0202**	**0.0000**	**61.8163**	**61.8163**	**0.0200**	**0.0000**	**62.3161**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.5000e-004	3.8600e-003	1.1500e-003	1.0000e-005	4.6000e-004	4.0000e-005	5.0000e-004	1.3000e-004	4.0000e-005	1.7000e-004	0.0000	1.3916	1.3916	1.0000e-005	2.1000e-004	1.4540
Worker	6.8000e-003	5.2100e-003	0.0597	1.7000e-004	0.0189	1.0000e-004	0.0190	5.0200e-003	9.0000e-005	5.1100e-003	0.0000	15.5652	15.5652	4.2000e-004	4.3000e-004	15.7051
Total	**6.9500e-003**	**9.0700e-003**	**0.0609**	**1.8000e-004**	**0.0194**	**1.4000e-004**	**0.0195**	**5.1500e-003**	**1.3000e-004**	**5.2800e-003**	**0.0000**	**16.9568**	**16.9568**	**4.3000e-004**	**6.4000e-004**	**17.1592**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Non-Asphalt Surfaces	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Non-Asphalt Surfaces	0.539927	0.053807	0.173545	0.136624	0.023267	0.006448	0.013553	0.025992	0.000624	0.000304	0.021845	0.001297	0.002766

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

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	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	0.0749	0.0000	1.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.6000e-004	3.6000e-004	0.0000	0.0000	3.8000e-004
Unmitigated	0.0749	0.0000	1.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.6000e-004	3.6000e-004	0.0000	0.0000	3.8000e-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	0.0183					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0566					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.0000e-005	0.0000	1.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.6000e-004	3.6000e-004	0.0000	0.0000	3.8000e-004
Total	**0.0749**	**0.0000**	**1.8000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**3.6000e-004**	**3.6000e-004**	**0.0000**	**0.0000**	**3.8000e-004**

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	0.0183					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0566					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.0000e-005	0.0000	1.8000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	3.6000e-004	3.6000e-004	0.0000	0.0000	3.8000e-004
Total	**0.0749**	**0.0000**	**1.8000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**3.6000e-004**	**3.6000e-004**	**0.0000**	**0.0000**	**3.8000e-004**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

Use Water Efficient Irrigation System

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

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

White Pine Solar (36.5 Acres, 3.5 MW)

Displaced Energy Production during 35-year Project life

Annual Energy Production		Annual Average Solar Radiation Hours/Day/Year
Grid Size (MW)	3.5	5.96
Total hrs/year	8,760	
% Operational time [1]	*25%*	
Operational hours/year	2,175	
KWh produced per year	7,613,900	
Assumed Heat Rate (Btu/KWh)	10,000	
Annual Fuel Equivalent (MMBtu)[2]	76,139	

CA Power Mix[3]		Annual Fuel Displacement (MMBtu)
Coal[4]	0.00%	0
Large Hydro	10.10%	7,690
Natural Gas[4]	16.40%	12,487
Nuclear	42.80%	32,587
Oil	0.00%	0
Other (petroleum coke/waste heat)	0.00%	0
Renewables	30.60%	23,299
Unspecified sources of Power	0.00%	0
Total	**99.9%**	**76,063**

Annual Pollutant Displacement[4]

Natural Gas Turbine Emissions

Pollutant	AP-42 Emission Factor (lb/MMBtu)[5]	Controlled Emission Factor (lb/MMBtu)	Controlled Emissions (lb)	Controlled Emissions (ton)	AP-42 Emission Factor Source Notes[5]
CO$_2$	110	110	1,373,548	686.77	Table 3.1-2a

Coal Combustion Emissions

Pollutant	AP-42 Emission Factor (lb/ton)[6]	Controlled Emission Factor (lb/ton)	Emissions (lb)[7]	Emissions (ton)	AP-42 Emission Factor Source Notes[6]
CO$_2$	6040	6040	0	0.00	Table 1.1-20

Total Displaced Emissions Associated With Direct Combustion

Pollutant	tons/year[8]	tons/lifetime (35 years)		
ROG (NMHC)	0	0		
NO$_X$	1	19		
CO	0	3		
PM$_{10}$	0	1		
PM$_{2.5}$	0	0		
SO$_X$	0	1		
CO$_2$E (Metric Ton)	623	21,806	445.03	15576.07426

Notes:

1. Operational time is based on annual average solar radiation hours per day per year (5.96) for the project area. Source: National Renewable Energy Laboratories, U.S. Department of Energy (https://pvwatts.nrel.gov/pvwatts.php)
2. The Project is assumed to displace existing power generation equivalent to the current power mix each year of operation.
3. CA Power Mix assumptions are based on data from the 2020 Total System Electric Generatin Table. https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/2020-total-system-electric-generation
4. Combustion of natural gas and coal for power are of the greatest concern related to the generation of criteria pollutants and GHG emissions, therefore only fuel displacement of natural gas and coal due to electricty production from the Solar Scarlet facility are considered in this assessment.
5. EPA Air Pollution Emission Factors AP-42 Section 3.1, Stationary Gas Turbines
6. EPA Air Pollution Emission Factors AP-42 Section 1.1, Bituminous and Subbituminous Coal Combustion
7. Coal characteristics used for conversion: Assumed coal heat content = 24 MMBtu/ton
8. Total particulate matter (CPM-TOT) is expressed in terms of coal ash content therefore emission factor is determined by multiplying % ash content of coal (assumed to be 20% herein) by value listed in Table 1.1-4. Organic fraction of particulate matter is 20% of total CPM-TOT (Table 1.1-5) and listed as controlled emission factor.
9. SO$_x$ emission factor calculated by multiplying the weight percent of sulfur (assumed to be 7.5%) by the value listed in Table 1.1-3
10. CO$_2$E volumes are in metric tons rather than short (US) tons

Appendix B

Biological Resource Assessment

Rincon Consultants, Inc.

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March 2, 2022
Project No: 21-11333

Ms. Cate Parker
White Pine Renewables
Via email: cate.parker@whitepinerenew.com

Subject: Biological Resources Assessment for the James Irrigation District Solar Project, Fresno County, California

Dear Ms. Parker:

This report documents the findings of a biological resources assessment conducted by Rincon Consultants, Inc. (Rincon) for the James Irrigation District (James ID) Solar Project (project) in Fresno County, California. The purpose of this report is to document the existing conditions of the project site and to evaluate the potential for impacts to special status biological resources for compliance with James Irrigation District California Environmental Quality Act (CEQA) review process.

Project Location and Description

The project site is located in Fresno County (see Attachment 1; Figure 1). The 36.5-acre site is located on the east side of South Placer Avenue north of West Adams Avenue (see Attachment 1; Figure 2). The site is located on assessor parcel number 030-170-032. The project site is bordered by South Placer Avenue to the west, and recently tilled agricultural lands to the north and west. West Adams Avenue and grape vineyards are located to the south of the site.

The proposed project would involve the development of a solar photovoltaic facility on previously disturbed agricultural lands. The proposed project will provide power to James ID through PG&E's RES_BCT program.

Regulatory Background

Regulatory authority over biological resources is shared by federal, state, and local authorities under a variety of statutes and guidelines. Primary authority for general biological resources lies within the land use control and planning authority of local jurisdictions (in this instance, Fresno County). The California Department of Fish and Wildlife (CDFW) is a trustee agency for biological resources throughout the state under CEQA and also has direct jurisdiction under the California Fish and Game Code (CFGC). Under the California and federal Endangered Species Acts (CESA/ESA), CDFW and U.S. Fish and Wildlife Service (USFWS) also have direct regulatory authority over species formally listed as Threatened or Endangered as well as native bird species listed under the Federal Migratory Bird Treaty Act (MBTA), and the Bald and Golden Eagle Protection Act. The U.S. Army Corps of Engineers (USACE) has regulatory authority over specific biological resources—namely, wetlands and waters of the United States, under Section 404 of the federal Clean Water Act. The CDFW, under CFGC Sections 1600-1617, and Regional Water Quality Control Boards (RWQCB), under the Porter-Cologne Water Quality Control Act, protect waters and streambeds at the state level. The analysis in this biological resources assessment is guided by the requirements of these laws, and by the operating standards of the implementing agencies. The project site does not occur in Natural Community Conservation Planning or Habitat Conservation Plan areas.

Methods

The biological resources study for the project consisted of a review of the relevant literature and databases, a field reconnaissance survey to confirm existing conditions and determine which sensitive biological resources are present or may occur at the site, and an evaluation of the development to determine potentially significant impacts to biological resources under CEQA. The potential presence of special status species is based on the literature review and a field survey designed to assess habitat suitability and presence of, or potential for presence of target species. The potential for impacts to biological resources was evaluated based on these findings and the assumption of full build-out of the project site. The study area evaluated for this analysis includes the 36.5-acre project site (see Attachment 1; Figure 2).

Literature Review

The literature review included the background reports database research on special status biological resource occurrences within the *Jamesan, California* U.S. Geological Survey (USGS) 7.5-minute quadrangle and surrounding eight quadrangles. Sources included the CDFW California Natural Diversity Data Base (CNDDB) (CDFW 2021a); Biogeographic Information and Observation System (CDFW 2021b); USFWS National Wetlands Inventory (USFWS 2021a); USFWS Information for Planning and Consultation (USWFS 2021b); and USFWS Critical Habitat Portal (USFWS 2021c). Other resources included the California Native Plant Society's (CNPS) online Inventory of Rare and Endangered Plants of California (CNPS 2021); CDFW's Special Vascular Plants, Bryophytes, and Lichens List (CDFW 2021d), and CDFW's Connectivity Areas- California Essential Habitat Connectivity Map (CDFW 2021f). Aerial photographs, topographic maps, soil survey maps, geologic maps, and climatic data in the area were also examined. References are included at the end of this letter. A review of the information contained within these databases, supported by the expert opinion of Rincon's biological staff, resulted in a list of special status species and other resources to be evaluated for their presence or potential to occur at the project site.

Field Survey

Rincon biologists Alana Garza and Morgan Craig conducted a reconnaissance-level survey to confirm the evaluation of biological resources in the literature review, assess the habitat suitability for potential special status species, and map vegetation communities and land-cover types. Rincon documented and mapped the vegetation communities, land cover types, presence of any sensitive biological resources, identify potential jurisdictional waters and wetlands, and wildlife connectivity/movement features, and recorded all observations of plant and wildlife species within the study area. Ms. Garza and Ms. Craig conducted the site visit on December 9, 2021, between the hours of 0855 and 1018. The temperature onsite was approximately 52°F. The biologists walked meandering transects over the entire 36.5-acre study area, inspecting the site for the potential to support special status species or sensitive biological resources. Site photos from the survey are included as Attachment 2.

Rincon biologists mapped vegetation communities observed within the study area and conducted a focused search for special status plants that would have been apparent and identifiable during the nonblooming season; however, the survey did not constitute a protocol-level floristic survey. The compilation of a comprehensive floral checklist was limited by survey timing, and the analysis of potential impacts to rare plants is based on a habitat assessment and not protocol survey results. Floral nomenclature for native and non-native plants in this report follows the treatments within the second edition of *The Jepson Manual* (Baldwin et al. 2012).

Wildlife species observed directly or detected from calls, tracks, scat, nests, or other signs were documented. The detection of wildlife species was limited by seasonal and temporal factors. As the survey was performed during the day, identification of nocturnal animals was limited to sign, if present on site.

Existing Setting

Topography and Soils

At an elevation range of approximately 165 feet above mean sea level, the topography of the site is relatively flat. The study area is depicted over the *Jamesan, California* USGS 7.5-minute quadrangle. Adjacent land uses include agricultural development.

The study area contains the following three soil map units (USDA NRCS 2021a): Merced clay loam, 0 to 2 percent slopes; Merced clay, 0 to 2 percent slopes; and Temple clay loam, 0 to 2 percent slopes. Each is defined below:

- **Merced clay loam, 0 to 2 percent slopes:** a poorly drained soil that occurs on basin floors. It is formed from alluvium derived from granite. It is typically used for agriculture if irrigated and drained. Merced clay loam is a hydric soil.
- **Merced clay, 0 to 2 percent slopes:** a very poorly drained soil that occurs on basin floors. It is formed from alluvium derived from granite. It is typically used for agriculture if irrigated and drained. Merced clay is a hydric soil.
- **Temple clay loam, 0 to 2 percent slopes:** a poorly drained soil that is found on basin floors. It is formed from alluvium derived from granite. It is typically used for agriculture if irrigated and drained. Temple clay loam is a hydric soil.

All soils mapped within the project site are listed as hydric soils (USDA NRCS 2021b).

Vegetation/Land Cover Types

There are no intact native vegetation communities within the study area. Two (2) land cover types were identified within the study area during the field survey: Agricultural and Developed. A map of the land-cover types within the study area is shown in Figure 3.

The vegetation community characterizations for this analysis were based on the classification systems presented in *A Manual of California Vegetation, Second Edition* (Sawyer et al. 2009) but have been modified slightly to reflect the existing site conditions most accurately. Although this manual has been superseded by the publication *Preliminary Description of Terrestrial Natural Communities of California* (Holland 1986), it is included for comparison.

Representative photographs of the study area are included as Attachment 2 and a complete list of plant and animal species observed during the field surveys are presented in Attachment 4.

Agricultural

This land cover type is not naturally occurring and is not described in either the Holland (1986) or Sawyer et al. (2009) classification systems. This land cover type within the study area includes an actively tilled field. No signs of plant or animal species activity were observed within the field.

Developed/Ruderal

This land cover type is not naturally occurring and is not described in either the Holland (1986) or Sawyer et al. (2009) classification systems. Developed and ruderal portions of the study area include paved and dirt roads, a man-made levy boarding the agricultural field, and a culvert that connects to the adjacent agricultural fields. The culvert was likely used for past agricultural uses, such as flood irrigation. Patches of ruderal vegetation occur within the developed land cover type. Tumbleweed (*Amaranthus albus*), horseweed (*Erigeron canadensis*), and common mugwort (*Artemisia vulgaris*) were observed near the culvert (Attachment 1; Photo 4).

General Wildlife

The project area and surrounding lands consist predominantly of heavily impacted agricultural fields and orchards. Avian species observed on or adjacent to the site include red-tailed hawk (*Buteo jamaicensis*), common raven (*Corvus corax*), mourning dove (*Zenaida macroura*), great egret (*Ardea alba*), and white-faced ibis (*Plegadis chihi*). Terrestrial species observed/detected include botta’s pocket gopher (*Thomomys bottae),* California ground squirrel (*Otospermophilus beecheyi*), and domestic dogs.

Special Status Biological Resources

This section discusses sensitive biological resources observed on the study area and evaluates the potential for the study area to support other sensitive biological resources.

Special Status Species

Local, state, and federal agencies regulate special status species and may require an assessment of their presence or potential presence to be conducted prior to the approval of development on a property. Assessments for the potential occurrence of special status species are based upon known ranges, habitat preferences for the species, species occurrence records from the CNDDB species occurrence records from other sites in the vicinity of the study area (2021a), and previous reports for the study area. The potential for each special status species to occur in the study area was evaluated according to the following criteria:

- **Not expected.** Habitat on and adjacent to the site is clearly unsuitable for the species’ requirements (foraging, breeding, cover, substrate, elevation, hydrology, plant community, site history, disturbance regime).
- **Observed but not expected.** Specific to bird species observed flying over the site, however habitat on and adjacent to the site is clearly unsuitable for the species’ requirements.
- **Low Potential.** Few of the habitat components meeting the species’ requirements are present, and/or the majority of habitat on and adjacent to the site is unsuitable or of very poor quality. The species is not likely to be found on the site.

- **Moderate Potential.** Some of the habitat components meeting the species' requirements are present, and/or only some of the habitat on or adjacent to the site is unsuitable. The species has a moderate probability of being found on the site.
- **High Potential.** All of the habitat components meeting the species' requirements are present and/or most of the habitat on or adjacent to the site is highly suitable. The species has a high probability of being found on the site.
- **Present.** Species is observed on the site or has been recorded (e.g., CNDDB, other reports) on the site recently (within the last 5 years).

For the purpose of this report, special status species are those plants and animals listed, proposed for listing, or candidates for listing as Threatened or Endangered by the USFWS under the ESA; those listed or candidates for listing as Rare, Threatened, or Endangered under the CESA or Native Plant Protection Act; those identified as Fully Protected by the California Fish and Game Code (Sections 3511, 4700, 5050, and 5515); those identified as Species of Special Concern or Watch List species by the CDFW; and plants occurring on lists 1 and 2 of the California Native Plant Society (CNPS) California Rare Plant Rank (CRPR) system per the following definitions:

- **Rank 1A**: Plants presumed extinct in California;
- **Rank 1B.1:** Rare or endangered in California and elsewhere; seriously endangered in California (over 80% of occurrences threatened/high degree and immediacy of threat);
- **Rank 1B.2**: Rare or endangered in California and elsewhere; fairly endangered in California (20-80% occurrences threatened);
- **Rank 1B.3**: Rare or endangered in California and elsewhere, not very endangered in California (<20% of occurrences threatened or no current threats known);
- **Rank 2**: Rare, threatened or endangered in California, but more common elsewhere.

Based on a query of the CNDDB (2021a), there are 16 special status plant species, 27 special status wildlife species, and four sensitive natural communities documented within the *Jamesan, California* USGS 7.5-minute quad and the eight surrounding quads. The forty-three special status species have been evaluated for potential to occur within the study area (Attachment 3). Only species with present, high, or moderate potential to occur will be evaluated in this document.

Special Status Plant Species

Sixteen (16) special status plant species known to occur in the region were evaluated for their potential to occur in the study area (see Attachment 3). None of these 16 species would be expected to occur within the project site. The species could be excluded based on known range and elevation, the lack of the species' specific habitat requirements within the study area, or due to the disturbed nature of the site and its lack of connectivity to natural vegetation communities.

Special Status Wildlife Species

Rincon identified 27 special status wildlife species that have been documented within the nine-quadrangle search radius. These species were reviewed for potential to occur within the study area (see Attachment 3); one species was present during the site visit, one species has moderate potential to occur, and three have low potential to occur in the study area. Tricolored blackbird, burrowing owl, and

San Joaquin kit fox were determined to have a low potential to occur, and therefore will not be discussed further. Special status species that were present or are considered to have moderate potential to occur are discussed in detail below.

White-Faced Ibis

The white-faced ibis is on CDFW's watch list (WL). One white-faced ibis was observed flying over the project site during the site visit. It was only observed flying overhead and did not land on or near-by the study area. White-faced ibis use shallow freshwater marshes for foraging and dense tule thickets for nesting. No foraging or nesting habitat is present within the study area. The species is present in the region of the study area and may be spotted during dispersal but would be unlikely to use the project site due to lack of foraging and nesting habitat. In addition, no occurrences have been documented by the CNDDB within 5 miles of the study area. Despite the recent observation of this species flying overhead, the white-faced ibis is not likely to be present on the project site.

Swainson's Hawk

The Swainson's hawk is listed as a state threatened species. The historical breeding range of Swainson's hawk in California included the Great Basin, Sacramento and San Joaquin Basins, the coast from Marin County to San Diego County, and scattered sites in the Mojave and Colorado Deserts (England et al., 1997). The species continues to breed across its entire historical range, but in significantly lower numbers than historically. In the Central Valley, much of the native habitat has been converted to agricultural and urban uses, thereby limiting nesting and foraging opportunities for Swainson's hawk. This species is often found nesting in trees associated with scattered rural residences, particularly in relation to grasslands or dry-land grain fields. Throughout its range the species nest almost exclusively in trees, typically on the edges of woodland adjacent to grass or shrubland habitat (England et al. 1997).

There are several records of Swainson's hawks nesting within five miles of the study area, last recorded in 2018. No Swainson's hawks or raptor nests were observed during the site survey and there are no trees present within the study area or in the immediate vicinity. Suitable nesting habitat within 1 mile of the study area is limited to isolated trees on the west side of Clayton Ave. There is limited habitat for the species within the study area, but a stand of isolated trees along a canal to the west of the study area could provide marginal foraging and nesting habitat for the species. Therefore, Swainson's hawk has a moderate potential to forage and low potential to nest within the study area.

Nesting Birds

Non-game migratory birds protected under the CFGC Section 3503, such as native avian species common to grasslands, agricultural, developed, and ruderal areas, have the potential to breed and forage throughout the study area. Nesting by a variety of common birds protected by the MBTA and CFGC Section 3503 could occur in virtually any location throughout the study area on the ground surface or within native or non-native vegetation.

Special Status Vegetation Communities and Critical Habitat

Four (4) sensitive natural communities are documented in the CNDDB within the nine USGS quadrangles surrounding the project area: Coastal and Valley Freshwater Marsh, Valley Sink Scrub, Valley Sacaton

Grassland, and Northern Claypan Vernal Pool (CDFW 2021b). None of these communities, nor other sensitive plant communities, occur within the project area.

There is no USFWS designated critical habitat within the project area (USFWS 2021c).

Jurisdictional Waters and Wetlands

No jurisdictional wetlands or waters were mapped within the project area. The project site was used as agricultural land and flood-irrigated agricultural production. According to the NWI, one unnamed canal exists south of the project area. The canal is classified as R5UBFx (Riverine [R], Unknown Perennial [5], Unconsolidated Bottom [UB], Semipermanently Flooded [F], and Excavated [x]).

Wildlife Movement

Wildlife movement corridors, or habitat linkages, are generally defined as connections between habitat patches that allow for physical and genetic exchange between otherwise isolated animal populations. Such linkages may serve a local purpose, such as providing a linkage between foraging and denning areas, or they may be regional in nature. Some habitat linkages may serve as migration corridors, wherein animals periodically move away from an area and then subsequently return. Other corridors may be important as dispersal corridors for young animals. A group of habitat linkages in an area can form a wildlife corridor network.

In the vicinity of the study area, disked fields and existing roads could provide local scale opportunities for wildlife movement, particularly disturbance-tolerant species such as coyote. There are no Natural Landscape Blocks or Essential Connectivity Areas mapped within the study area and surrounding land has long been disrupted by intensive agriculture, therefore, the project is not expected to substantially alter existing wildlife movement or interfere with established resident or migratory wildlife corridors.

Local Policies and Ordinances

The project is located in unincorporated Fresno County. Project activities are subject to the Fresno County's General Plan and Municipal Code. The Fresno County General Plan includes open space, conservation, and land use elements. Proposed project activities are not in conflict with any elements of the General Plan as the site is located in agricultural zoning. No native trees were observed on site or are proposed for removal. The project will not conflict with any local policies or ordinances protecting biological resources.

Habitat Conservation Plans

The study area is not within any Habitat Conservation Plan or Natural Community Conservation Plan areas.

Impact Analysis and Mitigation Measures

This section discusses the potential impacts and effects to biological resources that may occur from project implementation.

Special Status Species

The project would have a significant effect on biological resources if it would:

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 Wildlife or U.S. Fish and Wildlife Service.*

Special Status Plants

Literature review and database searches identified 16 special status plants have the potential to occur within the study area. None are expected to occur within the study area; therefore, impacts to special status plant species are not expected.

Special Status Wildlife

Two (2) of the twenty-seven special status wildlife species have potential to occur within the study area based upon known ranges, habitat preferences, species occurrence records in the vicinity of the study area, and presence of suitable habitat. The white-faced ibis was spotted flying overhead during the site reconnaissance survey. However, due to lack of foraging and nesting habitat, this species is not likely to be present in the study area, and thus no impacts to the white-faced ibis are expected. The one special status wildlife species that has potential to occur is the Swainson's hawk. Impacts to this species may occur through removal of vegetation if active nests are present. Impacts may also occur if active nests are present in undeveloped and landscaped areas adjacent to active construction or staging through disturbance and nest abandonment.

Mitigation Measures

BIO-1 Mitigation Measures for Swainson's Hawk, Other Raptors and Nesting Birds

Ground disturbance and vegetation removal activities should be restricted to the non-breeding season (September 16 to January 31) when feasible. If construction activities occur during the nesting bird season (February 1 to September 15), the following mitigation measures are recommended to reduce impacts to Swainson's hawk, other protected raptor species, tricolored birds, and other nesting birds protected by the MBTA and CFGC.

- A preconstruction nesting bird survey should be conducted no more than 14 days prior to initiation of ground disturbance and vegetation removal. The survey should be conducted within the study area and include a 150-foot buffer for passerines, 500-foot buffer for other raptors, and ½ mile buffer for active Swainson's hawk nests. The survey should be conducted by a biologist familiar with the identification of avian species known to occur in the region.
- If the nesting bird survey results are negative, no further action is required. If nests are found, an appropriate avoidance buffer will be determined and demarcated by the biologist with high visibility material. For Swainson's hawk nests, an avoidance buffer of up to ½ mile should be established by a qualified biologist based on the nest location in relation to the project activity, the line-of-sight from the nest to the project activity, and observed hawk behavior at the nest.

- All construction personnel should be notified as to the existence of the buffer zones and to avoid entering buffer zones during the nesting season. No ground disturbing activities should occur within the buffer until the avian biologist has confirmed that breeding/nesting is complete, and the young have fledged the nest. Encroachment into the buffer should occur only at the discretion of the qualified biologist.
- Results of the preconstruction nesting bird survey will be submitted in a brief letter report to James Irrigation District no more than 30 days after completion of the survey.

Sensitive Plant Communities and Critical Habitat

The project would have a significant effect on biological resources if it would:

b) Have a substantial adverse impact 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 Wildlife or US Fish and Wildlife Service.

No sensitive plant communities or critical habitat are present within the study area. Therefore, no impacts to sensitive natural communities or critical habitat are expected.

Jurisdictional Waters and Wetlands

The project would have a significant effect on biological resources if it would:

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.

The project would have no effect on jurisdictional waters and wetlands as there are none located in the project area.

Wildlife Movement

The project would have a significant effect on biological resources if it would:

d) Interfere substantially with the movement of any resident or migratory fish or wildlife species or with established resident or migratory wildlife corridors or impede the use of wildlife nursery sites.

No significant wildlife movement corridors or habitat linkages are present in the study area. The location within the study area and surrounding land has long been disrupted by intensive agriculture. The project is not expected to substantially alter existing wildlife movement or interfere with established resident or migratory wildlife corridors. Therefore, impacts to wildlife movement would be less than significant.

Local Policies and Ordinance

The proposed project would have a significant effect on biological resources if it would:

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance

The Fresno County General Plan includes open space, conservation, and land use elements. Proposed project activities are not in conflict with any elements of the General Plan as the site is located in agricultural zoning. No native trees were observed on site or are proposed for removal. The project will not conflict with any local policies or ordinances protecting biological resources.

Habitat Conservation Plan

The proposed project would have a significant effect on biological resources if it would:

f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Conservation Community Plan, or other approved local, regional, or state habitat conservation plan.

The project is not within any applicable habitat conservation plan areas; therefore, no conflicts with state, regional, or local habitat conservation plans would occur.

Sincerely,
Rincon Consultants, Inc.

Morgan Craig
Associate Biologist

David Daitch, Ph.D.
Principal/Senior Ecologist

Attachments

Attachment 1	Figures
Attachment 2	Representative Site Photographs
Attachment 3	Special Status Species Evaluation Tables
Attachment 4	Floral and Faunal Compendium

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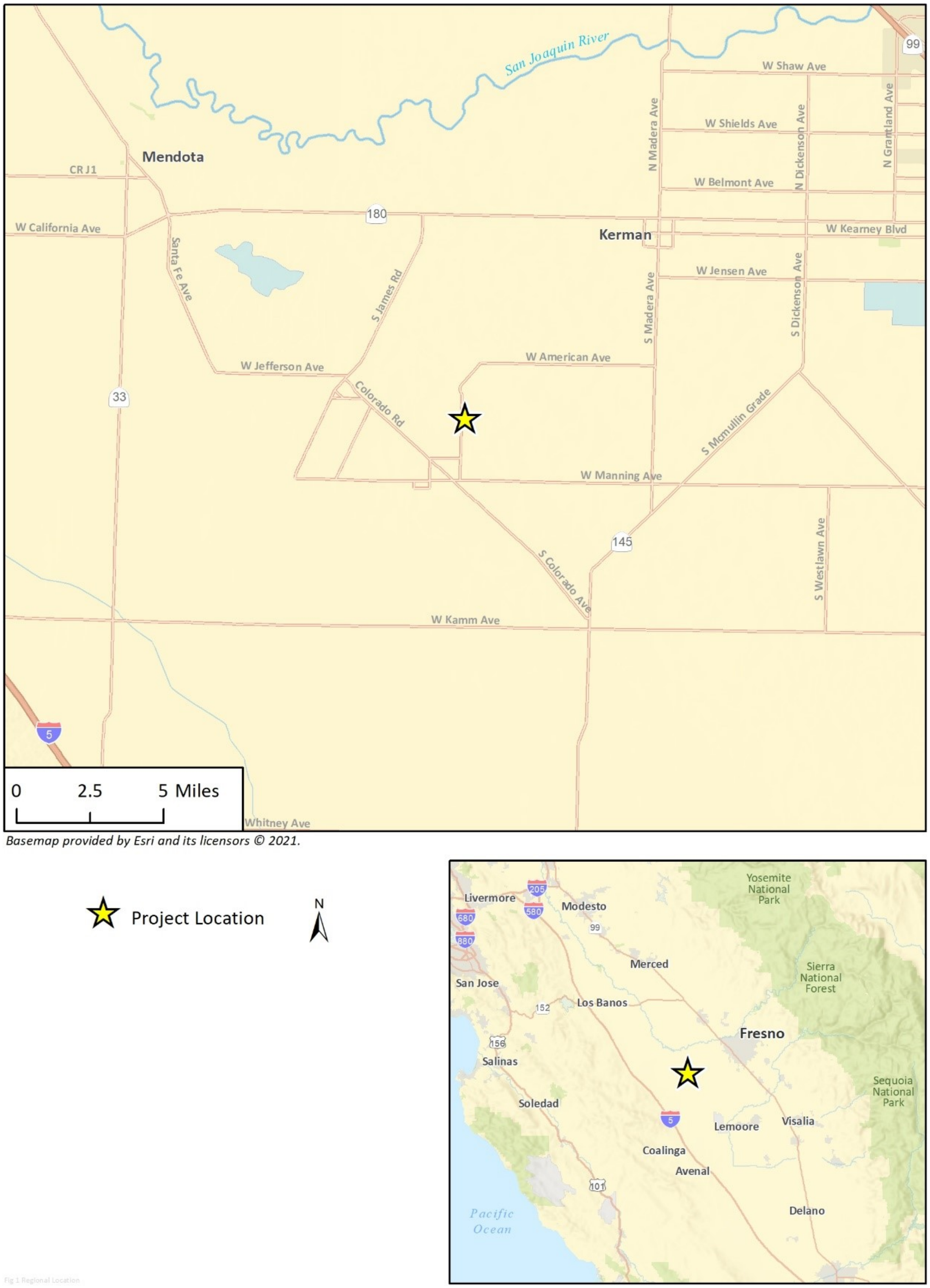
Attachment 1

Figures

Figure 1 Regional Location



Basemap provided by Esri and its licensors © 2021.

Figure 2 Study Area

Imagery provided by Microsoft Bing and its licensors © 2021.

Fig 2 Project Location

Figure 3 Land Cover Types

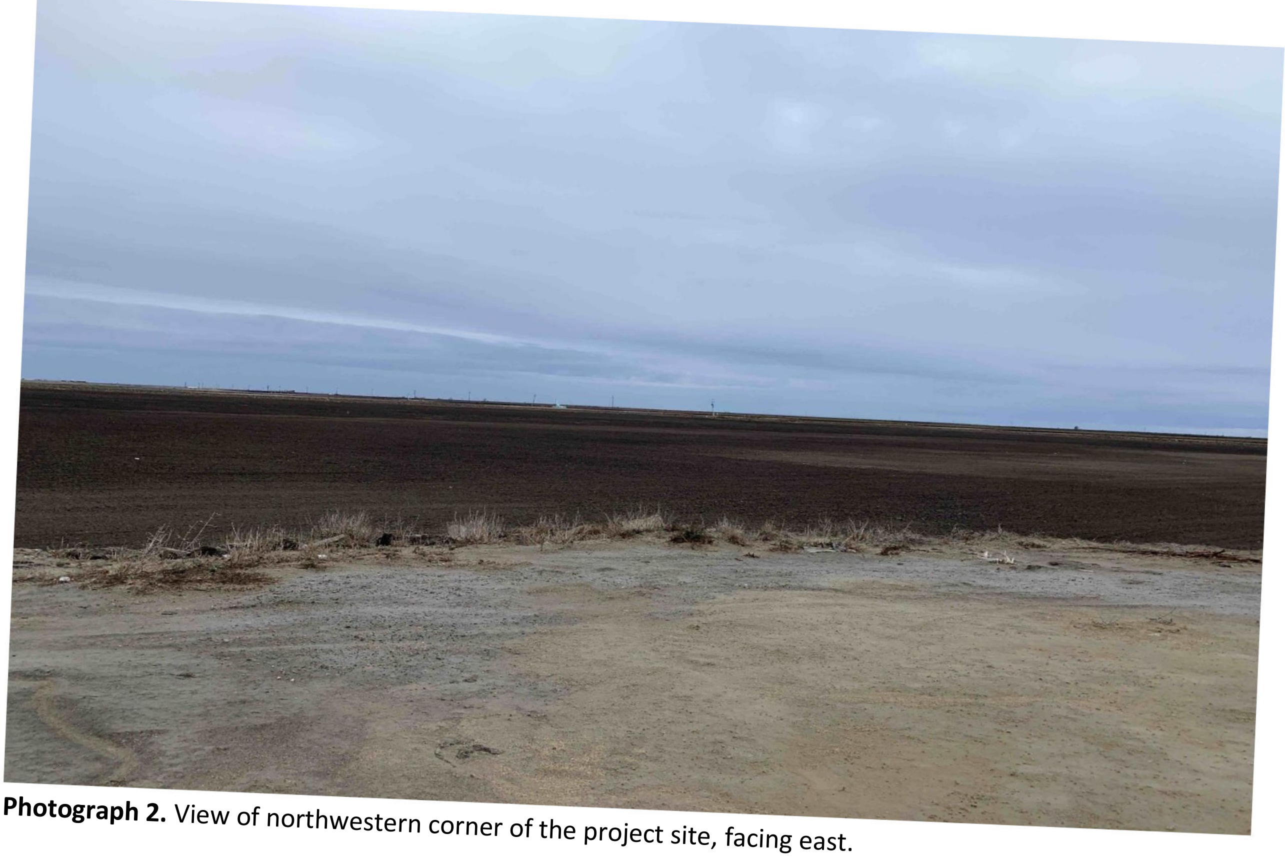
Imagery provided by Microsoft Bing and its licensors © 2021.

Fig 3 Land Cover Type

Attachment 2

Representative Site Photographs

Photograph 1. View of southwestern corner of the project site, facing northeast.



Photograph 2. View of northwestern corner of the project site, facing east.

Photograph 3. View of northeastern corner of the project site, facing south.

Photograph 4. Culvert at southeast corner or project site, facing southwest.

Photograph 5. View of southern end of project site, facing west.

Photograph 6. View of western end of project site and South Placer Avenue, facing west.

Photograph 7. View of eastern end of project site, facing east.

Photograph 8. View of northern end of project site, facing north.

Attachment 3

Special Status Species Evaluation Tables

Special Status Plant Species in the Regional Vicinity (Nine Quad) of the Study Area

Scientific Name Common Name	Status Fed/State ESA CRPR	Habitat Requirements	Potential to Occur	Rationale
Atriplex cordulata var. *cordulata* heartscale	None/None G3T2/S2 1B.2	Chenopod scrub, Meadows and seeps, Valley and foothill grassland (sandy). saline or alkaline. 0 - 560 m. annual herb. Blooms Apr-Oct	Not Expected	Native grasslands and suitable soils are not present, and the project site is heavily disturbed. No occurrences have been reported within 5 miles.
Atriplex cordulata var. erecticaulis Earlimart orache	None/None G3T1/S1 1B.2	Valley and foothill grassland. 40-100m. Blooms Aug-Sep(Nov)	Not Expected	Native grasslands and suitable elevation are not present at the project site. Twenty-three occurrences have been reported within 5 miles in 1990, although species is presumed extirpated.
Atriplex coronata var. vallicola Lost Hills crownscale	None/None G4T3/S3 1B.2	Chenopod scrub, Valley and foothill grassland, Vernal pools. Alkaline 50-635m. Blooms Apr-Sep	Not Expected	Disturbance history of study area limits the possibility of occurrence. No occurrences have been reported within 5 miles.
Atriplex depressa brittlescale	None/None G2/S2 1B.2	Chenopod scrub, Meadows and seeps, Playas, Valley and foothill grassland, Vernal pools. Alkaline, Clay 1-320m. Blooms Apr-Oct	Not Expected	Disturbance history of study area limits the possibility of occurrence. No occurrences have been reported within 5 miles.
Atriplex minuscula lesser saltscale	None/None G2/S2 1B.1	Chenopod scrub, Playas, Valley and foothill grassland. Alkaline, Sandy 15-200m. Blooms May-Oct	Not Expected	Native grasslands and suitable soils are not present, and the project site is heavily disturbed. No occurrences have been reported within 5 miles.
Atriplex persistens vernal pool smallscale	None/None G2/S2 1B.2	Vernal pools. Alkaline vernal pools. 10-115m. Blooms Jun-Oct.	Not Expected	Suitable habitat and elevation are not present at the project site.
Atriplex subtilis subtle orache	None/None G1/S1 1B.2	Valley and foothill grassland. Alkaline 40-100m. Blooms (Apr)Jun-Sep(Oct)	Not Expected	Disturbance history of study area limits the possibility of occurrence. Suitable elevation is not present. No occurrences have been reported within 5 miles.
Chloropyron palmatum palmate-bracted bird's-beak	FE/SCE G1/S1 1B.1	Chenopod scrub, Valley and foothill grassland. Alkaline 5-155m. Blooms May-Oct	Not Expected	Suitable elevation and habitat are not present. No occurrences have been reported within 5 miles.

Scientific Name Common Name	Status Fed/State ESA CRPR	Habitat Requirements	Potential to Occur	Rationale
Delphinium recurvatum recurved larkspur	None/None G2?/S2? 1B.2	Chenopod scrub, Cismontane woodland, Valley and foothill grassland. Alkaline 3-790m. Blooms Mar-Jun	Not Expected	Disturbance history of study area limits the possibility of occurrence. No occurrences have been reported within 5 miles.
Eriastrum hooveri Hoover's eriastrum	FD/None G3/S3 4.2	Chenopod scrub, Pinyon and juniper woodland, Valley and foothill grassland. Gravelly (sometimes) 50-915m. Blooms Mar-Jul	Not Expected	Disturbance history of study area limits the possibility of occurrence. No occurrences have been reported within 5 miles.
Eryngium spinosepalum spiny-sepaled button-celery	None/None G2/S2 1B.2	Valley and foothill grassland, Vernal pools. Some sites on clay soil of granitic origin; vernal pools, within grassland. 80-975m. Blooms Apr-Jun	Not Expected	Suitable habitat is not present at the project site.
Lasthenia chrysantha alkali-sink goldfields	None/None G2/S2 1B.1	Vernal pools. Alkaline 0-200m. Blooms Feb-Ap	Not Expected	Suitable habitat is not present at the project site.
Layia munzii Munz's tidy-tips	None/None G2/S2 1B.2	Chenopod scrub, Valley and foothill grassland. Hillsides, in white-grey alkaline clay soils, w/grasses and chenopod scrub associates. 150-700m. Blooms Mar-Apr	Not Expected	Native grasslands are not present, and the project site is heavily disturbed.
Monolopia congdonii San Joaquin woollythreads	FE/None G2/S2 1B.2	Chenopod scrub, Valley and foothill grassland. Alkaline or loamy plains; sandy soils, often with grasses and within chenopod scrub. 60-800m. Blooms Feb-May	Not Expected	Suitable soils are not present at the project site. No occurrences have been reported within 5 miles.
Puccinellia simplex California alkali grass	None/None G3/S2 1B.2	Chenopod scrub, Meadows and seeps, Valley and foothill grassland, Vernal pools. Alkaline, vernally mesic. Sinks, flats, and lake margins. 2-930m. Blooms Mar-May	Not Expected	Disturbance history of study area limits the possibility of occurrence. Vernal pools are not present at the project site. No occurrences have been reported within 5 miles.

Scientific Name Common Name	Status Fed/State ESA CRPR	Habitat Requirements	Potential to Occur	Rationale
Sagittaria sanfordii Sanford's arrowhead	None/None G3/S3 1B.2	Marshes and swamps. In standing or slow-moving freshwater ponds, marshes, and ditches. 0-650m. Blooms May-Oct(Nov)	Not Expected	Suitable habitat is not present at the project site. No occurrences have been reported within 5 miles.

Regional Vicinity refers to within a 9-quad search radius of site.

FE = Federally Endangered FT = Federally Threatened FC = Federal Candidate Species

SE = State Endangered ST = State Threatened SC = State Candidate SR = State Rare

CRPR (CNPS California Rare Plant Rank):

1A=Presumed Extinct in California

1B=Rare, Threatened, or Endangered in California and elsewhere

2A=Plants presumed extirpated in California, but more common elsewhere

2B=Plants Rare, Threatened, or Endangered in California, but more common elsewhere

CRPR Threat Code Extension:

.1=Seriously endangered in California (over 80% of occurrences threatened / high degree and immediacy of threat)

.2=Fairly endangered in California (20-80% occurrences threatened)

.3=Not very endangered in California (<20% of occurrences threatened)

Special Status Animal Species in the Regional Vicinity (Nine Quad) of the Study Area

Scientific Name Common Name	Status Fed/State ESA CDFW	Habitat Requirements	Potential to Occur	Rationale
Invertebrates				
Branchinecta longiantenna longhorn fairy shrimp	FE/None G1/S1S2	Endemic to the eastern margin of the Central Coast mountains in seasonally astatic grassland vernal pools. Inhabit small, clear-water depressions in sandstone and clear-to-turbid clay/grass-bottomed pools in shallow swales.	Not Expected	Vernal pools are not present.
Branchinecta lynchi vernal pool fairy shrimp	FT/None G3/S3	Endemic to the grasslands of the Central Valley, Central Coast mountains, and South Coast mountains, in astatic rain-filled pools. Inhabit small, clear-water sandstone-depression pools and grassed swale, earth slump, or basalt-flow depression pools.	Not Expected	Vernal pools are not present. No occurrences have been reported within 5 miles.
Linderiella occidentalis California linderiella	None/None G2G3/S2S3	Seasonal pools in unplowed grasslands with old alluvial soils underlain by hardpan or in sandstone depressions. Water in the pools has very low alkalinity, conductivity, and total dissolved solids.	Not Expected	Vernal pools are not present. No occurrences have been reported within 5 miles.
Amphibians				
Spea hammondii western spadefoot	None/None G2G3/S3 SSC	Occurs primarily in grassland habitats, but can be found in valley-foothill hardwood woodlands. Vernal pools are essential for breeding and egg-laying.	Not Expected	Vernal pools are not present. No occurrences have been reported within 5 miles.
Reptiles				
Anniella pulchra northern California legless lizard	None/None G3/S3 SSC	Sandy or loose loamy soils under sparse vegetation. Soil moisture is essential. They prefer soils with a high moisture content.	Not Expected	Suitable sandy soils are not present, and disturbance history of site limits the possibility of occurrence. No occurrences have been reported within 5 miles.
Emys marmorata western pond turtle	None/None G3G4/S3 SSC	A thoroughly aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches, usually with aquatic vegetation, below 6000 ft elevation. Needs basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.5 km from water for egg-laying.	Not Expected	Suitable aquatic habitats are not present, and disturbance history of site limits the possibility of occurrence. No occurrences have been reported within 5 miles.

Scientific Name Common Name	Status Fed/State ESA CDFW	Habitat Requirements	Potential to Occur	Rationale
Gambelia sila blunt-nosed leopard lizard	FE/SE G1/S1 FP	Resident of sparsely vegetated alkali and desert scrub habitats, in areas of low topographic relief. Seeks cover in mammal burrows, under shrubs or structures such as fence posts; they do not excavate their own burrows.	Not Expected	Suitable habitats are not present, and disturbance history of site limits the possibility of occurrence. No occurrences have been reported within 5 miles.
Masticophis flagellum ruddocki San Joaquin coachwhip	None/None G5T2T3/S2? SSC	Open, dry habitats with little or no tree cover. Found in valley grassland and saltbush scrub in the San Joaquin Valley. Needs mammal burrows for refuge and oviposition sites.	Not Expected	Disturbance history of site limits the possibility of occurrence. Little to no burrows were observed to potentially use as refuge. No occurrences have been reported within 5 miles.
Phrynosoma blainvillii coast horned lizard	None/None G3G4/S3S4 SSC	Frequents a wide variety of habitats, most common in lowlands along sandy washes with scattered low bushes. Open areas for sunning, bushes for cover, patches of loose soil for burial, and abundant supply of ants and other insects.	Not Expected	Suitable sandy soils are not present, and disturbance history of site limits the possibility of occurrence. No occurrences have been reported within 5 miles.
Thamnophis gigas giant gartersnake	FT/ST G2/S2	Prefers freshwater marsh and low gradient streams. Has adapted to drainage canals and irrigation ditches. This is the most aquatic of the gartersnakes in California.	Not Expected	Relatively low water source availability could potentially discourage the species. No occurrences have been reported within 5 miles.
Thamnophis hammondii two-striped gartersnake	None/None G4/S3S4 SSC	Coastal California from vicinity of Salinas to northwest Baja California. From sea to about 7,000 ft elevation. Highly aquatic, found in or near permanent fresh water. Often along streams with rocky beds and riparian growth.	Not Expected	Relatively low water source availability could potentially discourage the species. No occurrences have been reported within 5 miles.

Scientific Name Common Name	Status Fed/State ESA CDFW	Habitat Requirements	Potential to Occur	Rationale
Birds				
Agelaius tricolor tricolored blackbird	None/ST G2G3/S1S2 SSC	Highly colonial species, most numerous in Central Valley & vicinity. Largely endemic to California. Requires open water, protected nesting substrate, and foraging area with insect prey within a few km of the colony.	Low Potential	Relatively low water source availability and minimal nesting habitat could potentially discourage the species. No occurrences have been reported within 5 miles.
Athene cunicularia burrowing owl	None/None G4/S3 SSC	Open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	Low Potential	Suitable habitat is not present due to the disturbance history of site and lack of mammal burrows required for the species, although there have been occurrences within 5 miles of the project site, last documented in 2016.
Buteo swainsoni Swainson's hawk	None/ST G5/S3	Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, & agricultural or ranch lands with groves or lines of trees. Requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations.	Moderate	No nests observed and marginal suitable nesting habitat was observed nearby the project site. The species may occasionally use the site for foraging.
Charadrius montanus mountain plover	None/None G3/S2S3 SSC	Short grasslands, freshly plowed fields, newly sprouting grain fields, and sometimes sod farms. Short vegetation, bare ground, and flat topography. Prefers grazed areas and areas with burrowing rodents.	Not Expected	No occurrences have been reported within 5 miles.
Coccyzus americanus occidentalis western yellow-billed cuckoo	FT/SE G5T2T3/S1	Riparian forest nester, along the broad, lower flood-bottoms of larger river systems. Nests in riparian jungles of willow, often mixed with cottonwoods, with lower story of blackberry, nettles, or wild grape.	Not Expected	Suitable habitats are not present. No occurrences have been reported within 5 miles.
Falco columbarius merlin	None/None G5/S3S4 WL	Seacoast, tidal estuaries, open woodlands, savannahs, edges of grasslands and deserts, farms and ranches. Clumps of trees or windbreaks are required for roosting in open country.	Not Expected	Suitable habitat is not present. No occurrences have been reported within 10 miles.

Scientific Name Common Name	Status Fed/State ESA CDFW	Habitat Requirements	Potential to Occur	Rationale
Plegadis chihi white-faced ibis	None/None G5/S3S4 WL	Shallow freshwater marsh. Dense tule thickets for nesting, interspersed with areas of shallow water for foraging.	Observed but Not Expected	Observed flying overhead during previous site survey. Suitable nesting and foraging habitat is not present at the project site due to disturbance history of site and lack of suitable freshwater marsh vegetation.
Riparia riparia bank swallow	None/ST G5/S2	Colonial nester; nests primarily in riparian and other lowland habitats west of the desert. Requires vertical banks/cliffs with fine-textured/sandy soils near streams, rivers, lakes, ocean to dig nesting hole.	Not Expected	Suitable habitat is not present. No occurrences have been reported within 10 miles.
Mammals				
Ammospermophilus nelson Nelson's (=San Joaquin) antelope squirrel	None/ST G2G3/S2S3	Occurs in Western San Joaquin Valley from 200-1200 feet elevation. Uses dry, sparsely vegetated areas with a variety of soils suitable for digging. Digs burrows or uses kangaroo rat or other small mammal burrows. Needs widely scattered shrubs, forbs, and grasses in broken terrain, often with gullies and washes.	Not Expected	Suitable elevation and habitat are not present. Little to no mammal burrows were observed at the project site. No occurrences have been reported within 5 miles.
Dipodomys nitratoides exilis Fresno kangaroo rat	FE/SE G3TH/SH	Alkali sink-open grassland habitats in western Fresno County. Bare alkaline clay-based soils subject to seasonal inundation, with more friable soil mounds around shrubs and grasses.	Not Expected	Disturbance history of site limits the possibility of occurrence. Little to no burrows were observed at the project site.
Eumops perotis californicus western mastiff bat	None/None G4G5T4/S3S4 SSC	Roosts in trees in forests and woodlands of varying elevations. Forages in grasslands, shrublands, open woodlands and forests, and agriculture. Typically found in riparian habitats, does not occur in deserts.	Not Expected	Suitable roost habitats are not present. No occurrences have been reported within 10 miles.
Lasiurus blossevillii western red bat	None/None G4/S3 SSC	Roosts in trees in forests and woodlands of varying elevations. Forages in grasslands, shrublands, open woodlands and forests, and agriculture. Typically found in riparian habitats, does not occur in deserts.	Not Expected	Suitable roost habitats are not present. No occurrences have been reported within 10 miles.

Scientific Name Common Name	Status Fed/State ESA CDFW	Habitat Requirements	Potential to Occur	Rationale
Myotis yumanensis Yuma myotis	None/None G5/S4	Occurs in a variety of lowland and upland habitats including desert scrub, riparian, and woodlands and forests. Distribution is closely tied to bodies of water. Roosts in a variety of areas including caves, cliffs, mines, crevices in live trees, and buildings and other man-made structures.	Not Expected	Suitable roost habitats are not present. No occurrences have been reported within 10 miles.
Perognathus inornatus San Joaquin pocket mouse	None/None G2G3/S2S3	Grassland, oak savanna and arid scrubland in the southern Sacramento Valley, Salinas Valley, San Joaquin Valley and adjacent foothills, south to the Mojave Desert. Associated with fine-textured, sandy, friable soils.	Not Expected	Suitable habitat and soil are not present at the project site. Little to no burrows were observed at the project site. No occurrences have been reported within 10 miles.
Taxidea taxus American badger	None/None G5/S3 SSC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Needs sufficient food, friable soils and open, uncultivated ground. Preys on burrowing rodents. Digs burrows.	Not Expected	No burrows of sufficient size were observed at the project site. Badgers do not occupy agricultural areas subject to plowing.
Vulpes macrotis mutica San Joaquin kit fox	FE/ST G4T2/S2	Annual grasslands or grassy open stages with scattered shrubby vegetation. Need loose-textured sandy soils for burrowing, and suitable prey base.	Low Potential	No suitable burrows were observed at the project site. Site is within range, but ongoing agricultural activities discourage occupancy. Likely only to occur as a transient.

Regional Vicinity refers to within a 9-quad search radius of site.

FE = Federally Endangered FT = Federally Threatened FC = Federal Candidate Species FS=Federally Sensitive

SE = State Endangered ST = State Threatened SC = State Candidate SS=State Sensitive

SSC = CDFW Species of Special Concern SFP = State Fully Protected WL = Watch List

Attachment 4

Floral and Faunal Compendium

Plant Species Observed within the Study Area on December 9, 2021

Scientific Name	Common Name	Status	Native or Introduced
Vines			
Vitis vinifera	grape	None	Introduced; Cultivated
Herbs			
Artemisia vulgaris	Common mugwort	None	Introduced
Erigeron canadensis	horseweed	None	Native
Salsola australis	tumbleweed	None	Introduced
Grasses			
Cynodon dactylon	Bermuda grass	None	Introduced, Cal-IPC: Moderate

CRPR= California Rare Plant Rank

1B= Rare, threatened, or endangered in California and elsewhere, 0.2= Moderately threatened in California

Cal-IPC=California Invasive Plant Council Rank

Wildlife Species Observed Within the Study Area on December 9, 2021

Scientific Name	Common Name	Status	Native or Introduced
Birds			
Ardea alba	great egret	None	Native
Buteo jamaicensis	red-tailed hawk	None	Native
Corvus corax	common raven	None	Native
Plegadis chihi	white-faced ibis	WL	Native
Zenaida macroura	mourning dove	None	Native
Mammals			
Canis lupus familiaris	domestic dog	None	Native
Otospermophilus beecheyi	California ground squirrel*	None	Native
Thomomys bottae	botta's pocket gopher*	None	Native

WL- State Watch List

* observed sign by species only (i.e., tracks, scat, burrow)

Appendix C

Cultural Resources Assessment

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March 3, 2022
Project No: 21-11333

Ms. Cate Parker
White Pine Renewables
498 Carl Street, Suite 3
San Francisco, CA 94117
Via email: cate.parker@whitepinerenew.com

Subject: Cultural Resources Assessment for James Irrigation District Solar Projects 1 and 2, Fresno County, California

Dear Ms. Parker:

This letter report presents the findings of a cultural resources assessment completed in support of James Irrigation District (James ID) Solar Projects 1 and 2 (proposed projects) located in unincorporated Fresno County, California. Rincon Consultants, Inc. (Rincon) was retained by White Pine Renewables to support the proposed projects' compliance with the California Environmental Quality Act (CEQA). This letter report documents the results of the tasks performed by Rincon, specifically a cultural resources records search, archival and background research, and field survey. All work was completed in accordance with CEQA and applicable local regulations. James ID is the lead agency under CEQA.

Project Sites and Description

The project sites are located 1.3 miles northeast of the city of San Joaquin at the northeast corner of the intersection of West Adams Avenue and South Placer Avenue. The proposed projects consist of two separate but adjacent parcels: one parcel totaling 36.5 acres (Assessor's Parcel Number [APN] 030-170-32T), and the other parcel totaling 120.6 acres (APN 030-170-33T) in unincorporated Fresno County. Specifically, the proposed projects encompass portions of Sections 12 and 13 of Township 15 South, Range 16 East on the *Jamesan*, *California* United States Geological Survey (USGS) 7.5-minute topographic quadrangle (Attachment 1: Figure 1). The project sites are bordered by South Placer Avenue to the west, recently tilled agricultural lands to the north, and West Adams Avenue and grape vineyards to the south (see Attachment 1: Figure 2).

The proposed projects involve the development of two solar photovoltaic facilities on a total of 45.3 acres of previously disturbed agricultural lands on the two aforementioned parcels. Two separate solar arrays would be installed, which would include direct current photovoltaic (PV) modules, steel support structures, alternating current electrical inverters, cabling, and other system components. Solar Project 1 would consist of a 3.5-megawatt (MW) solar array system on approximately 36.5 acres of land on APN 030-170-32T (referred to herein as the "western site"), and Solar Project 2 would consist of a 1-MW solar array system on approximately 8.8 acres of land on the eastern parcel (referred to herein as the "eastern site"). The projects also include service boards and step-up transformers as well as metering facilities, conductors, and safety equipment for interconnection to Pacific Gas and Electric's (PG&E) distribution system. No off-site construction would be required to support connections to the PG&E

system. Solar PV panels would be located on piles driven into the ground to depth of eight feet and supports would be bolted onto the piles. All electrical equipment would be elevated above the base flood elevation line.

Methods

Background and Archival Research

Rincon completed background and archival research in support of this assessment in December 2021. A variety of primary and secondary source materials were consulted. Sources included, but were not limited to, historical maps, aerial photographs, and written histories of the area. The following sources were utilized to develop an understanding of the project sites and its context:

- Fresno County Assessor's Office
- Historical aerial photographs accessed via NETR Online
- Historical aerial photographs accessed via University of California, Santa Barbara Library FrameFinder
- Historical U.S. Geological Survey topographic maps

California Historical Resources Information System Records Search

On December 7, 2021, Rincon received records search results (Records Search File No.: 21-463) from the Southern San Joaquin Valley Information Center (Attachment 2). The Southern San Joaquin Valley Information Center is the official state repository for cultural resources records and reports for the county in which the project falls. The purpose of the records search was to identify previously recorded cultural resources, as well as previously conducted cultural resources studies within the project sites and a 0.5-mile radius. Rincon also reviewed the National Register of Historic Places (NRHP), the California Register of Historical Resources (CRHR), the California Historical Landmarks list, and the Built Environment Resources Directory (BERD), as well as its predecessor the California State Historic Property Data (HPD) File. Additionally, Rincon reviewed the Archaeological Determination of Eligibility (ADOE) list.

Sacred Lands File Search

Rincon contacted the Native American Heritage Commission (NAHC) on November 23, 2021, to request a search of the Sacred Lands File (SLF), as well as a contact list of Native Americans culturally affiliated with the project area (Attachment 3).

Field Survey

Rincon Archaeologist Courtney Montgomery, MA, conducted a pedestrian survey of the project sites on February 15, 2022. Rincon conducted a pedestrian survey using transect intervals spaced 15 meters and oriented generally from east to west. Exposed ground surfaces were examined for artifacts (e.g., flaked stone tools, tool-making debris, stone milling tools, ceramics, fire-affected rock), ecofacts (marine shell and bone), soil discoloration that might indicate the presence of a cultural midden, soil depressions, and features indicative of the former presence of structures or buildings (e.g., standing exterior walls, postholes, foundations) or historic debris (e.g., metal, glass, ceramics). Ground disturbances such as burrows and drainages were also visually inspected. Survey accuracy was maintained using a handheld

Global Positioning Satellite (GPS) unit and a georeferenced map of the project sites. Site characteristics and survey conditions were documented using field records and a digital camera. Copies of the survey notes and digital photographs are maintained at our Rincon Fresno office.

Findings

The following section summarizes the results of all background research and fieldwork as they pertain to archaeological resources that may qualify as historical resources and/or unique archaeological resources.

Known Cultural Resources Studies

The CHRIS records search and background research identified one cultural resources study within 0.5 miles of the project sites (Attachment 2). This previously conducted cultural resources study (FR-00185) does not overlap the proposed project sites.

Known Cultural Resources

The CHRIS records search and background research identified two cultural resources within a 0.5-mile radius of the project sites. Resources recorded in the search radius are listed in Table 1 below. No resources are recorded within or adjacent to the project sites.

Table 1 Known Cultural Resources

Primary Number	Trinomial	Resource Type	Description	Recorder(s) and Year(s)	Eligibility Status	Relationship to Project Sites
P-10-006617	CA-FRE-3773H	Historic-Period Structure	James Bypass and Flood Channel	2015 (R. Baloian)	6Z[1] (2015)	Outside
P-10-006632	CA-FRE-3774H	Historic-Period Structure	James Irrigation District Canal System	2015 (R. Baloian)	6Z (2015)	Outside

[1] 6Z: Found ineligible for NRHP, CRHR or local designation through survey evaluation.

Source: SSJVIC 2021

Aerial Imagery and Historical Topographic Maps Review

Rincon completed a review of historical topographic maps and aerial imagery to ascertain the development history of the project sites. In a review of historical topographic maps dating from 1924 to 1947, the project sites are depicted as undeveloped (NETR Online 2021). Between 1965 and 1984, a structure is depicted in the northwest corner of the parcel, but the rest of the parcel remains otherwise undeveloped. Aerial imagery from 1946 to 2018 confirms that the project sites were mostly undeveloped agricultural land (NETR Online 2021) with the exception of the northwest corner of the parcel. Imagery from 1946 to 1998 shows disturbance in the northwestern corner of the westernmost project site with varying structures and/or objects depicted in 1946, 1958, 1962, and 1981 (NETR Online 2021). Imagery from 2005 to present depicts the project sites in their current condition (NETR Online 2021).

Sacred Land File Search

On January 12, 2022, the NAHC responded to Rincon's SLF request, stating that the results of the SLF search were negative. See Attachment 3 for the NAHC response, including the Tribal contacts list(s).

James ID conducted Assembly Bill 52 consultation for the projects. On February 17, 2022, Robert Ledger, Tribal Chairman of the Dumna Wo Wah Tribal Government, responded to James ID stating that the tribe had encampments within and around the project sites in the 1800s. Chairman Ledger stated that the Chief at the time would bury cultural and/or spiritual objects within the area of the project sites, traverse the area for gatherings, and use the vicinity for medicinal use and camping. Because the area is within the traditional use area and identified as sensitive for tribal cultural resources, Chairman Ledger requested tribal monitoring for the project.

Survey Results

The field survey did not identify any cultural resources during the field survey. Ground visibility ranged from good to excellent (65 to 95 percent). Vegetation consisted of grasses and weeds throughout both project sites (Attachment 1: Figure 3). Disturbances consisting of tilling were evidenced throughout both parcels (Attachment 1: Figure 4). Modern trash was observed within the western site; however, no modern trash was observed in the eastern site. Additionally, ecofacts consisting of Aves (bird) bones (Attachment 1: Figure 5) were identified within the western site. The bones were not historic in age and did not show signs of human modification No other disturbances were identified. The project sites have been heavily disturbed by the historical use and tilling throughout the years. Figure 6 through Figure 8 in Attachment 1 provide further documentation of site conditions during the current survey.

Conclusions and Recommendations

The impact analysis included here is organized based on the cultural resources thresholds included in CEQA Guidelines Appendix G: Environmental Checklist Form:

a. Would the project cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?
b. Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?
c. Would the project disturb any human remains, including those interred outside of dedicated cemeteries?

Threshold A broadly refers to historical resources. To more clearly differentiate between archaeological and built environment resources, this report limits analysis under Threshold A to built environment resources. Archaeological resources, including those that may be considered historical resources pursuant to Section 15064.5 and those that may be considered unique archaeological resources pursuant to Section 21083.2, are considered under Threshold B.

Historical Built Environment Resources

The field survey and background research did not identify any built-environment resources that may be considered historical resources under CEQA within the project sites. The project therefore does not have the potential to impact built environment historical resources and Rincon recommends a finding of ***no impact to historical resources*** pursuant to CEQA.

Historical and Unique Archaeological Resources

This assessment did not identify any archaeological resources or archaeological deposits within the project sites. The SLF for the project was returned with negative results, and no cultural resources were identified by the CHRIS records search of the SSJVIC. During Assembly Bill 52 consultation, James ID received a response from the Dumna Wo Wah Tribal Government identifying the project sites as sensitive for tribal cultural resources. Chairman Ledger identified that the area was used in the 1800s by the Chief for medicinal uses, traversing for gatherings, and camping. He also stated that the Chief would bury cultural and/or spiritual objects within and around the project sites. Although the area was identified as sensitive for tribal cultural resources for the Dunma Wo Wah Tribal Government, no archaeological resources were identified on the surface during the pedestrian survey. However, the lack of surface evidence of archaeological materials does not preclude their subsurface existence. Though there is an absence of substantial prehistoric or historic-period archaeological remains within the immediate vicinity, and a high level of existing disturbance to the project sites, Rincon identified the project sites as having a moderate potential for encountering intact subsurface archaeological deposits due to the information provided by Chairman Ledger. Rincon presents the following recommended mitigation measures for a worker environmental awareness program, archaeological and Native American monitoring, and unanticipated discoveries during construction. With adherence to this measure, Rincon recommends a finding of ***less than significant impact with mitigation for archaeological resources*** under CEQA.

Recommended Mitigation Measures

Worker Environmental Awareness Program

An environmental professional will conduct a WEAP training on archaeological sensitivity for all construction personnel prior to the commencement of any ground-disturbing activities within the surveyed area. The training material will be developed by an archaeologist who meets or exceeds the Secretary of Interior’s Professional Qualification Standards for archaeology (National Park Service [NPS] 1983). Archaeological sensitivity training will include a description of the types of cultural material that may be encountered, cultural sensitivity issues, regulatory issues, and the proper protocol for treatment of the materials in the event of a find.

Archaeological and Native American Monitoring

James ID will retain an archaeologist meeting the Secretary of the Interior’s Professional Qualifications Standards for archaeology (National Park Service 1983) and Native American consultant to conduct archaeological and Native American monitoring of all project-related ground disturbing activities. Native American monitoring will be provided by a locally affiliated tribal member. Monitors will have the authority to halt and redirect work should any archaeological resources be identified during monitoring. If archaeological resources are encountered during ground-disturbing activities, work within 60 feet of the find will halt and the find will be evaluated for listing in the CRHR and NRHP. Archaeological or Native American monitoring or both may be reduced to spot-checking or eliminated at the discretion of the monitors, in consultation with James ID, as warranted by conditions such as encountering bedrock, sediments being excavated are fill, or negative findings during the first 60 percent of rough grading. If monitoring is reduced to spot-checking, spot-checking will occur when ground-disturbance moves to a new location within the project site and when ground disturbance will extend to depths not previously reached (unless those depths are within bedrock).

Unanticipated Discovery of Cultural Resources

In the event that archaeological resources are encountered during ground-disturbing activities and monitoring has been reduced or halted, work in the immediate area will be halted and an archaeologist meeting the Secretary of the Interior's Professional Qualifications Standards for archeology (National Park Service 1983) will be contacted immediately to evaluate the find. If the find is prehistoric, then a Native American representative will also be contacted to participate in the evaluation of the find. If necessary, the evaluation may require preparation of a treatment plan and archaeological testing for CRHR eligibility. If the discovery proves to be eligible for the CRHR and cannot be avoided by the proposed project, additional work, such as data recovery excavation, may be warranted to mitigate any significant impacts to historical resources.

Human Remains

No human remains are known to be present within the project sites. However, the discovery of human remains is always a possibility during ground disturbing activities. If human remains are found, the State of California Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the County Coroner has made a determination of origin and disposition pursuant to Public Resources Code Section 5097.98. In the event of an unanticipated discovery of human remains, the County Coroner must be notified immediately. If the human remains are determined to be of Native American origin, the Coroner will notify the Native American Heritage Commission, which will determine and notify a most likely descendant (MLD). The MLD has 48 hours from being granted site access to make recommendations for the disposition of the remains. If the MLD does not make recommendations within 48 hours, the landowner shall reinter the remains in an area of the property secure from subsequent disturbance. With adherence to existing regulations, Rincon recommends a finding of less than significant impact to human remains under CEQA.

Should you have any questions concerning this study, please do not hesitate to contact the undersigned at (805) 201-9621 or lflaherty@rinconconsultants.com.

Sincerely,
Rincon Consultants, Inc.

Leanna Flaherty

Leanna Flaherty, MA, RPA
Cultural Resources Project Manager

Courtney Montgomery, MA
Archaeologist/ Assistant Project Manager

Hannah Haas

Hannah Haas, MA, RPA
Senior Archaeologist/
Cultural Resources Program Manager

Andrew Pulcheon

Andy Pulcheon, RPA, AICP
Principal

Attachments

Attachment 1	Figures
Attachment 2	CHRIS – Southern San Joaquin Valley Information Center Search Results
Attachment 3	Sacred Lands File Search Results

References

National Park Service

1983 Archaeological and Historic Preservation: Secretary of the Interior’s Standards and Guidelines. Electronic document, online at http://www.nps.gov/history/local-law-Arch_Standards.htmaccessed December 6, 2021.

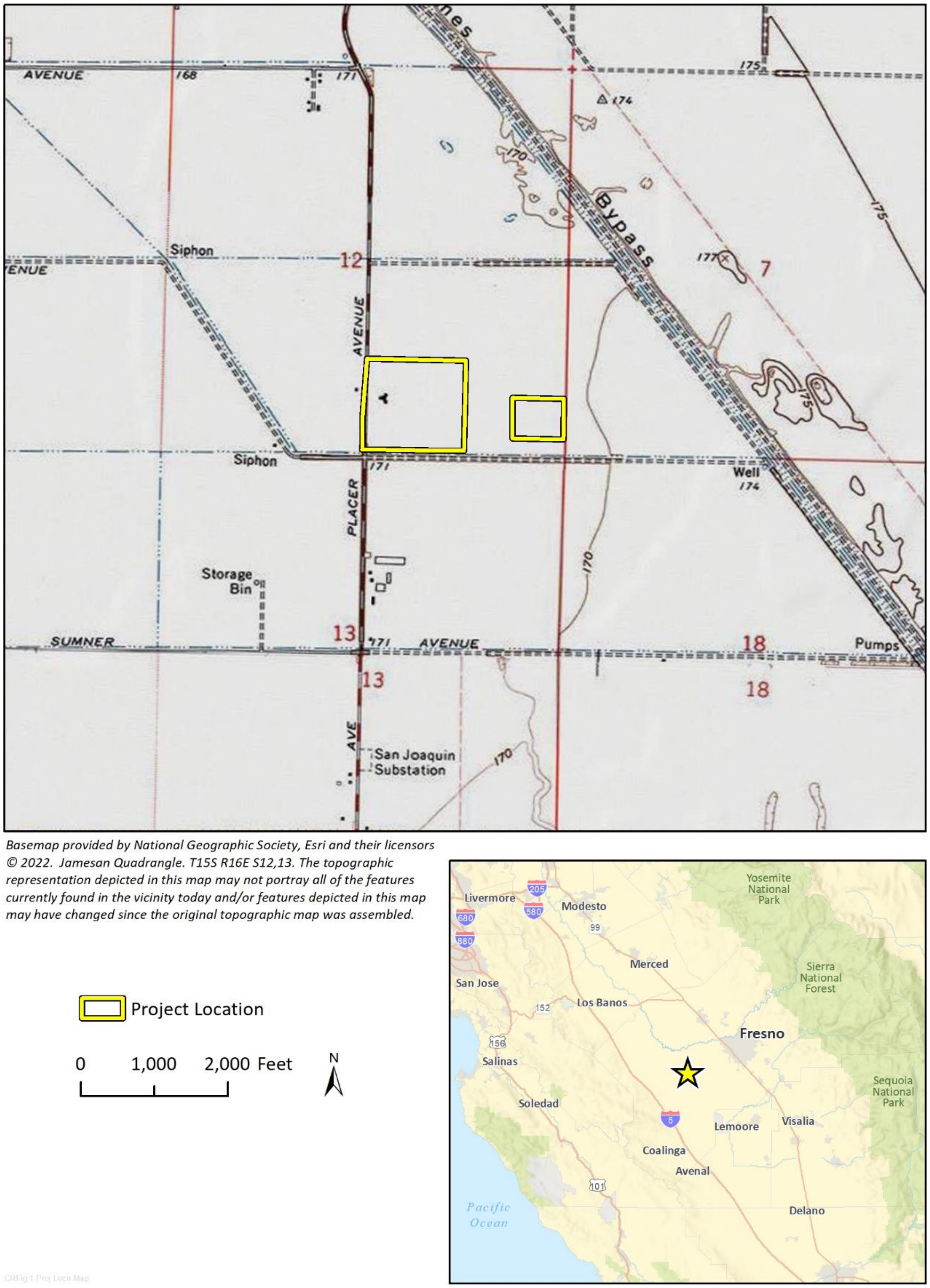
NETR Online

2021 Historic Aerials. https://www.historicaerials.com/viewer. Accessed December 2021.

Attachment 1

Figures

Figure 1 Regional Location Map



Basemap provided by National Geographic Society, Esri and their licensors © 2022. Jamesan Quadrangle. T15S R16E S12,13. The topographic representation depicted in this map may not portray all of the features currently found in the vicinity today and/or features depicted in this map may have changed since the original topographic map was assembled.

Figure 2 Project Location Map

Imagery provided by Microsoft Bing and its licensors © 2022.

CRFig 2 Project Vicinity Map

Figure 3 Overview of Eastern Site, Facing West

Figure 4 Tilling Evidence within Eastern Site, Facing East

Figure 5 Aves (Bird) Bones Found Within Project Site, Plainview

Figure 6 Overview of Eastern Site, Facing West

Figure 7 Overview of Western Site, Facing East

Figure 8 Overview of Canal Debris within Western Site, Facing North

Attachment 2

CHRIS – Southern San Joaquin Valley Information Center Search Results

California
Historical
Resources
Information
System

Fresno
Kern
Kings
Madera
Tulare

Southern San Joaquin Valley Information Center
California State University, Bakersfield
Mail Stop: 72 DOB
9001 Stockdale Highway
Bakersfield, California 93311-1022
(661) 654-2289
E-mail: ssjvic@csub.edu
Website: www.csub.edu/ssjvic

12/7/2021

Leanna Flaherty
Rincon Consultants, Inc.
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Ventura, CA 93003

Re: James Irrigation District Solar Project (Rincon Project #21-11333)
Records Search File No.: 21-463

The Southern San Joaquin Valley Information Center received your record search request for the project area referenced above, located on the Jamesan USGS 7.5' quad. The following reflects the results of the records search for the project area and the 0.5 mile radius:

As indicated on the data request form, the locations of resources and reports are provided in the following format: ☐ custom GIS maps ☒ GIS data

Resources within project area:	None
Resources within 0.5 mile radius:	P-10-006617, 006632
Reports within project area:	None
Reports within 0.5 mile radius:	FR-00185

Resource Database Printout (list): ☒ enclosed ☐ not requested ☐ nothing listed

Resource Database Printout (details): ☐ enclosed ☒ not requested ☐ nothing listed

Resource Digital Database Records: ☐ enclosed ☒ not requested ☐ nothing listed

Report Database Printout (list): ☒ enclosed ☐ not requested ☐ nothing listed

Report Database Printout (details): ☐ enclosed ☒ not requested ☐ nothing listed

Report Digital Database Records: ☐ enclosed ☒ not requested ☐ nothing listed

Resource Record Copies: ☒ enclosed ☐ not requested ☐ nothing listed

Report Copies: ☐ enclosed ☒ not requested ☐ nothing listed

OHP Built Environment Resources Directory: ☒ enclosed ☐ not requested ☐ nothing listed

Archaeological Determinations of Eligibility: ☐ enclosed ☐ not requested ☒ nothing listed

CA Inventory of Historic Resources (1976): ☐ enclosed ☒ not requested ☐ nothing listed

Caltrans Bridge Survey: Not available at SSJVIC; please see https://dot.ca.gov/programs/environmental-analysis/cultural-studies/california-historical-bridges-tunnels

Ethnographic Information: Not available at SSJVIC

Historical Literature: Not available at SSJVIC

Historical Maps: Not available at SSJVIC; please see http://historicalmaps.arcgis.com/usgs/

Local Inventories: Not available at SSJVIC

GLO and/or Rancho Plat Maps: Not available at SSJVIC; please see http://www.glorecords.blm.gov/search/default.aspx#searchTabIndex=0&searchByTypeIndex=1 and/or http://www.oac.cdlib.org/view?docId=hb8489p15p;developer=local;style=oac4;doc.view=items

Shipwreck Inventory: Not available at SSJVIC; please see https://www.slc.ca.gov/shipwrecks/

Soil Survey Maps: Not available at SSJVIC; please see http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

Please forward a copy of any resulting reports from this project to the office as soon as possible. Due to the sensitive nature of archaeological site location data, we ask that you do not include resource location maps and resource location descriptions in your report if the report is for public distribution. If you have any questions regarding the results presented herein, please contact the office at the phone number listed above.

The provision of CHRIS Data via this records search response does not in any way constitute public disclosure of records otherwise exempt from disclosure under the California Public Records Act or any other law, including, but not limited to, records related to archeological site information maintained by or on behalf of, or in the possession of, the State of California, Department of Parks and Recreation, State Historic Preservation Officer, Office of Historic Preservation, or the State Historical Resources Commission.

Due to processing delays and other factors, not all of the historical resource reports and resource records that have been submitted to the Office of Historic Preservation are available via this records search. Additional information may be available through the federal, state, and local agencies that produced or paid for historical resource management work in the search area. Additionally, Native American tribes have historical resource information not in the CHRIS Inventory, and you should contact the California Native American Heritage Commission for information on local/regional tribal contacts.

Should you require any additional information for the above referenced project, reference the record search number listed above when making inquiries. Invoices for Information Center services will be sent under separate cover from the California State University, Bakersfield Accounting Office.

Thank you for using the California Historical Resources Information System (CHRIS).

Sincerely,

Celeste M. Thomson
Coordinator

Report List

SSJVIC Record Search 21-463

Report No.	Other IDs	Year	Author(s)	Title	Affiliation	Resources
FR-00185		1975	Peak, Ann S., Gerry, Robert, Schulz, Peter D., and Riddell, Francis A.	Archaeological Assessment of Cultral Resources-Mid-Valley Canal Project in Fresno, Tulare, Merced, Madera, and Kings Counties, California	Cultural Resources Section State Department of Parks and Recreation	10-000536, 10-000537, 10-000538, 10-000539, 10-000540, 10-000541, 10-000542, 10-000543, 10-000544, 10-000545, 10-000546, 10-000547, 10-000548, 10-000549, 10-000550, 10-000551, 10-000552, 10-000553, 10-000554, 10-000555, 10-000556, 10-000557, 10-000558, 10-000559, 10-000560, 10-000561, 10-000562, 10-000563, 10-000564, 10-000565, 10-000566, 10-000567, 10-000568, 10-000569

Resource List

SSJVIC Record Search 21-463

Primary No.	Trinomial	Other IDs	Type	Age	Attribute codes	Recorded by	Reports
P-10-006617	CA-FRE-003773H	Resource Name - AE-3043-BE-029; Other - James Bypass and Flood Channel; Fresno Slough Bypass; OHP Property Number - 108585; OTIS Resource Number - 501900	Structure	Historic	HP20	2015 (Randy Baloian, Applied EarthWorks, Inc.)	FR-02769, FR-02791, FR-02908
P-10-006632	CA-FRE-003774H	Resource Name - James Irrigation District Lateral R Canal	Structure	Historic	HP20	2015 (Randy Baloian, Applied EarthWorks); 2015 (Randy Baloian, Applied EarthWorks)	FR-02769, FR-02791, FR-02934

Attachment 3

Sacred Lands File Search Results

STATE OF CALIFORNIA **Gavin Newsom, *Governor***

NATIVE AMERICAN HERITAGE COMMISSION

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

January 12, 2022

Leanna Flaherty
Rincon Consultants, Inc.

Via Email to: lflaherty@rinconconsultants.com

Re: James Irrigation District Solar Project, Fresno County

Dear Ms. Flaherty:

A record search of the Native American Heritage Commission (NAHC) Sacred Lands File (SLF) was completed for the information you have submitted for the above referenced project. The results were negative. However, the absence of specific site information in the SLF does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Attached is a list of Native American tribes who may also have knowledge of cultural resources in the project area. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated; if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call or email to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from tribes, please notify me. With your assistance, we can assure that our lists contain current information.

If you have any questions or need additional information, please contact me at my email address: Andrew.Green@nahc.ca.gov.

Sincerely,

Andrew Green

Andrew Green
Cultural Resources Analyst

Attachment

Native American Heritage Commission
Native American Contact List
Fresno County
1/12/2022

Big Sandy Rancheria of Western Mono Indians
Elizabeth Kipp, Chairperson
P.O. Box 337
Auberry, CA, 93602
Phone: (559) 374 - 0066
Fax: (559) 374-0055
lkipp@bsrnation.com
Western Mono

Cold Springs Rancheria of Mono Indians
Carol Bill, Chairperson
P.O. Box 209
Tollhouse, CA, 93667
Phone: (559) 855 - 5043
Fax: (559) 855-4445
coldsprgstribe@netptc.net
Mono

Cold Springs Rancheria of Mono Indians
Jared Aldern,
P. O. Box 209
Tollhouse, CA, 93667
Phone: (559) 855 - 5043
Fax: (559) 855-4445
csrepa@netptc.net
Mono

Dumna Wo-Wah Tribal Government
Robert Ledger, Chairperson
2191 West Pico Ave.
Fresno, CA, 93705
Phone: (559) 540 - 6346
ledgerrobert@ymail.com
Foothill Yokut
Mono

Kings River Choinumni Farm Tribe
Stan Alec,
3515 East Fedora Avenue
Fresno, CA, 93726
Phone: (559) 647 - 3227
Foothill Yokut

North Valley Yokuts Tribe
Katherine Perez, Chairperson
P.O. Box 717
Linden, CA, 95236
Phone: (209) 887 - 3415
canutes@verizon.net
Costanoan
Northern Valley
Yokut

North Valley Yokuts Tribe
Timothy Perez,
P.O. Box 717
Linden, CA, 95236
Phone: (209) 662 - 2788
huskanam@gmail.com
Costanoan
Northern Valley
Yokut

Santa Rosa Rancheria Tachi Yokut Tribe
Leo Sisco, Chairperson
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Lemoore, CA, 93245
Phone: (559) 924 - 1278
Fax: (559) 924-3583
Southern Valley
Yokut

Table Mountain Rancheria
Brenda Lavell, Chairperson
P.O. Box 410
Friant, CA, 93626
Phone: (559) 822 - 2587
Fax: (559) 822-2693
rpennell@tmr.org
Yokut

Table Mountain Rancheria
Bob Pennell, Cultural Resource Director
P.O. Box 410
Friant, CA, 93626
Phone: (559) 325 - 0351
Fax: (559) 325-0394
rpennell@tmr.org
Yokut

Traditional Choinumni Tribe
David Alvarez, Chairperson
2415 E. Houston Avenue
Fresno, CA, 93720
Phone: (559) 217 - 0396
Fax: (559) 292-5057
davealvarez@sbcglobal.net
Foothill Yokut

Tule River Indian Tribe
Neil Peyron, Chairperson
P.O. Box 589
Porterville, CA, 93258
Phone: (559) 781 - 4271
Fax: (559) 781-4610
neil.peyron@tulerivertribe-nsn.gov
Yokut

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed James Irrigation District Solar Project, Fresno County.

Native American Heritage Commission
Native American Contact List
Fresno County
1/12/2022

Tule River Indian Tribe
Joey Garfield, Tribal Archaeologist
P. O. Box 589 Yokut
Porterville, CA, 93258
Phone: (559) 783 - 8892
Fax: (559) 783-8932
joey.garfield@tulerivertribe-nsn.gov

Tule River Indian Tribe
Kerri Vera, Environmental Department
P. O. Box 589 Yokut
Porterville, CA, 93258
Phone: (559) 783 - 8892
Fax: (559) 783-8932
kerri.vera@tulerivertribe-nsn.gov

Wuksache Indian Tribe/Eshom Valley Band
Kenneth Woodrow, Chairperson
1179 Rock Haven Ct. Foothill Yokut
Salinas, CA, 93906 Mono
Phone: (831) 443 - 9702
kwood8934@aol.com

This list is current only as of the date of this document. Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native Americans with regard to cultural resources assessment for the proposed James Irrigation District Solar Project, Fresno County.

Appendix D

Energy Calculations

White Pine Solar - Construction

1/14/2021

Compression-Ignition Engine Brake-Specific Fuel Consumption (BSFC) Factors **[1]**:

HP: 0 to 100	0.0588	HP: Greater than 100	0.0529

Values above are expressed in gallons per horsepower-hour/BSFC.

CONSTRUCTION EQUIPMENT

Construction Equipment	#	Hours per Day	Horsepower	Load Factor	Construction Phase	Fuel Used (gallons)
Rough Terrain Forklifts	2	8	100	0.4	Solar Array Installation	2,858
Skid Steer Loaders	1	8	65	0.37	Solar Array Installation	859
Other Construction Equipment	1	8	172	0.42	Solar Array Installation	2,322
Trenchers	1	8	78	0.5	Solar Array Installation	1,393
					Total Fuel Used	**7,433**
						(Gallons)

Construction Phase	Days of Operation
Solar Array Installation	76
Total Days	76

WORKER TRIPS

Constuction Phase	MPG [2]	Trips	Trip Length (miles)	Fuel Used (gallons)
Solar Array Installation	24.1	40	30.0	3784.23
		Total		**3,784.23**

HAULING AND VENDOR TRIPS

Trip Class	MPG [2]	Trips	Trip Length (miles)	Fuel Used (gallons)
		HAULING TRIPS		
Solar Array Installation	7.5	0	0.0	0.00
		Total		-
		VENDOR TRIPS		
Solar Array Installation	7.5	3	30.0	912.00
		Total		**912.00**

Total Gasoline Consumption (gallons)	**3,784**
Total Diesel Consumption (gallons)	**8,345**

Sources:

[1] United States Environmental Protection Agency. 2021. *Exhaust and Crankcase Emission Factors for Nonroad Compression-Ignition Engines in MOVES3.0.2* . September. Available at: https://www.epa.gov/system/files/documents/2021-08/420r21021.pdf.

[2] United States Department of Transportation, Bureau of Transportation Statistics. 2021. *National Transportation Statistics* . Available at: https://www.bts.gov/topics/national-transportation-statistics.

White Pine Solar (36.5 Acres, 3.5 MW)

Displaced Energy Production during 35-year Project life

Annual Energy Production		Annual Average Solar Radiation Hours/Day/Year
Grid Size (MW)	3.5	5.96
Total hrs/year	8,760	
% Operational time [1]	*25%*	
Operational hours/year	2,175	
KWh produced per year	7,613,900	
Assumed Heat Rate (Btu/KWh)	10,000	
Annual Fuel Equivalent (MMBtu)[2]	76,139	

CA Power Mix[3]		Annual Fuel Displacement (MMBtu)
Coal[4]	0.00%	0
Large Hydro	10.10%	7,690
Natural Gas[4]	16.40%	12,487
Nuclear	42.80%	32,587
Oil	0.00%	0
Other (petroleum coke/waste heat)	0.00%	0
Renewables	30.60%	23,299
Unspecified sources of Power	0.00%	0
Total	**99.9%**	**76,063**

Annual Pollutant Displacement[4]

Natural Gas Turbine Emissions

Pollutant	AP-42 Emission Factor (lb/MMBtu)[5]	Controlled Emission Factor (lb/MMBtu)	Controlled Emissions (lb)	Controlled Emissions (ton)	AP-42 Emission Factor Source Notes[5]
CO_2	110	110	1,373,548	686.77	Table 3.1-2a

Coal Combustion Emissions

Pollutant	AP-42 Emission Factor (lb/ton)[6]	Controlled Emission Factor (lb/ton)	Emissions (lb)[7]	Emissions (ton)	AP-42 Emission Factor Source Notes[6]
CO_2	6040	6040	0	0.00	Table 1.1-20

Total Displaced Emissions Associated With Direct Combustion

Pollutant	tons/year[8]	tons/lifetime (35 years)
ROG (NMHC)	0	0
NO_X	1	19
CO	0	3
PM_{10}	0	1
$PM_{2.5}$	0	0
SO_X	0	1
CO_2E (Metric Ton)	623	21,806

445.03 15576.07426

Notes:

1. Operational time is based on annual average solar radiation hours per day per year (5.96) for the project area. Source: National Renewable Energy Laboratories, U.S. Department of Energy (https://pvwatts.nrel.gov/pvwatts.php)
2. The Project is assumed to displace existing power generation equivalent to the current power mix each year of operation.
3. CA Power Mix assumptions are based on data from the 2020 Total System Electric Generatin Table. https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/2020-total-system-electric-generation
4. Combustion of natural gas and coal for power are of the greatest concern related to the generation of criteria pollutants and GHG emissions, therefore only fuel displacement of natural gas and coal due to electricty production from the Solar Scarlet facility are considered in this assessment.
5. EPA Air Pollution Emission Factors AP-42 Section 3.1, Stationary Gas Turbines
6. EPA Air Pollution Emission Factors AP-42 Section 1.1, Bituminous and Subbituminous Coal Combustion
7. Coal characteristics used for conversion: Assumed coal heat content = 24 MMBtu/ton
8. Total particulate matter (CPM-TOT) is expressed in terms of coal ash content therefore emission factor is determined by multiplying % ash content of coal (assumed to be 20% herein) by value listed in Table 1.1-4. Organic fraction of particulate matter is 20% of total CPM-TOT (Table 1.1-5) and listed as controlled emission factor.
9. SO_x emission factor calculated by multiplying the weight percent of sulfur (assumed to be 7.5%) by the value listed in Table 1.1-3
10. CO_2E volumes are in metric tons rather than short (US) tons

Appendix E

Geotechnical Engineering Investigation Report

GEOTECHNICAL ENGINEERING INVESTIGATION REPORT
JAMES IRRIGATION DISTRICT SOLAR ARRAY PROJECT
NE OF S PLACER AVENUE AND W ADAMS AVENUE
FRESNO COUNTY, CALIFORNIA

BSK PROJECT G21-315-10F

PREPARED FOR:

WHITE PINE RENEWABLES
1808 WEDEMEYER ST., SUITE 219
SAN FRANCISCO, CALIFORNIA 94129

NOVEMBER 4, 2021

GEOTECHNICAL ENGINEERING INVESTIGATION REPORT
JAMES IRRIGATION DISTRICT SOLAR ARRAY PROJECT
NE OF S PLACER AVENUE AND W ADAMS AVENUE
FRESNO COUNTY, CALIFORNIA

Prepared for:

White Pine Renewables
1808 Wedemeyer St., Suite 219
San Francisco, California 94129

BSK Project: G21-315-10F

November 4, 2021

Prepared by:

Yingyi Xu

Yingyi Xu, E.I.T.
Staff Engineer

On Man Lau

On Man Lau, PE, GE
South Valley Regional Manager

REGISTERED PROFESSIONAL ENGINEER
ON MAN LAU
GE2644
EXP. 12-31-2021
GEOTECHNICAL
STATE OF CALIFORNIA

BSK Associates
550 W. Locust Avenue
Fresno, California 93650
(559) 497-2880
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Distribution: Ms. Marissa Boucher, White Pine Renewables,
(marissa.boucher@whitepinerenew.com) (pdf)

Table of Contents

Tables

Figures

Appendices

Appendix A: Field Exploration

Appendix B: Laboratory Testing

1.0 INTRODUCTION

This report presents the results of a geotechnical engineering investigation conducted by BSK Associates (BSK). The project site is situated at the property (APN 030-170-32T) at the northeast corner of S Placer Avenue and W Adams Avenue in Fresno County, California, as shown on the Site Vicinity Map, Figure 1. The geotechnical engineering investigation was conducted in accordance with BSK Proposal GF21-22693, dated September 27, 2021.

This report provides a description of the geotechnical conditions at the Site and provides specific recommendations for earthwork and foundation design with respect to the planned structures. In the event that changes occur in the design of the project, this report's conclusions and recommendations will not be considered valid unless the changes are reviewed with BSK and the conclusions and recommendations are modified or verified in writing. Examples of such changes would include location, size of structures, foundation loads, etc.

1.1 Planned Construction

BSK understands that the project is at APN 030-170-32T within the James Irrigation District (JID) in Fresno County, CA. The proposed solar array is anticipated to be supported on pole-type foundations, such as driven steel piles, or cast-in-drilled-hole piers. AC electrical equipment will be supported on driven piles, shallow foundations or mat foundations.

Review of the provided array location indicates the proposed solar arrays will occupy an approximately 32 acres with a system size of 4 MW AC. Anticipated foundation loads are relatively light.

In the event that significant changes occur in the design of the proposed improvements, this report's conclusions and recommendations will not be considered valid unless the changes are reviewed with BSK and the conclusions and recommendations are modified or verified in writing.

1.2 Purpose and Scope of Services

The objective of this geotechnical investigation was to characterize the subsurface conditions in the areas of the proposed structures and provide geotechnical engineering recommendations for the preparation of plans and specifications and bearing and lateral earth pressure conditions. The scope of the investigation included a field exploration, laboratory testing, engineering analyses, and preparation of this report.

2.0 FIELD INVESTIGATION AND LABORATORY TESTING

2.1 Field Exploration

The field exploration for this investigation was conducted under the oversight of a BSK Engineer. Five (5) borings were excavated at the Site on October 20, 2021, using a mini excavator provided by MD Cutting. The borings were completed to a maximum depth of approximately 15 feet beneath the existing ground surface (bgs).

The soil materials encountered in the borings were visually classified in the field and the logs were recorded during the drilling and sampling operations. Visual classification of the materials encountered in the borings was made in general accordance with the Unified Soil Classification System (ASTM D 2487). In necessary situations, the Unified Soil Classification System (ASTM D 2488) was used to classify the material. A soil classification chart is presented in Appendix A.

Boring logs are presented in Appendix A and should be consulted for more details concerning subsurface conditions. Stratification lines were approximated by the field staff based on observations made at the time of drilling, while the actual boundaries between soil types may be gradual and soil conditions may vary at other locations.

2.2 Laboratory Testing

Laboratory tests were performed on selected soil samples to evaluate moisture content, dry density, shear strength, expansion index, collapse potential, thermal resistivity, Atterberg Limits, and corrosion characteristics. A description of the laboratory test methods and results are presented in Appendix B. The expansion index test and thermal resistivity tests are not finished in the meantime and will be provided in an addendum report later.

2.3 Field Resistivity Testing

One set of field resistivity tests were conducted at the Site on October 13, 2021 using the Wenner 4-pin method. A summary of the field electrical resistivity tests and the test results are provided in Appendix A.

2.4 Thermal Resistivity

Representative soil sample was evaluated for thermal resistivity of soil using accepted test methods. The sample was obtained from the upper 3 feet of test pit TP-2 and TP-4. The test results can be found later in an addendum report when the tests are finished.

3.0 SITE CONDITIONS

The following sections address the site descriptions and surface conditions, subsurface conditions, and groundwater conditions at the Site. This information is based on BSK's field exploration and published maps and reports.

3.1 Site Description and Surface Conditions

At the time of the field exploration, the site was an open field with occasional dry vegetation. The project site was bounded by a berm surrounding the field. The site is located in the southwest quarter of the southeast quarter of Section 12, Township 15 South, Range 16 East of the Mount Diablo Meridian. WGS84 GPS coordinates for the center of the site are 36.6345 degrees North latitude and 120.1762 degrees West longitude.

3.2 Subsurface Conditions

Based on our soil boring data the site generally consisted of sandy clay, sandy silt, silty sand, and sand with silt to the bottom of the test pits. Based on the results of the consolidation test, the on-site soils below 3 feet are considered to have a low potential for hydrocompaction.

The boring logs in Appendix A provide a more detailed description of the materials encountered, including the applicable Unified Soil Classification System symbols.

3.3 Groundwater Conditions

Groundwater was not encountered in the borings. The California Department of Water Resources indicates the historical depth to groundwater is greater than 14 bgs in the vicinity of the site. However, fluctuations in the groundwater level or the presence of perched groundwater may occur due to variations in rainfall, irrigation, seasonal factors, pumping from wells and other factors that were not evident at the time of our investigation. Groundwater is not anticipated to affect design or construction of the proposed improvements.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Based upon the data collected during this investigation, and from a geotechnical engineering standpoint, it is our opinion that the soil conditions would not preclude the construction of the proposed improvements.

The proposed improvements may be supported on shallow or mat foundations and pole-type foundations, such as driven piles provided the recommendations presented herein are incorporated into the design and construction of the project.

4.1 Seismic Design Criteria

Based on Section 1613.3.2 of the 2019 California Building Code (CBC), the Site shall be classified as Site Class A, B, C, D, E or F based on the Site soil properties and in accordance with Chapter 20 of ASCE 7-16.

The 2019 CBC utilizes ground motion based on the Risk-Targeted Maximum Considered Earthquake (MCER) that is defined in the 2019 CBC as the most severe earthquake effects considered by this code, determined for the orientation that results in the largest maximum response to horizontal ground motions and with adjustment for targeted risk. Ground motion parameters in the 2019 CBC are based on ASCE 7-16, Chapter 11.

The Structural Engineers Associates of California (SEAOC) has prepared maps presenting the Risk-Targeted MCE spectral acceleration (5 percent damping) for periods of 0.2 seconds (S_S) and 1.0 seconds (S_1). The values of S_S and S_1 can be obtained from the Occupational Safety Health Planning and Development (OSHPD) Seismic Design Maps Tool at: https://seismicmaps.org/.

The OSHPD Seismic Design Maps Tool and Chapter 16 of the 2019 CBC based on ASCE 7-16 produced the spectral acceleration parameters risk targeted maximum considered earthquake values in Table 1 based on Site Class D conditions.

As per Section 1803.5.12 of the 2019 CBC, peak ground acceleration (PGA) utilized for dynamic lateral earth pressures and liquefaction, shall be based on a site-specific study (ASCE 7-16, Section 21.5) or ASCE 7-16, Section 11.8.3. The OSHPD Seismic Design Maps Tool and based on ASCE 7-16, Section 11.8.3 produced the Geometric Mean PGA value in Table 1 based on Site Class D conditions.

Table 1: Seismic Design Parameters

Seismic Design Parameter	2019 CBC Value		Reference
MCE Mapped Spectral Acceleration (g)	$S_S = 0.920$	$S_1 = 0.321$	USGS Mapped Value
Amplification Factors (Site Class D)	$F_a = 1.132$	F_v = null[1](1.979)[2]	ASCE Table 11.4
Site Adjusted MCE Spectral Acceleration (g)	$S_{MS} = 1.041$	S_{M1} = null[1](0.635)[2]	ASCE Equations 11.4.1-2
Design Spectral Acceleration (g)	$S_{DS} = 0.694$	S_{D1} = null[1] (0.424)[2]	ASCE Equations 11.4.1-4
Geometric Mean PGA (g)	$PGA_M = 0.475$		Section 11.8.3, ASCE 7-16
Site Short Period – T_s (seconds)	$T_s = 0.610$		$T_s = S_{D1}/ S_{DS}$
Site Long Period – T_L (seconds)	$T_L = 12$		USGS Mapped Value

Notes: [1] Requires site-specific ground motion procedure or exception as per ASCE 7-16 Section 11.48

[2] Values from ASCE 7-16 supplement, shall only be used to calculate $T_{s.}$ Values provided based on use of exception, as provided in Section 11.4.8.2 to Site-Specific Ground Motion Procedures and assumes the value of the seismic response coefficient C_s is determined by Eq. 12.8-2 for

values of $T£1.5T_s$ and taken as equal to 1.5 times the value computed in accordance with either Eq. 12.8-3 for $T_L^3T>1.5T_s$ or Eq. 12.8-4 for $T>T_L$.

4.2 Soil Corrosivity

A surface soil sample obtained from the Site was tested to provide a preliminary screening of the potential for concrete deterioration or steel corrosion due to attack by soil-borne soluble salts. The test results are presented in Appendix B.

The corrosivity evaluation was performed by BSK on a soil sample obtained from boring TP-4 @ 0-3 feet bgs. The soil was evaluated for minimum resistivity and pH (CT 643), and soluble sulfate and chlorides (CT 417 and CT 422). At TP-4, the pH is 8.3, sulfate is 27 mg/kg, and chloride was not detected. The minimum resistivity at TP-4 was 2,160 ohm-cm.

The water-soluble sulfate content severity class is considered **not severe to concrete** (Exposure Category **S0** per Table 4.2.1 of ACI 318-11). The site soils minimum resistivity is severely corrosive to buried metal. Therefore, buried metal conduits, ferrous metal pipes, and exposed steel should have a protective coating in accordance with the manufacturer's specification. The above are general discussions. A more detailed investigation may include more or fewer concerns and should be directed by a corrosion expert. BSK does not practice corrosion engineering.

4.3 Site Preparation Recommendations

The following procedures must be implemented during site preparation for the proposed site improvements. References to maximum dry density, optimum moisture content, and relative compaction are based on ASTM D 1557 (latest test revision) laboratory test procedures.

1. The areas of proposed improvements must be cleared of surface vegetation and debris. Materials resulting from the clearing and stripping operations must be removed and properly disposed of off-site. In addition, all undocumented fills must be removed where encountered and where fills or structural improvements will be placed. BSK recommends one foot of non-expansive (EI < 20) engineered fill below shallow foundations. Over excavation should extend laterally five feet beyond the edge of foundations. Yielding areas should be observed by the geotechnical consultant and removed and recompacted if necessary.
2. Following the required stripping and over excavation, the exposed ground surface must be inspected by the Geotechnical Engineer to evaluate if loose or soft zones are present that will require additional over excavation.
3. Imported soil (EI < 20), free of organic materials or deleterious substances, may be placed as compacted engineered fill. The material must be free of oversized fragments greater than 3-inches in greatest dimension. Engineered fill underneath and extending 5 feet beyond the building foundation and must be placed in uniform layers not exceeding 8-inches in loose

thickness, moisture conditioned at or above optimum moisture content and compacted to at least 90 percent of maximum dry density.

4. If possible, earthwork operations should be scheduled during a dry, warm period of the year. Should these operations be performed during or shortly following periods of inclement weather, unstable soil conditions may result in the soils exhibiting a "pumping" condition. This condition is caused by excess moisture in combination with moving construction equipment, resulting in saturation and zero air voids in the soils. If this condition occurs, the adverse soils will need to be over-excavated to the depth at which stable soils are encountered and replaced with suitable soils compacted as engineered fill. Alternatively, the Contractor may proceed with grading operations after utilizing a method to stabilize the soil subgrade, which should be subject to review and approval by BSK prior to implementation.

5. Import fill materials must be free from organic materials or deleterious substances. The project specifications must require the contractor to contact BSK to review the proposed import fill materials for conformance with these recommendations at least one week prior to importing to the Site, whether from on-site or off-site borrow areas. Imported fill soils must be non-hazardous and derived from a single, consistent soil type source conforming to the following criteria:

Plasticity Index:	< 12
Expansion Index:	< 20 (Very Low Expansion Potential)
Maximum Particle Size:	3 inches
Percent Passing #4 Sieve:	65 - 100
Percent Passing #200 Sieve:	20 - 45
Low Corrosion Potential:	Soluble Sulfates < 1,500 ppm
	Soluble Chlorides < 150 ppm
	Minimum Resistivity > 3,000 ohm-cm

4.4 Foundations

Provided the recommendations contained in this report are implemented during design and construction, it is our opinion that the structures can be supported on shallow or mat foundations and drilled piers or driven piles. A structural engineer must evaluate reinforcement, embedment depth based on the requirements for the structural loadings, shrinkage and temperature stresses.

4.4.1 Shallow Foundations

The proposed at-grade structures may be supported on reinforced concrete spread footings bearing on engineered fill. The allowable bearing pressure applies to the dead load plus live load (DL + LL) condition. Footing design must follow the criteria listed below:

Table 2: Allowable Bearing Pressure				
Footing Embedment[2] (inches)	Minimum Footing Width (inches)		Allowable Bearing Capacity[1] (psf)	
	Continuous Footing	Isolated Spread Footing	Continuous Footing	Isolated Spread Footing
12	12	24	2,400	3,000

Note (1) – The bearing pressure can be increased one-third for transient loading such as wind or seismic.
(2) – Measure with respect to the lowest adjacent subgrade surface.

The estimated total and differential settlement for the recommended spread footings is shown below:

Table 3: Anticipated Post-Construction Settlement			
Footing Type	Post-Construction Settlement (inches)	Differential Settlement (inches)	Angular Distortion
Continuous	1.0	--	0.005
Isolated	1.0	0.5	--

Isolated footing differential settlement is based on adjacent similarly loaded footings spaced at 30-feet. The settlement values given above are applicable to the maximum loading conditions. For loads, other than the design maximum loads, the settlements can be decreased proportionally.

4.4.2 Mat Foundations

We understand that the structure may be supported on a concrete mat foundation. The mat foundation may be designed to impose a maximum allowable pressure of 2,000 pounds per square foot (psf) due to dead plus live loads. The concrete mat foundation must be at least 4 inches thick and satisfy structural considerations.

Settlements: Based on the results of our laboratory tests and analyses, total static settlements of the mat foundation under the allowable bearing pressure are expected to be less than 1-inch, and maximum differential settlements are expected to be about 0.5-inch.

4.4.3 Pole-Type Foundations

The structure may be supported on pole-type foundations such as driven piles or drilled piers. This type of foundation should be designed in accordance with Section 1807.3 and 1806.3 of the 2019 CBC. In Section 1806.3.4 of the 2019 CBC, two times the allowable lateral soil bearing pressure can be used to develop parameters S_1 and S_3 rather than one of the values given in Table 1806.2. The calculated value of 165 psf can be doubled to 330 psf per foot of embedment. This includes a safety factor of 2. The upper one foot of the soil should be ignored when calculating the minimum embedment depth. The lateral bearing pressure shall be permitted to be increased by 1/3 were used with the alternative basic load combinations of CBC Section 1605A.3.2 that include wind or earthquake loads.

To support vertical loads applied to the pile foundations, an allowable static downward or uplift skin friction value of 300 psf (includes a factor of safety of 1.5) to support vertical loads applied to the pile foundations. Pole-type foundations should be spaced a minimum of 3 diameters apart. The total settlement of pile foundations designed in accordance with these recommendations should not exceed 0.5 inch. Skin friction may be increased by 1/3 for short term loading. The weight of the pile may be taken into consideration when determining resistance to uplift loads.

We have provided the modulus subgrade reaction, 100 pci, for the structural designers to use in their LPILE analysis. We recommend using the Reese et. al., 1975 option for the p-y curve soil model in the Soil Layers dialog box for the site. The following soil parameters may be used in the analysis:

Table 4: LPILE Input Parameters

Soil Type	Silty Sand
p-y curve model	Reese et. al., 1975
Effective Unit Weight, pcf	110
Elastic Subgrade Reaction, pci	100
Effective Friction Angle, degrees	29

4.5 Lateral Earth Pressures and Frictional Resistance

Provided the Site is prepared as recommended above, the following earth pressure parameters for footings may be used for design purposes. The parameters shown in the table below are for drained conditions of select non-expansive engineered fill or undisturbed native soil.

Table 5: Recommended Static Lateral Earth Pressures for Footings

Lateral Pressure Condition	Ultimate Equivalent Fluid Density (pcf) Drained Condition
Active Pressure	38
At Rest Pressure	57
Passive Pressure	330

The lateral earth pressures listed herein are obtained by the conventional equation for active, at rest, and passive conditions assuming level backfill and a bulk unit weight of 110 pcf for the Site soils. A coefficient of friction of 0.30 may be used between soil sub-grade and the bottom of footings.

The coefficient of friction and passive earth pressure values given above represent ultimate soil strength values. BSK recommends that a safety factor consistent with the design conditions be included in their usage in accordance with Sections 1806.3.1 through 1806.3.3 of the 2019 CBC. For stability against lateral sliding that is resisted solely by the passive earth pressure against footings or friction along the bottom of footings, a minimum safety factor of 1.5 is recommended. For stability against lateral sliding that is resisted by combined passive pressure and frictional resistance, a minimum safety factor of 2.0 is recommended. For lateral stability against seismic loading conditions, a minimum safety factor of 1.2 is recommended.

4.6 Excavation Stability

Soils encountered within the depth explored are generally classified as Type C soils in accordance with OSHA (Occupational Safety and Health Administration). The slopes surrounding, or along temporary excavations may be vertical for excavations that are less than five feet deep and exhibit no indication of potential caving, but should be no steeper than 1.5H:1V for excavations that are deeper than five feet, up to a maximum depth of 15 feet. Certified trench shields or boxes may also be used to protect workers during construction in excavations that have vertical sidewalls and are greater than 5 feet deep. Temporary excavations for the project construction should be left open for as short a time as possible and should be protected from water runoff. In addition, equipment and/or soil stockpiles must be maintained at least 10 feet away from the top of the excavations. Because of variability in soils, BSK must be afforded the opportunity to observe and document sloping and shoring conditions at the time of construction. Slope height, slope inclination, and excavation depths (including utility trench excavations) must in no case exceed those specified in local, state, or federal safety regulations, (e.g., OSHA Health and Safety Standards for Excavations, 29 CFR Part 1926, or successor regulations).

4.7 Trench Backfill and Compaction

Processed on-Site soils, which are free of organic material, are suitable for use as general trench backfill above the pipe envelope. Native soil with particles less than three inches in the greatest dimension may be incorporated into the backfill and compacted as specified above, provided they are properly mixed into a matrix of friable soils. The backfill must be placed in thin layers not exceeding 12 inches in loose thickness, be well-blended and consistent texture, moisture conditioned to at least optimum moisture content, and compacted to at least 90 percent of the maximum dry density as determined by the ASTM D1557. The uppermost 12 inches of trench backfill below pavement sections must be compacted to between 90 and 95 percent of the maximum dry density as determined by ASTM D1557. Moisture content at least 2 percent above optimum must be maintained while compacting this upper 12-inch trench backfill zone.

We recommend that trench backfill be tested for compliance with the recommended Relative Compaction and moisture conditions. Field density testing should conform to ASTM Test Methods D1556 or D6938. We recommend that field density tests be performed in the utility trench bedding, envelope and backfill for every vertical lift, at an approximate longitudinal spacing of not greater than

150 feet. Backfill that does not conform to the criteria specified in this section should be removed or reworked, as applicable over the trench length represented by the failing test so as to conform to BSK recommendations.

4.8 Drainage Considerations

The control surface drainage in the project areas is an important design consideration. BSK recommends that final grading around shallow foundations must provide for positive and enduring drainage away from the structures, and ponding of water must not be allowed around, or near the shallow foundations. Ground surface profiles next to the shallow foundations must have at least a 2 percent gradient away from the structures.

5.0 PLANS AND SPECIFICATIONS REVIEW

BSK recommends that it be retained to review the draft plans and specifications for the project, with regard to foundations and earthwork, prior to their being finalized and issued for construction bidding.

6.0 CONSTRUCTION TESTING AND OBSERVATIONS

Geotechnical testing and observation during construction is a vital extension of this geotechnical investigation. BSK recommends that it be retained for those services. Field review during Site preparation and grading allows for evaluation of the exposed soil conditions and confirmation or revision of the assumptions and extrapolations made in formulating the design parameters and recommendations. BSK's observations must be supplemented with periodic compaction tests to establish substantial conformance with these recommendations. BSK must also be called to the Site to observe foundation excavations, prior to placement of reinforcing steel or concrete, in order to assess whether the actual bearing conditions are compatible with the conditions anticipated during the preparation of this report. BSK must also be called to the Site to observe placement of foundation and slab concrete.

If a firm other than BSK is retained for these services during construction, then that firm must notify the owner, project designers, governmental building officials, and BSK that the firm has assumed the responsibility for all phases (i.e., both design and construction) of the project within the purview of the geotechnical engineer. Notification must indicate that the firm has reviewed this report and any subsequent addenda, and that it either agrees with BSK's conclusions and recommendations, or that it will provide independent recommendations.

7.0 LIMITATIONS

The analyses and recommendations submitted in this report are based upon the data obtained from the borings performed at the locations shown on the Boring Location Map, Figure 2. The report does not reflect variations which may occur between or beyond the Borings. The nature and extent of such variations may not become evident until construction is initiated. If variations then appear, a re-evaluation of the recommendations of this report will be necessary after performing on-Site observations during the excavation period and noting the characteristics of the variations.

The validity of the recommendations contained in this report is also dependent upon an adequate testing and observation program during the construction phase. BSK assumes no responsibility for construction compliance with the design concepts or recommendations unless it has been retained to perform the testing and observation services during construction as described above.

The findings of this report are valid as of the present. However, changes in the conditions of the Site can occur with the passage of time, whether caused by natural processes or the work of man, on this property or adjacent property. In addition, changes in applicable or appropriate standards may occur, whether they result from legislation, governmental policy or the broadening of knowledge.

BSK has prepared this report for the exclusive use of the Client and members of the project design team. The report has been prepared in accordance with generally accepted geotechnical engineering practices, which existed in Fresno County at the time the report was written. No other warranties either expressed or implied are made as to the professional advice provided under the terms of BSK's agreement with Client and included in this report.

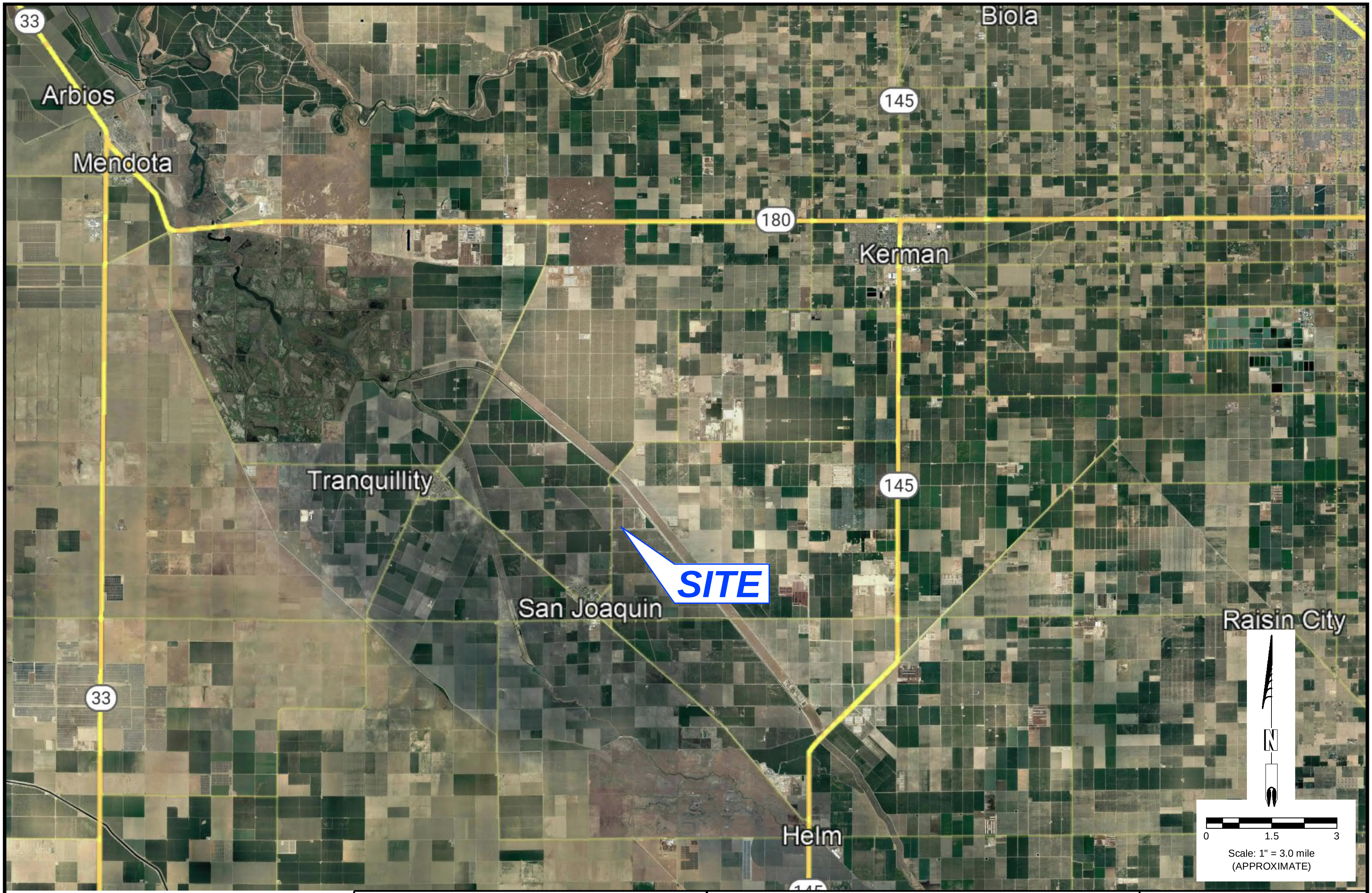
8.0 REFERENCES

Department of Water Resources. http://www.water.ca.gov/waterdatalibrary/, Water Data Library, 2021.

"U.S. Seismic Design Maps." U.S. Seismic Design Maps, 2021, seismicmaps.org/.

FIGURES

C:\Users\tgonzalez\BSK Associates\BSK Documents - FRS Projects Active\GEO\G2131510F - White Pine Renewables 2 Solar Array Proj\Graphics\G21-315-10F_JID.dwg User:tgonzalez Plotted:Oct 22, 2021 - 1:28pm La



REFERENCE IMAGE: Google Earth

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SITE VICINITY MAP

White Pine Renewables Solar Array
San Joaquin, Fresno County, California

FIGURE 1

JOB NO. G21-315-10F
DATE October 22, 2021
DR. BY TG
CH. BY OML
SCALE AS SHOWN
SHEET NO. 1
OF 1 SHEETS

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LEGEND:

⊕ TP-5	APPROXIMATE TEST PIT LOCATIONS
⊕ FR-1	APPROXIMATE FIELD RESISTIVITY LOCATION

REFERENCE IMAGE: Google Earth

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TEST PIT LOCATION MAP

White Pine Renewables Solar Array
San Joaquin, Fresno County, California

FIGURE 2

JOB NO. G21-315-10F
DATE October 22, 2021
DR. BY TG
CH. BY OML
SCALE AS SHOWN
SHEET NO. 1
OF 1 SHEETS

APPENDIX A

FIELD EXPLORATION

APPENDIX A

FIELD EXPLORATION

The field exploration for this investigation was conducted under the oversight of a BSK Engineer. Five (5) borings were excavated at the Site on October 20, 2021, using a mini excavator provided by MD Cutting. The borings were completed to a maximum depth of approximately 15 feet beneath the existing ground surface (bgs).

The soil materials encountered in the test borings were visually classified in the field, and the logs were recorded during the drilling and sampling operations. Visual classification of the materials encountered in the test borings was made in general accordance with the Unified Soil Classification System (ASTM D 2488). A soil classification chart is presented herein. Boring logs are presented herein and should be consulted for more details concerning subsurface conditions. Stratification lines were approximated by the field staff based on observations made at the time of drilling, while the actual boundaries between soil types may be gradual and soil conditions may vary at other locations.

Subsurface samples were obtained at the successive depths shown on the test pit logs by hand driving samplers which consisted of a 2.5-inch inside diameter (I.D.) California Sampler. The relatively undisturbed soil core samples were capped at both ends to preserve the samples at their natural moisture content. At the completion of the field exploration, the test borings were backfilled with the excavated soil cuttings.

The site was tested for field electrical resistivity using the Wenner 4-pin method in four (4) directions. The tests were performed according to ASTM G57 with a maximum spacing of 30 feet. The tests were performed at one location, FR-1. One test was run in the North-South direction and one test was run in the East-West direction. The test results are presented on Figures A-2.

MAJOR DIVISIONS					TYPICAL NAMES
COARSE GRAINED SOILS More than Half >#200	GRAVELS MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW	●	WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES
			GP	○	POORLY GRADED GRAVELS, GRAVEL- SAND MIXTURES
		GRAVELS WITH OVER 15% FINES	GM	▥	SILTY GRAVELS, POORLY GRADED GRAVEL-SAND-SILT MIXTURES
			GC	▨	CLAYEY GRAVELS, POORLY GRADED GRAVEL-SAND-CLAY MIXTURES
	SANDS MORE THAN HALF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE	CLEAN SANDS WITH LITTLE OR NO FINES	SW	⁙	WELL GRADED SANDS, GRAVELLY SANDS
			SP	⁖	POORLY GRADED SANDS, GRAVELLY SANDS
		SANDS WITH OVER 15% FINES	SM	▥	SILTY SANDS, POORLY GRADED SAND-SILT MIXTURES
			SC	▨	CLAYEY SANDS, POORLY GRADED SAND-CLAY MIXTURES
FINE GRAINED SOILS More than Half <#200 sieve	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50		ML	▥	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS, OR CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL	▨	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
			OL	▤	ORGANIC CLAYS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50		MH	▥	INORGANIC SILTS , MICACEOUS OR DIATOMACIOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS
			CH	▨	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH	≋	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS			Pt	⁂	PEAT AND OTHER HIGHLY ORGANIC SOILS

Note: Dual symbols are used to indicate borderline soil classifications.

⧗	Pushed Shelby Tube	∇	Water Level measured at time of Drilling (with date noted)
☒	Standard Penetration Test (2-inch outside diameter)	▼	Water Level measured after Drilling (with date noted)
■	Modified California (3-inch outside diameter)	⌇	Hand Auger Cuttings
◩	Split Barrel Sampler (2 ½-inch outside diameter)	✋	Grab Sample
▨	Undisturbed Sample	○	Sample Attempt with No Recovery
▮	Continuous Core Sample		

SOIL CLASSIFICATION CHART AND LOG KEY
Unified Soil Classification System (ASTM D 2487)
Figure A-1

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Location: Fresno County, CA
Project No.: G21-315-10F
Logged By: T. Gorham
Checked By: N. Popenoe

Page 1 of 1

Boring: **TP-1**

Depth (Feet)	Samples	Bulk Samples	Penetration Blows / Foot	In-Situ Dry Density (pcf)	In-Situ Moisture Content (%)	% Passing No. 200 Sieve	Graphic Log	USCS	MATERIAL DESCRIPTION	REMARKS
								ML	**Sandy SILT** - brown, dry, fine to medium grained sand	
1									... gray, moist	
2		✋				53				
3	■									
4								SM	**Silty SAND** - yellowish brown, moist, fine to medium grained sand	
5										
6										
7										
8		✋						CL	**Sandy CLAY** - yellowish brown, moist, fine to medium grained sand	
9										
10										
11										
12										
13										
14										
15									Boring terminated at approximately 14.5 foot bgs. No groundwater encountered. Boring backfilled with soil cuttings.	
16										
17										
18										
19										

Drilling Contractor: MD Cutting
Drilling Method: Mini Excavator
Drilling Equipment: Mini Excavator
Date Started: 10/20/21
Date Completed: 10/20/21

Surface Elevation:
Sample Method: 2.5-inch Modified Cal Mod
Groundwater Depth: Not Encountered
Completion Depth: 14 Feet
Borehole Diameter: 8"

* See key sheet for symbols and abbreviations used above.

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Project No.: G21-315-10F
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Boring: **TP-2**

Depth (Feet)	Samples	Bulk Samples	Penetration Blows / Foot	In-Situ Dry Density (pcf)	In-Situ Moisture Content (%)	% Passing No. 200 Sieve	Graphic Log	USCS	MATERIAL DESCRIPTION	REMARKS
								ML	**Sandy SILT** - dark yellowish brown, dry, fine to medium grained sand	
1		✋								
2		✋						SM	**Silty SAND** - olive yellow, moist, fine to medium grained sand, clay pockets	
3	■									
4										
5										
6										
7								SP-SM	**Poorly Graded SAND with Silt** - light brown, moist, fine to medium grained sand	
8										
9										
10										
11										
12										
13										
14										
15										
16									Boring terminated at approximately 15 foot bgs. No groundwater encountered. Boring backfilled with soil cuttings.	
17										
18										
19										

Drilling Contractor: MD Cutting
Drilling Method: Mini Excavator
Drilling Equipment: Mini Excavator
Date Started: 10/20/21
Date Completed: 10/20/21

Surface Elevation:
Sample Method: 2.5-inch Modified Cal Mod
Groundwater Depth: Not Encountered
Completion Depth: 15 Feet
Borehole Diameter: 8"

* See key sheet for symbols and abbreviations used above.

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Location: Fresno County, CA
Project No.: G21-315-10F
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Page 1 of 1

Boring: **TP-3**

Depth (Feet)	Samples	Bulk Samples	Penetration Blows / Foot	In-Situ Dry Density (pcf)	In-Situ Moisture Content (%)	% Passing No. 200 Sieve	Graphic Log	USCS	MATERIAL DESCRIPTION	REMARKS
								ML	**Sandy SILT** - dark yellowish brown, dry, fine to medium grained sand	
1									... light brown	
2						61				
		✋								
3	■			103.9	1.9					
4										
5									... yellowish brown, red striations, moist	
		✋								
6								SP-SM	**Poorly Graded SAND with Silt** - yellowish brown, moist, fine to coarse grained sand	
7										
8										
9										
10										
11										
12										
13										
14									Boring terminated at approximately 13 foot bgs. No groundwater encountered. Boring backfilled with soil cuttings.	
15										
16										
17										
18										
19										

Drilling Contractor: MD Cutting
Drilling Method: Mini Excavator
Drilling Equipment: Mini Excavator
Date Started: 10/20/21
Date Completed: 10/20/21

Surface Elevation:
Sample Method: 2.5-inch Modified Cal Mod
Groundwater Depth: Not Encountered
Completion Depth: 13 Feet
Borehole Diameter: 8"

* See key sheet for symbols and abbreviations used above.

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Project: White Pine Renewables - JID Solar Array
Location: Fresno County, CA
Project No.: G21-315-10F
Logged By: T. Gorham
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Boring: **TP-4**

Depth (Feet)	Samples	Bulk Samples	Penetration Blows / Foot	In-Situ Dry Density (pcf)	In-Situ Moisture Content (%)	% Passing No. 200 Sieve	Graphic Log	USCS	MATERIAL DESCRIPTION	REMARKS
							▨	CL	**Sandy CLAY** - olive brown, dry, fine to medium grained sand	
1		✋					▨			
2							▨		... white striations	
3	■						░	SM	**Silty SAND** - yellowish brown, moist, fine to medium grained	
4		✋				22	░			
5							░			
6							░			
7							░			
8							░			
9							░			
10							░			
11							░			
12		✋					░			
13									Boring terminated at approximately 13 foot bgs. No groundwater encountered. Boring backfilled with soil cuttings.	
14										
15										
16										
17										
18										
19										

Drilling Contractor: MD Cutting
Drilling Method: Mini Excavator
Drilling Equipment: Mini Excavator
Date Started: 10/20/21
Date Completed: 10/20/21

Surface Elevation:
Sample Method: 2.5-inch Modified Cal Mod
Groundwater Depth: Not Encountered
Completion Depth: 13 Feet
Borehole Diameter: 8"

* See key sheet for symbols and abbreviations used above.

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Project: White Pine Renewables - JID Solar Array

Location: Fresno County, CA

Project No.: G21-315-10F

Logged By: T. Gorham

Checked By: N. Popenoe

Boring: **TP-5**

Depth (Feet)	Samples	Bulk Samples	Penetration Blows / Foot	In-Situ Dry Density (pcf)	In-Situ Moisture Content (%)	% Passing No. 200 Sieve	Graphic Log	USCS	MATERIAL DESCRIPTION	REMARKS
0							▨	CL	**Sandy CLAY** - olive brown, dry, fine to medium grained sand	
1		✋					⁘	SM	**Silty SAND** - yellowish brown, dry, fine to medium grained sand	
2										
3	■			90.5	1.9				... light brown	
4										
5										
6							⁘	SP-SM	**Poorly Graded SAND with Silt** - light brown, dry, fine to coarse grained sand	
7										
8										
9										
10										
11										
12										
13									Boring terminated at approximately 13 foot bgs. No groundwater encountered. Boring backfilled with soil cuttings.	
14										
15										
16										
17										
18										
19										

Drilling Contractor: MD Cutting
Drilling Method: Mini Excavator
Drilling Equipment: Mini Excavator
Date Started: 10/20/21
Date Completed: 10/20/21

Surface Elevation:
Sample Method: 2.5-inch Modified Cal Mod
Groundwater Depth: Not Encountered
Completion Depth: 13 Feet
Borehole Diameter: 8"

* See key sheet for symbols and abbreviations used above.

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Figure A-2

Field Resistivity Test

ASTM G57 (Wenner 4-pin Method)

Project Name: **White Pines - JID Solar Arrays** **Project Number:** G21-315-10F **Test Conducted by:** TG

Soil Conditions: Sandy Silt (MLS): dry, fine to medium grained sand

Location	Date	Latitude (degrees)	Longitude (degrees)	Weather	Equipment
FR-1	10/13/2021	36.6342670	-120.1762760	sunny	Syscal R1+

Field Resistance (Ω), measured at each pin spacing

Location	Test Line	Orientation	Pin Spacing (feet)									
			2.5	5	10	20	30	-	-	-	-	-
FR-1	1	North-South	74.75	105.15	144.20	159.20	173.61					
	2	East-West	83.95	117.20	125.48	158.81	179.85					

Field Resistivity (Ω-m)

Location	Test Line	Orientation	Pin Spacing (feet)									
			2.5	5	10	20	30	-	-	-	-	-
FR-1	1	North-South	357.9	1,006.9	2,761.6	6,097.7	9,974.5					
	2	East-West	401.9	1,122.3	2,403.1	6,082.8	10,333.0					

Field Resistivity (Ω-cm)

Location	Test Line	Orientation	Pin Spacing (feet)									
			2.5	5	10	20	30	-	-	-	-	-
FR-1	1	North-South	35,789	100,687	276,160	609,773	997,449					
	2	East-West	40,193	112,226	240,309	608,279	1,033,300					

Note: High readings due to dry and desiccated soil.

APPENDIX B

LABORATORY TESTING

APPENDIX B

LABORATORY TESTING RESULTS

Moisture-Density Tests

The field moisture content, as a percentage of dry weight of the soils, was determined by weighing the samples before and after oven drying in accordance with ASTM D2216 test procedures. Dry densities, in pounds per cubic foot, were also determined for undisturbed core samples in general accordance with ASTM D 2937 test procedures. Test results are presented on the boring logs in Appendix A.

Sieve Analysis Test

Three (3) sieve analysis tests were performed at the Site. The Sieve Analysis tests were performed on selected soil samples in the area of planned construction. The tests were performed in general accordance with Test Method ASTM D422. The results of the tests are presented on Figures B-1 through B-3.

Atterberg Limits Test

One (1) Atterberg Limits Test was performed on a soil sample obtained at the time of drilling in the area of planned construction. The test was performed in general accordance with ASTM D4829. The test results are presented on Figure B-4.

Direct Shear Test

One (1) direct shear test was performed on a relatively undisturbed soil samples obtained at the time of drilling in the area of planned construction. The tests were conducted to determine the soil strength characteristics. The standard test method is ASTM D3080, Direct Shear Test for Soil under Consolidated Drained Conditions. The direct shear test results are presented graphically on Figure B-5.

Collapse Potential Test

One (1) Collapse Potential Test was performed on relatively undisturbed soil samples to evaluate collapse potential characteristics. The tests were performed in general accordance with ASTM D5333. The sample was initially loaded under as-received moisture content to a selected stress level, loaded to a maximum load of 2000 psf and then saturated. The test results are presented on Figure B-6.

Soil Corrosivity

One (1) Corrosivity Evaluation was performed on a bulk soil sample obtained at the time of drilling in the area of planned construction. The soil was evaluated for minimum resistivity (ASTM G57), sulfate ion concentration (CT 417), chloride ion concentration (CT 422), and pH of soil (ASTM D4972). The test results are presented in Table B-1.

Table B-1: Summary of Corrosion Test Results

Sample Location	pH	Sulfate, mg/kg	Chloride, mg/kg	Minimum Resistivity, ohm-cm
TP-4 @ 0-3 feet bgs	8.3	27	Not Detected	2,160

FIGURE B-1

550 W. Locust Ave.
Fresno, CA 93650
Ph: (559) 497-2880
Fax: (559) 497-2886

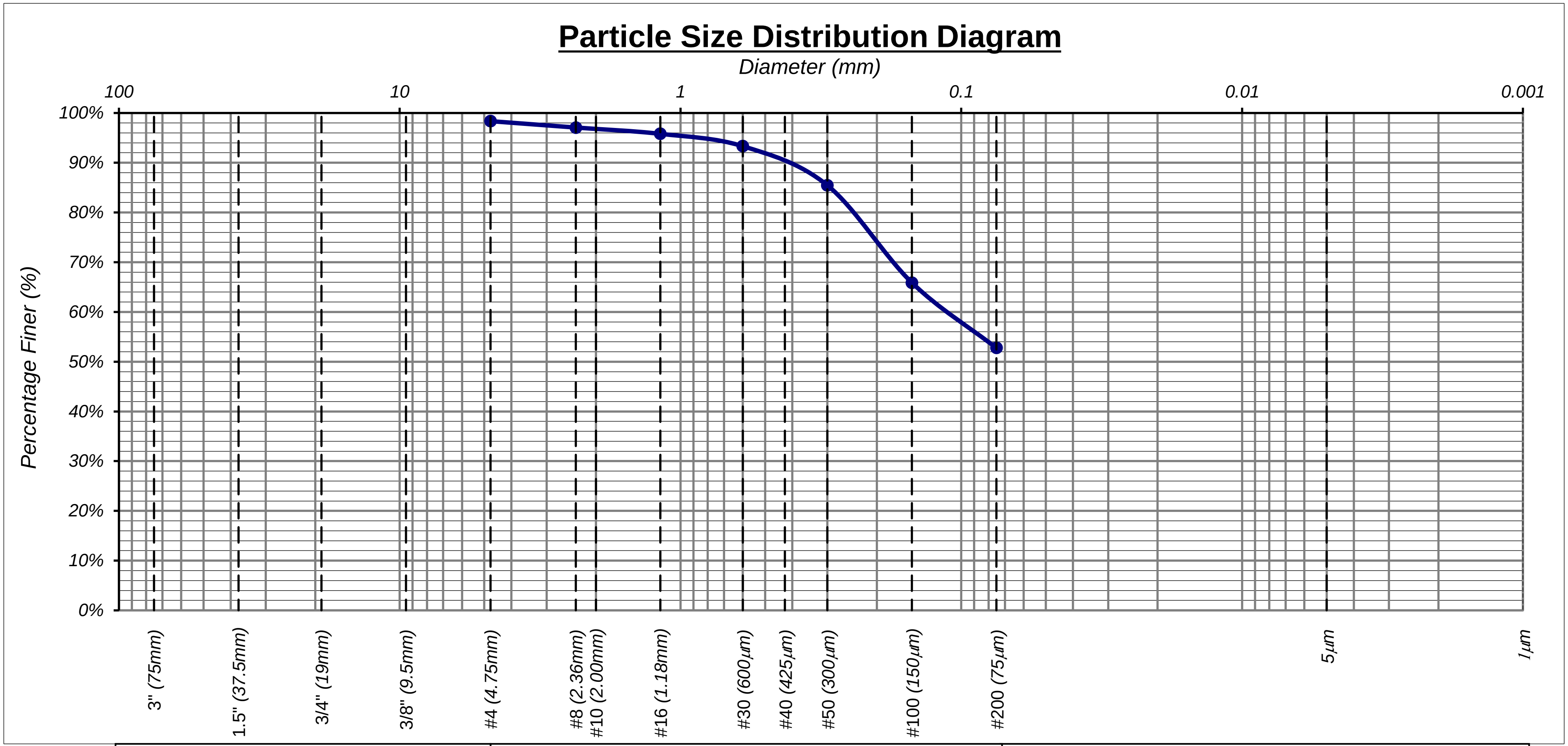
Gradation Analysis Report
ASTM D-422 / ASTM C-136

Project Name: White Pine Renewables - JID Site
Project Number: G21-315-10F
Report Date: 11/3/2021

Sample Location: TP-1 @ 1'-3'
Sample Lab ID: n/a
Sample Date: 10/20/2021

Sample Description: Sandy Silt - gray, moist, fine to medium grained sand
Test Date: 10/28/2021

Particle Size Distribution Diagram



Clear Square Openings (ASTM C-136)			US Standard Series (ASTM D-422)			Hydrometer Readings (ASTM D-422)
Cobble	Gravel		Sand			Silt (Non-Plastic) to Clay (Plastic)
	Coarse	Fine	Coarse	Medium	Fine	

% Gravel = 2% **% Sand = 46%** **% Fines = 53%**

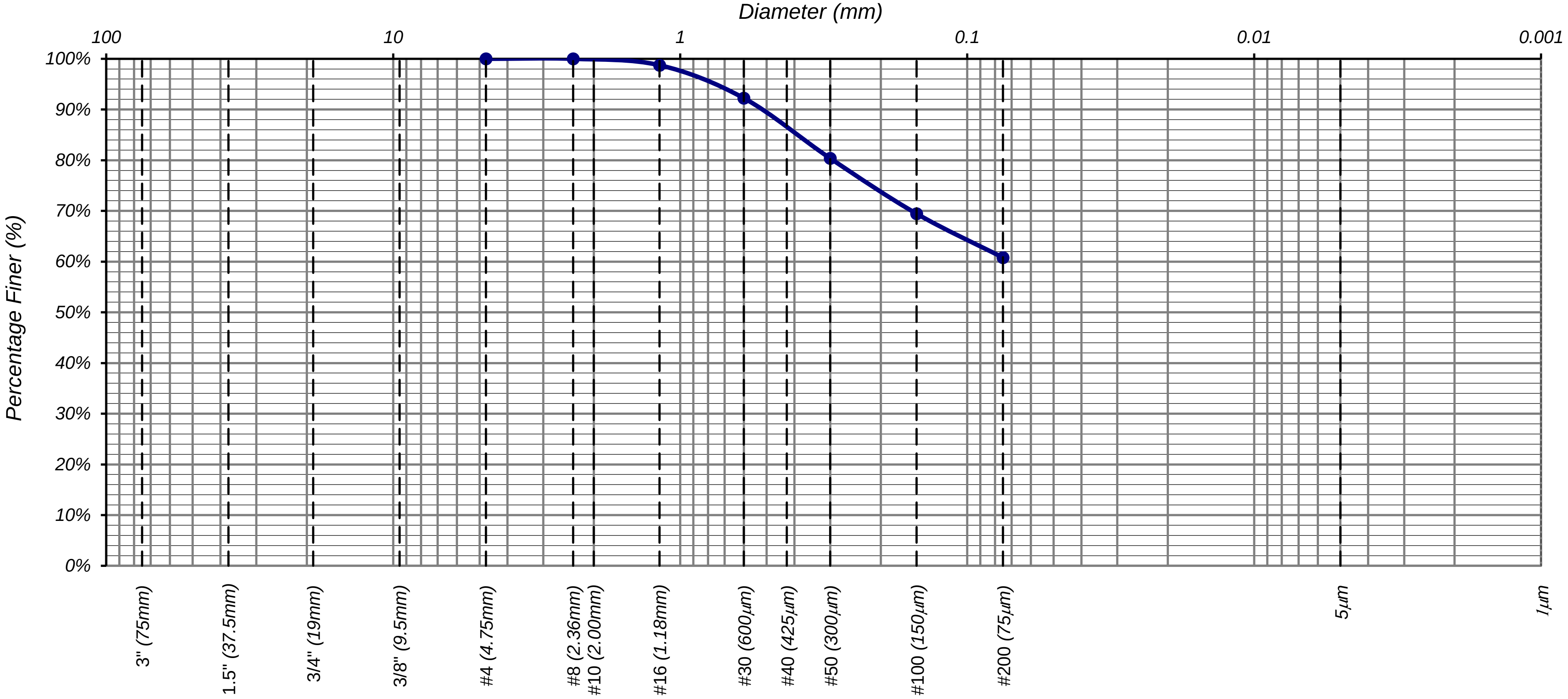
ASSOCIATES

Gradation Analysis Report
ASTM D-422 / ASTM C-136

FIGURE B-2
550 W. Locust Ave.
Fresno, CA 93650
Ph: (559) 497-2880
Fax: (559) 497-2886

Project Name: White Pine Renewables - JID Site
Project Number: G21-315-10F
Report Date: 11/3/2021
Sample Location: TP-3 @ 1'-3'
Sample Lab ID: n/a
Sample Date: 10/20/2021
Sample Description: Sandy Silt (ML) - dark yellowish brown, fine to medium grained sand
Test Date: 10/28/2021

Particle Size Distribution Diagram



Clear Square Openings (ASTM C-136)			US Standard Series (ASTM D-422)			Hydrometer Readings (ASTM D-422)
Cobble	Gravel		Sand			Silt (Non-Plastic) to Clay (Plastic)
	Coarse	Fine	Coarse	Medium	Fine	

% Gravel = 0% **% Sand = 39%** **% Fines = 61%**

BSK ASSOCIATES

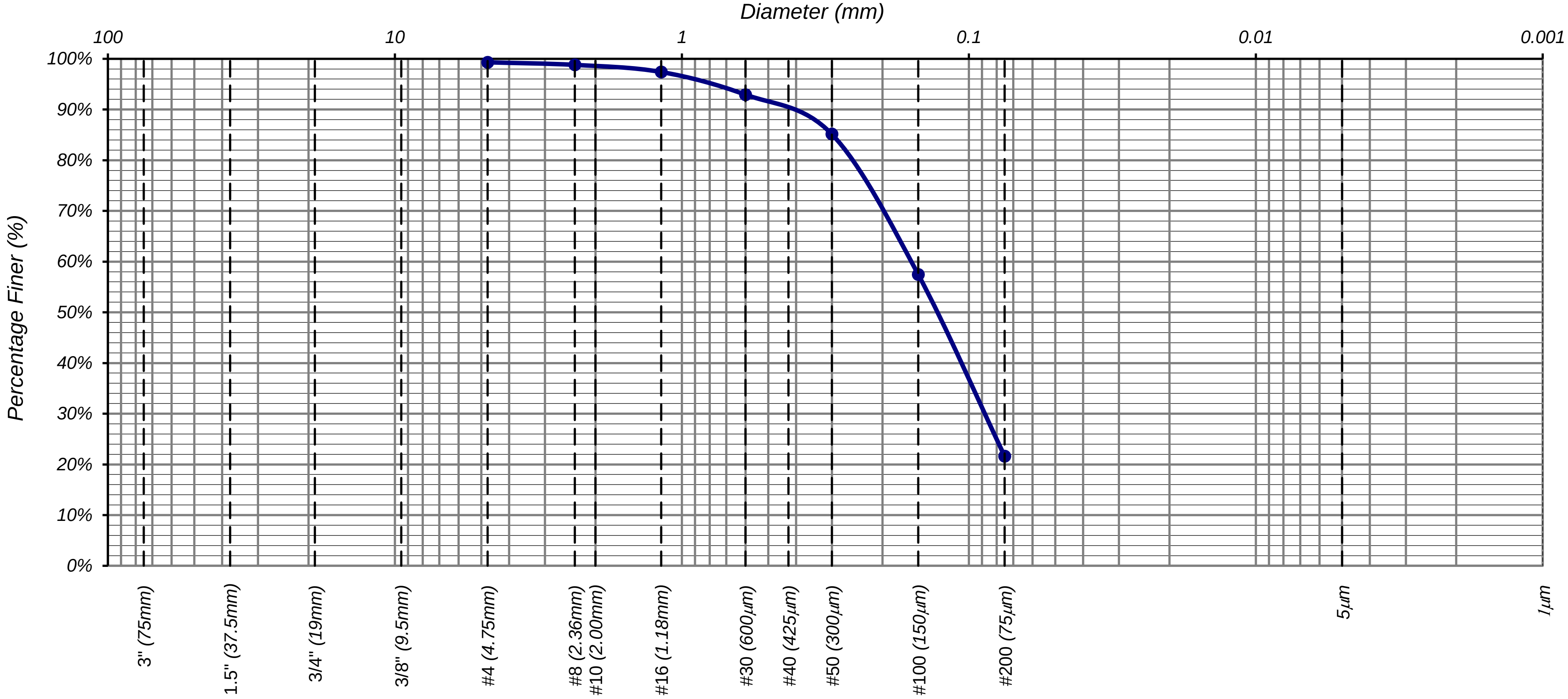
Figure B-3

550 W. Locust Ave.
Fresno, CA 93650
Ph: (559) 497-2880
Fax: (559) 497-2886

Gradation Analysis Report
ASTM D-422 / ASTM C-136

Project Name:	White Pine Renewables - JID Site	**Project Number:**	G21-315-10F	**Report Date:**	11/3/2021
Sample Location:	TP-4 @ 3'-5'	**Sample Lab ID:**	n/a	**Sample Date:**	10/20/2021
Sample Description:	Silty Sand (SM) - olive brown, dry, fine to medium grained sand			**Test Date:**	10/28/2021

Particle Size Distribution Diagram



Clear Square Openings (ASTM C-136)			US Standard Series (ASTM D-422)			Hydrometer Readings (ASTM D-422)
Cobble	Gravel		Sand			Silt (Non-Plastic) to Clay (Plastic)
	Coarse	Fine	Coarse	Medium	Fine	

% Gravel = 1% **% Sand = 78%** **% Fines = 22%**

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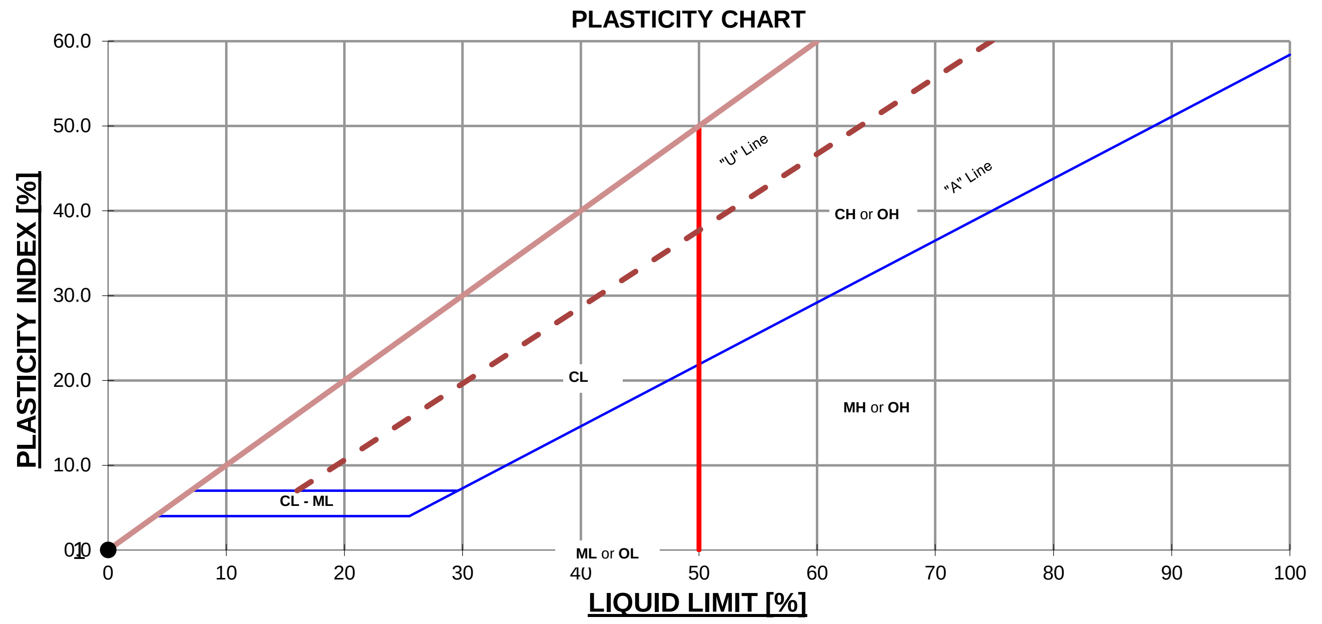
LIQUID LIMIT (LL), PLASTIC LIMIT (PL), AND PLASTICITY INDEX (PI) OF SOILS

ASTM D-4318

Figure B-4
550 W. Locust Ave.
Fresno, CA 93650
Ph: (559) 497-2868
Fax: (559) 497-2886

Project Name: White Pine Renewables - JID
Project Number: G21-315-10F
Sampled By: T. Gorham **Tested By:** D. Messfin
Report Date: 11/3/2021
Sample Date: 10/20/2021
Test Date: 11/2/2021



Sample #	1			2			3		
Sample ID Location Description	TP-1 @ 1'-3'								
	Liquid Limit Data								
Wet+Tare (g)									
Dry+Tare (g)									
Tare (g)									
Spec. Blows	**NON PLASTIC**			25-35	20-30	15-25	25-35	20-30	15-25
No. of Blows									
LL									
Corrected LL									
	Plastic Limit Data								
Wet+Tare (g)									
Dry+Tare (g)	**NON PLASTIC**								
Tare (g)									
M.C.									

	Results	**Specification**	**Results**	**Specification**	**Results**	**Specification**
AVG L.L.	#DIV/0!					
AVG P.L.						
P.I.	#DIV/0!					
USCS Symbol						

Remarks:

Reviewed By: **Date:**

FIGURE B-5
550 W. Locust
Fresno, CA 93650
Ph: (559) 497-2880
Fax: (559) 497-2886

Direct Shear Test

ASTM D-3080

Project Name: White Pines Renewable - JID Solar Array

Sampled By: T. Gorham

Sample Date: 10/20/2021

Tested By: D.Messfin

Test Date: 10/26/2021

Project Number: G21 - 315 - 10F

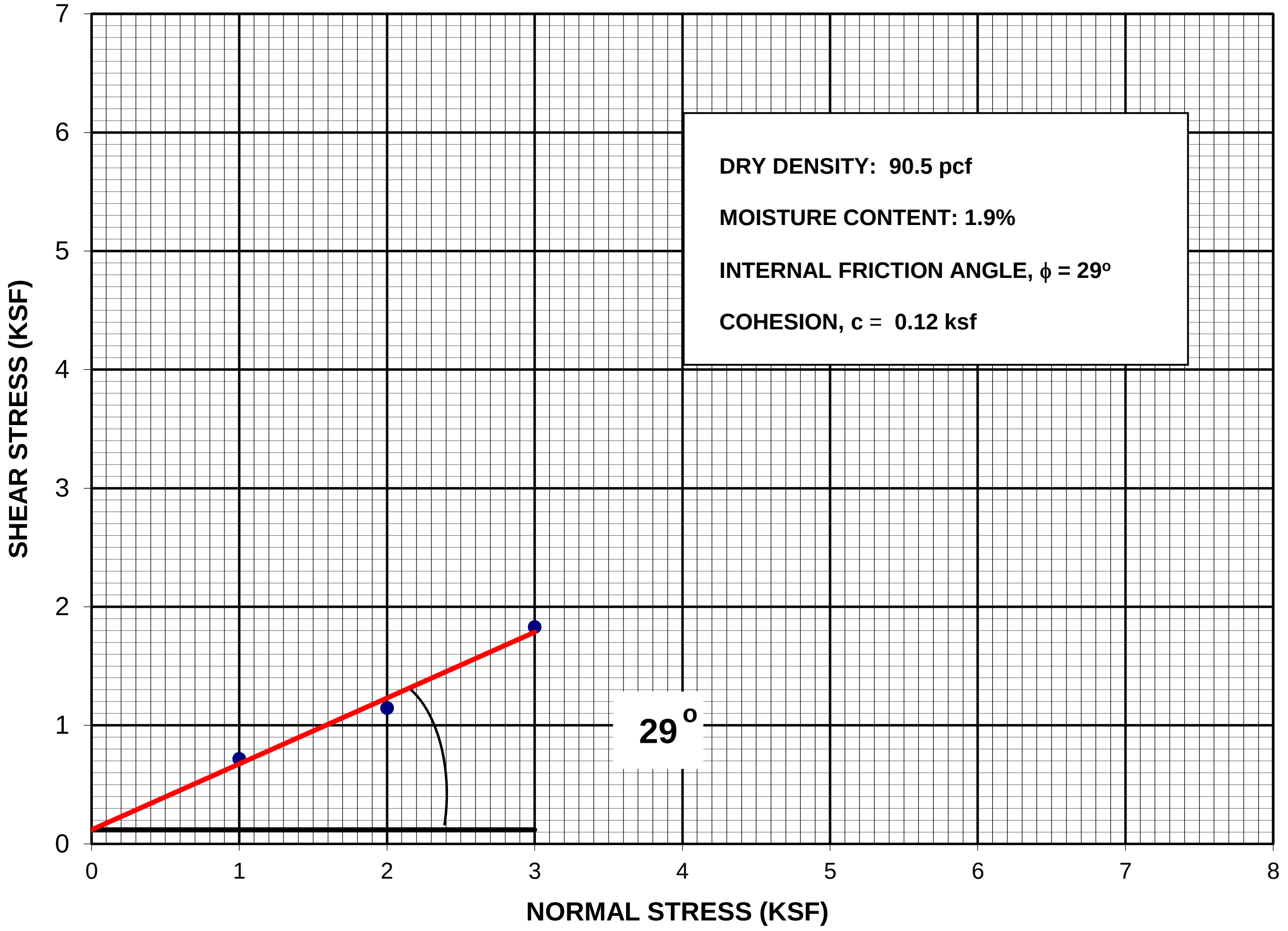
Lab Tracking ID: N/A

Report Date: 11/1/2021

Sample Location: TP - 5 @ 3'

Sample Description: Silty Sand (SM): yellowish brown, dry, fine to medium grained sand

SHEAR STRENGTH DIAGRAM



DRY DENSITY: 90.5 pcf

MOISTURE CONTENT: 1.9%

INTERNAL FRICTION ANGLE, $\phi = 29^o$

COHESION, c = 0.12 ksf

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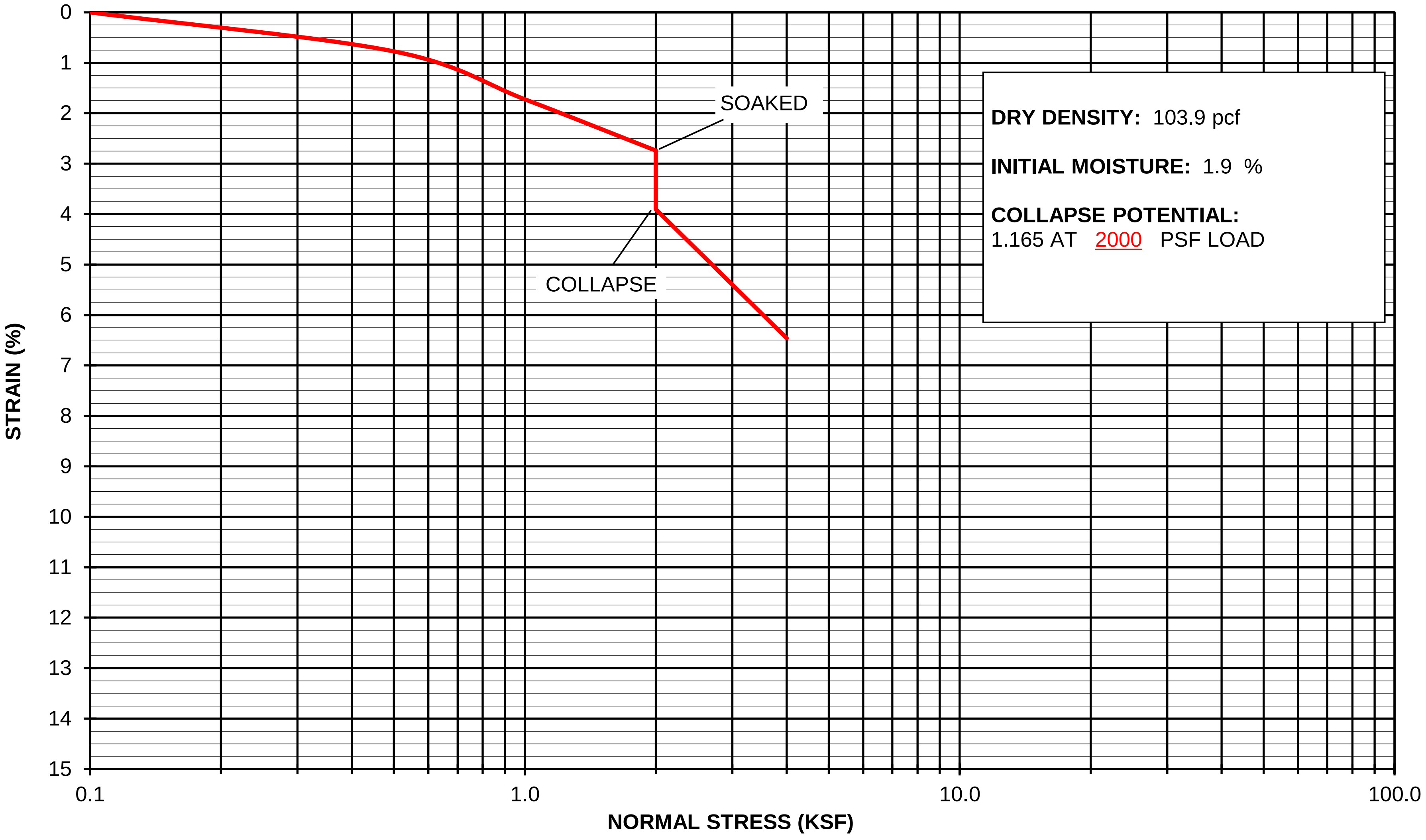
COLLAPSE POTENTIAL
ASTM D-5333

FIGURE B-6
550 W. Locust Ave.
Fresno, CA 93650
Ph: (559) 497-2880
Fax: (559) 497-2886

Project Name: White Pine Renewables - JID
Sampled By: T. Gorham
Sample Date: 10/20/21
Tested By: D.Messfin
Test Date: 10/26/21
Project Number: G21-315-10F
Lab Tracking ID: N/A
Report Date: 11/3/21
Sample Location: TP-3 @ 3'
Sample Description: Sandy Silty (ML) - light brown, dry, fine to medium grained sand



DRY DENSITY: 103.9 pcf

INITIAL MOISTURE: 1.9 %

COLLAPSE POTENTIAL:
1.165 AT 2000 PSF LOAD

BSK ASSOCIATES

550 West Locust Avenue
Fresno CA 93650
P 559.497.2880
www.bskassociates.com

Sent via email: marissa.boucher@whitepinerenew.com

November 15, 2021 BSK Project G21-315-10F

Ms. Marissa Boucher
White Pine Renewables
1808 Wedemeyer St., Suite 219
San Francisco, California 94129

SUBJECT: Addendum Laboratory Test Results Update
James Irrigation District Solar Array Project
NE of S Placer Avenue and W Adams Avenue
Fresno County, California

Dear Ms. Boucher:

At your request, BSK prepared this addendum to provide the rest of the laboratory results for James Irrigation District (JID) Solar Array Project located on the northeast corner of S Placer Avenue and W Adams Avenue in Fresno County, California. BSK prepared the geotechnical investigation for this site dated November 4, 2021.

PROJECT UNDERSTANDING

BSK understands that the project is at APN 030-170-32T within the James Irrigation District (JID) in Fresno County, CA. The proposed solar array is anticipated to be supported on pole-type foundations, such as driven steel piles, or cast-in-drilled-hole piers. AC electrical equipment will be supported on driven piles, shallow foundations or mat foundations.

Review of the provided array location indicates the proposed solar arrays will occupy an approximately 32 acres with a system size of 4 MW AC. Anticipated foundation loads are relatively light.

In the event that significant changes occur in the design of the proposed improvements, this report's conclusions and recommendations will not be considered valid unless the changes are reviewed with BSK and the conclusions and recommendations are modified or verified in writing.

LABORATORY TESTING RESULTS

One (1) Expansion Index Test was performed on a bulk soil sample obtained at the time of drilling in the area of planned construction to determine the expansion characteristics of the sample. The test was performed in general accordance with UBC Standard 18-2/ ASTM Test Method D4829. The test results are attached in this letter. Based on the result of the expansion test, the upper ten feet bgs of the on-site soil is considered to have a low expansion potential based on an Expansion Index result of 25 at Boring B-1.

Representative soil sample was evaluated for thermal resistivity of soil using accepted test methods. The sample was obtained from the upper 3 feet of test pit TP-2 and TP-4. The test results can be found attached in this letter.

CONCLUSION

We appreciate the opportunity to assist you on this project. If you have any questions regarding this letter, please contact us.

Sincerely,
BSK Associates

Yingyi Xu

On Man Lau

REGISTERED PROFESSIONAL ENGINEER
ON MAN LAU
GE2644
EXP. 12-31-2021
GEOTECHNICAL
STATE OF CALIFORNIA

Yingyi Xu, EIT
Staff Engineer

On Man Lau, PE, GE
South Valley Regional Manager

Attachments: Expansion Index Results
Thermal Resistivity Laboratory Report

Distributed: Ms. Marissa Boucher, White Pine Renewables, (marissa.boucher@whitepinerenew.com) (pdf)

BSK ASSOCIATES

550 W. Locust Avenue
Fresno, CA 93650
Ph: (559) 497-2868
Fax: (559) 485-6140

Expansion Index of Soils

ASTM D 4829 / UBC Standard 18-2

Project Name: White Pines Renewables - JID Solar Array Project
Report Date: 11/15/2021
Project Number: G21-315-10F
Sample Date: 10/20/2021
Lab Tracking ID: N/A
Test Date: 11/9/2021
Sample Location: TP-1 @ 8-9'
Sample Source
Sampled By: T. Gorham
Tested By: T. Gorham
Reviewed By:

TEST DATA

INITIAL SET-UP DATA			
Sample + Tare Weight (g)	774.8		
Tare Weight (g)	368.6	FINAL TAKE-DOWN DATA	
		Moisture Content Data	
Wet Weight + Tare	85.9	Wet Weight + Tare	619.6
Dry Weight + Tare	79.1	Dry Weight + Tare	545.5
Tare Weight (g)	0	Tare Weight (g)	179.3
Moisture Content (%)	8.6%	Moisture Content (%)	20.2%
Initial Volume (ft^3)	0.007272	Final Volume (ft^3)	0.007461
Remolded Wet Density (pcf)	123.1	Final Wet Density (pcf)	132.9
Remolded Dry Density (pcf)	113.4	Final Dry Density (pcf)	110.5
Degree of Saturation	**48**	**Degree of Saturation**	**104**

EXPANSION READINGS

Initial Gauge Reading (in)	0.24
Final Gauge Reading (in)	0.266
Expansion (in)	0.026

Uncorrected Expansion Index	**26**
Corrected Expansion Index, EI	**25**

Classification of Expansive Soil

EI	Potential Expansion
0 - 20	Very Low
21 - 50	Low
51 - 90	Medium
91 - 130	High
>130	Very High

Laboratory Report for
BSK Associates Engineers & Laboratories

G21-315-10F, White Pine Renewables JID & WR1

November 6, 2021

Daniel B. Stephens & Associates, Inc.

4400 Alameda Blvd. NE, Suite C • Albuquerque, New Mexico 87113

November 6, 2021

On Man Lau
BSK Associates Engineers & Laboratories
550 W Locust Ave.
Fresno, CA 93650
(559) 497-2880 ext 206

Re: DBS&A Laboratory Report for the BSK Associates G21-315-10F, White Pine Renewables JID & WR1 Project

Dear On Man Lau:

Enclosed is the report for the BSK Associates G21-315-10F, White Pine Renewables JID & WR1 project sample testing. Please review this report and provide any comments as samples will be held for a maximum of 30 days. After 30 days samples will be returned or disposed of in an appropriate manner.

All testing results were evaluated subjectively for consistency and reasonableness, and the results appear to be reasonably representative of the material tested. However, DBS&A does not assume any responsibility for interpretations or analyses based on the data enclosed, nor can we guarantee that these data are fully representative of the undisturbed materials at the field site. We recommend that careful evaluation of these laboratory results be made for your particular application.

The testing utilized to generate the enclosed report employs methods that are standard for the industry. The results do not constitute a professional opinion by DBS&A, nor can the results affect any professional or expert opinions rendered with respect thereto by DBS&A. You have acknowledged that all the testing undertaken by us, and the report provided, constitutes mere test results using standardized methods, and cannot be used to disqualify DBS&A from rendering any professional or expert opinion, having waived any claim of conflict of interest by DBS&A.

We are pleased to provide this service to BSK Associates and look forward to future laboratory testing on other projects. If you have any questions about the enclosed data, please do not hesitate to call.

Sincerely,

DANIEL B. STEPHENS & ASSOCIATES, INC.
SOIL TESTING & RESEARCH LABORATORY

Joleen Hines

Joleen Hines
Laboratory Manager

Enclosure

Daniel B. Stephens & Associates, Inc.
Soil Testing & Research Laboratory
4400 Alameda Blvd. NE, Suite C
Albuquerque, NM 87113
505-889-7752
FAX 505-889-0258

Summaries

Summary of Tests Performed

Laboratory Sample Number	Initial Soil Properties[1]			Saturated Hydraulic Conductivity[2]			Moisture Characteristics[3]								Particle Size[4]			Specific Gravity[5]		Air Perm-eability	Atterberg Limits	Thermal Properties
	G	VM	VD	CH	FH	FW	HC	PP	FP	DPP	RH	EP	WHC	K_{unsat}	DS	WS	H	F	C			
WR-1 TP-1 @ 3'	X	X																				X
WR-1 TP-8 @ 3'	X	X																				X
JID TP-2 @ 3'	X	X																				X
JID TP-4 @ 3'	X	X																				X

[1] G = Gravimetric Moisture Content, VM = Volume Measurement Method, VD = Volume Displacement Method

[2] CH = Constant Head Rigid Wall, FH = Falling Head Rigid Wall, FW = Falling Head Rising Tail Flexible Wall

[3] HC = Hanging Column, PP = Pressure Plate, FP = Filter Paper, DPP = Dew Point Potentiometer, RH = Relative Humidity Box, EP = Effective Porosity, WHC = Water Holding Capacity, Kunsat = Calculated Unsaturated Hydraulic Conductivity

[4] DS = Dry Sieve, WS = Wet Sieve, H = Hydrometer

[5] F = Fine (<4.75mm), C = Coarse (>4.75mm)

Notes

Sample Receipt:
Four samples, each as a 2.5" x 6" stainless steel sleeve sealed with end caps and tape, were received on October 22, 2021. The samples were delivered in a cardboard box with packing material and were received in good order.

Sample Preparation and Testing Notes:
Each sample was subjected to thermal properties testing at the initial moisture content, the saturated moisture content, and at the oven dry state. Each thermal properties reading was obtained in the same location if possible.

Summary of Thermal Properties

Sample	Reading	Gravimetric Moisture Content (g/g, %)	Volumetric Moisture Content[1] (vol/vol, %)	Dry Bulk Density[1] (g/cm^3)	Temp °C	K W/(m·K)	ρ °C·cm/W	C $MJ/(m^3·K)$	D mm^2/s
WR-1 TP-1 @ 3'	Initial	7.43	10.76	1.45	20.82	0.486	205.6	1.742	0.279
WR-1 TP-1 @ 3'	Saturated	34.63	50.20	1.45	20.08	1.736	57.6	3.399	0.511
WR-1 TP-1 @ 3'	Oven Dry	0.00	0.00	1.45	24.20	0.329	304.1	1.344	0.245
WR-1 TP-8 @ 3'	Initial	8.19	11.00	1.34	21.73	0.468	213.7	2.103	0.222
WR-1 TP-8 @ 3'	Saturated	37.66	50.60	1.34	19.97	1.433	69.8	3.578	0.400
WR-1 TP-8 @ 3'	Oven Dry	0.00	0.00	1.34	25.00	0.236	423.3	1.181	0.200
JID TP-2 @ 3'	Initial	6.90	11.69	1.69	21.81	1.282	78.0	3.329	0.385
JID TP-2 @ 3'	Saturated	22.37	37.87	1.69	19.90	1.844	54.2	3.376	0.546
JID TP-2 @ 3'	Oven Dry	0.00	0.00	1.69	24.91	0.403	248.4	1.552	0.259
JID TP-4 @ 3'	Initial	7.50	12.58	1.68	21.93	1.199	83.4	3.894	0.308
JID TP-4 @ 3'	Saturated	22.95	38.51	1.68	19.39	1.764	56.7	3.700	0.477
JID TP-4 @ 3'	Oven Dry	0.00	0.00	1.68	24.35	0.377	265.1	1.580	0.239

---

[1] Adjusted for volume changes during testing, if applicable.

Thermal Properties

Summary of Thermal Properties

Sample	Reading	Gravimetric Moisture Content (g/g, %)	Volumetric Moisture Content[1] (vol/vol, %)	Dry Bulk Density[1] (g/cm^3)	Temp °C	K W/(m·K)	ρ °C·cm/W	C MJ/(m^3·K)	D mm^2/s
WR-1 TP-1 @ 3'	Initial	7.43	10.76	1.45	20.82	0.486	205.6	1.742	0.279
WR-1 TP-1 @ 3'	Saturated	34.63	50.20	1.45	20.08	1.736	57.6	3.399	0.511
WR-1 TP-1 @ 3'	Oven Dry	0.00	0.00	1.45	24.20	0.329	304.1	1.344	0.245
WR-1 TP-8 @ 3'	Initial	8.19	11.00	1.34	21.73	0.468	213.7	2.103	0.222
WR-1 TP-8 @ 3'	Saturated	37.66	50.60	1.34	19.97	1.433	69.8	3.578	0.400
WR-1 TP-8 @ 3'	Oven Dry	0.00	0.00	1.34	25.00	0.236	423.3	1.181	0.200
JID TP-2 @ 3'	Initial	6.90	11.69	1.69	21.81	1.282	78.0	3.329	0.385
JID TP-2 @ 3'	Saturated	22.37	37.87	1.69	19.90	1.844	54.2	3.376	0.546
JID TP-2 @ 3'	Oven Dry	0.00	0.00	1.69	24.91	0.403	248.4	1.552	0.259
JID TP-4 @ 3'	Initial	7.50	12.58	1.68	21.93	1.199	83.4	3.894	0.308
JID TP-4 @ 3'	Saturated	22.95	38.51	1.68	19.39	1.764	56.7	3.700	0.477
JID TP-4 @ 3'	Oven Dry	0.00	0.00	1.68	24.35	0.377	265.1	1.580	0.239

---

[1] Adjusted for volume changes during testing, if applicable.

Thermal Properties Results Sheet for Sample: WR-1 TP-1 @ 3'

Job Name: BSK Associates
Job Number: DB21.1033.00
Sample Number: WR-1 TP-1 @ 3'
Job #: G21-315-10F
Job Name: White Pine Renewables JID & WR1

Instrument Description: Decagon KD2 Pro
Probe: ☐ KS-1, 6 cm length, 1.3 mm diameter, single needle
☐ TR-1, 10 cm length, 2.4 mm diameter, single needle
☑ SH-1, 3 cm length, 1.3 mm diameter, dual needle, 6 mm spacing
Test Start Date: 10/27/21

Reading	Water Potential (-cm water)	Gravimetric Moisture Content (g/g, %)	Volumetric Moisture Content[1] (vol/vol, %)	Dry Bulk Density[1] (g/cm^3)	Test Temperature (°C)	K Thermal Conductivity W/(m·K)	ρ Thermal Resistivity °C·cm/W	C Specific Heat Capacity MJ/(m^3·K)	D Thermal Diffusivity (mm^2/s)
Initial	---	7.43	10.76	1.45	20.82	0.486	205.6	1.742	0.279
Saturated	0	34.63	50.20	1.45	20.08	1.736	57.6	3.399	0.511
Oven Dry	---	0.00	0.00	1.45	24.20	0.329	304.1	1.344	0.245

--- = Value not measured.

[1] Adjusted for volume changes during testing, if applicable.

Thermal Properties Data

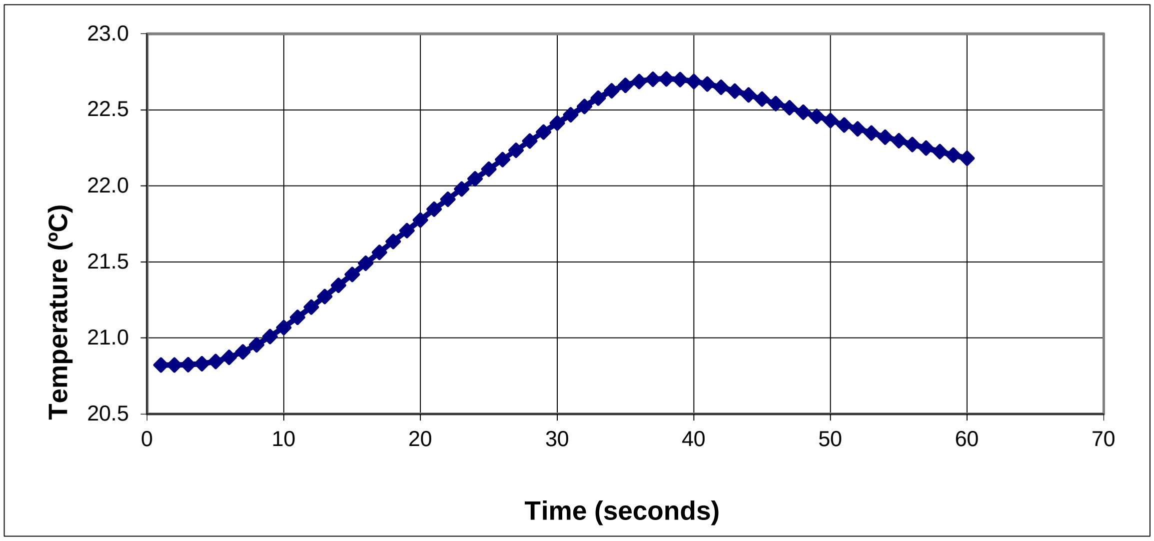
Sample Number: WR-1 TP-1 @ 3'
Potential (-cm water): Initial

Test Date/Time:	10/27/21 8:51 AM	*K (W/(m·K)):*	0.486
Sensor:	SH-1	*ρ (°C·cm/W):*	205.6
Test Temp.(°C):	20.8	*C (MJ/(m³·K)):*	1.742
KD2 Pro Sample ID:	W-TP1-AR	*D (mm²/s):*	0.279
Power (W/m):	21.050	*Err:*	0.0021
Current (amps):	0.142		

Raw Data

Second	Temp.(°C)	Second	Temp.(°C)	Second	Temp.(°C)	Second	Temp.(°C)
1	20.822	16	21.491	31	22.468	46	22.542
2	20.822	17	21.563	32	22.523	47	22.514
3	20.825	18	21.635	33	22.577	48	22.485
4	20.831	19	21.706	34	22.625	49	22.457
5	20.846	20	21.776	35	22.662	50	22.429
6	20.872	21	21.846	36	22.687	51	22.401
7	20.909	22	21.913	37	22.701	52	22.374
8	20.955	23	21.980	38	22.704	53	22.347
9	21.009	24	22.046	39	22.699	54	22.321
10	21.069	25	22.110	40	22.686	55	22.297
11	21.135	26	22.172	41	22.669	56	22.272
12	21.203	27	22.234	42	22.648	57	22.248
13	21.273	28	22.294	43	22.624	58	22.225
14	21.345	29	22.354	44	22.598	59	22.203
15	21.418	30	22.412	45	22.571	60	22.182

WR-1 TP-1 @ 3', Potential: Initial - Temperature vs. Time Graph



Laboratory analysis by: D. O'Dowd
Data entered by: J. Hines
Checked by: J. Hines

Thermal Properties Data

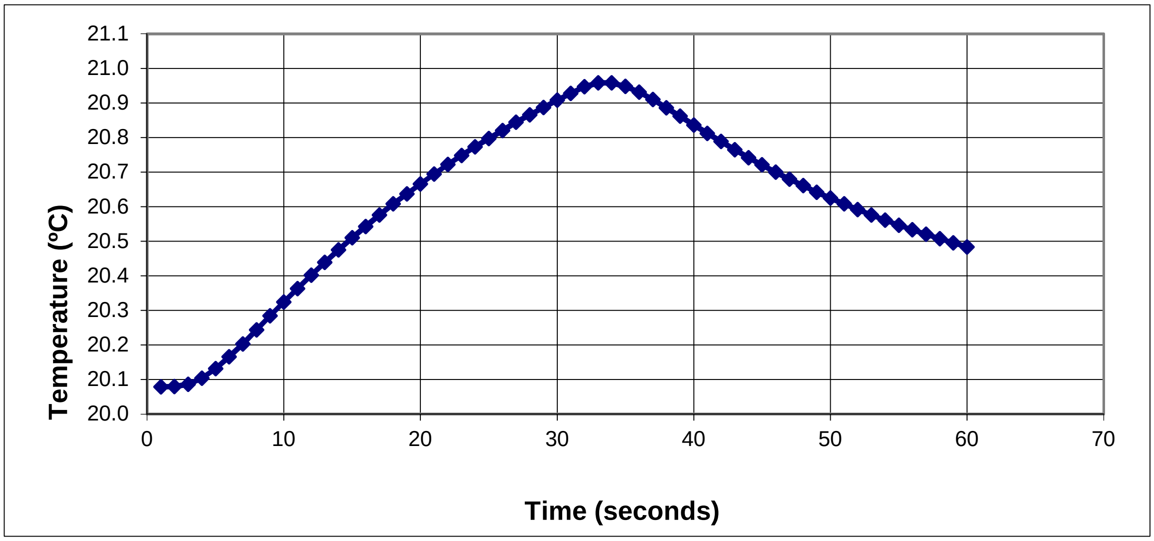
Sample Number: WR-1 TP-1 @ 3'
Potential (-cm water): 0

Test Date/Time:	10/28/21 9:29 AM	*K (W/(m·K)):*	1.736
Sensor:	SH-1	*ρ (°C·cm/W):*	57.6
Test Temp.(°C):	20.1	*C (MJ/(m³·K)):*	3.399
KD2 Pro Sample ID:	W-TP1-SA	*D (mm²/s):*	0.511
Power (W/m):	22.940	*Err:*	0.0040
Current (amps):	0.149		

Raw Data

Second	Temp.(°C)	Second	Temp.(°C)	Second	Temp.(°C)	Second	Temp.(°C)
1	20.079	16	20.543	31	20.928	46	20.700
2	20.080	17	20.576	32	20.947	47	20.680
3	20.086	18	20.608	33	20.958	48	20.661
4	20.104	19	20.637	34	20.958	49	20.642
5	20.132	20	20.666	35	20.948	50	20.625
6	20.166	21	20.694	36	20.931	51	20.608
7	20.203	22	20.722	37	20.910	52	20.592
8	20.244	23	20.748	38	20.886	53	20.576
9	20.284	24	20.773	39	20.862	54	20.561
10	20.324	25	20.797	40	20.836	55	20.546
11	20.363	26	20.820	41	20.812	56	20.533
12	20.402	27	20.844	42	20.789	57	20.520
13	20.439	28	20.866	43	20.765	58	20.507
14	20.475	29	20.887	44	20.742	59	20.495
15	20.510	30	20.908	45	20.721	60	20.483

WR-1 TP-1 @ 3', Potential: 0 - Temperature vs. Time Graph



Laboratory analysis by: D. O'Dowd
Data entered by: J. Hines
Checked by: J. Hines

Thermal Properties Data

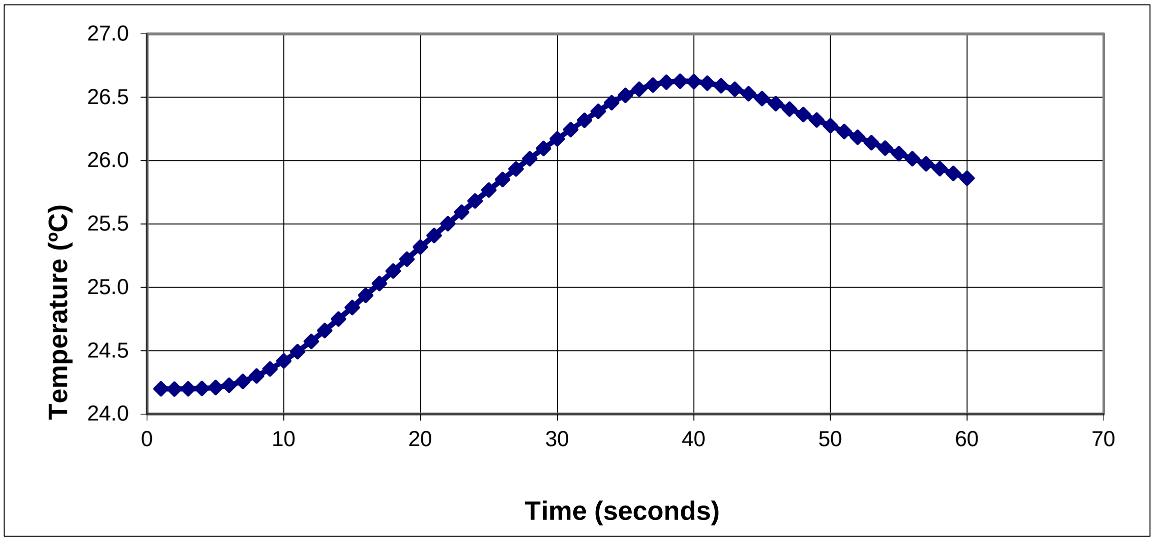
Sample Number: WR-1 TP-1 @ 3'
Potential (-cm water): Oven Dry

Test Date/Time:	11/1/21 2:04 PM	*K (W/(m·K)):*	0.329
Sensor:	SH-1	*ρ (°C·cm/W):*	304.1
Test Temp.(°C):	24.2	*C (MJ/(m³·K)):*	1.344
KD2 Pro Sample ID:	W-TP1-OD	*D (mm²/s):*	0.245
Power (W/m):	22.800	*Err:*	0.0033
Current (amps):	0.148		

Raw Data

Second	Temp.(°C)	Second	Temp.(°C)	Second	Temp.(°C)	Second	Temp.(°C)
1	24.200	16	24.937	31	26.246	46	26.450
2	24.198	17	25.031	32	26.319	47	26.407
3	24.199	18	25.128	33	26.390	48	26.364
4	24.201	19	25.223	34	26.456	49	26.320
5	24.209	20	25.318	35	26.515	50	26.274
6	24.228	21	25.410	36	26.562	51	26.229
7	24.259	22	25.502	37	26.597	52	26.185
8	24.301	23	25.593	38	26.618	53	26.142
9	24.355	24	25.682	39	26.627	54	26.098
10	24.419	25	25.768	40	26.623	55	26.056
11	24.492	26	25.852	41	26.611	56	26.015
12	24.573	27	25.935	42	26.590	57	25.975
13	24.658	28	26.016	43	26.562	58	25.936
14	24.749	29	26.095	44	26.528	59	25.898
15	24.842	30	26.171	45	26.491	60	25.861

WR-1 TP-1 @ 3', Potential: Oven Dry - Temperature vs. Time Graph



Laboratory analysis by: D. O'Dowd
Data entered by: J. Hines
Checked by: J. Hines

Thermal Properties Results Sheet for Sample: WR-1 TP-8 @ 3'

Job Name: BSK Associates
Job Number: DB21.1033.00
Sample Number: WR-1 TP-8 @ 3'
Job #: G21-315-10F
Job Name: White Pine Renewables JID & WR1

Instrument Description: Decagon KD2 Pro
Probe: ☐ KS-1, 6 cm length, 1.3 mm diameter, single needle
☐ TR-1, 10 cm length, 2.4 mm diameter, single needle
☑ SH-1, 3 cm length, 1.3 mm diameter, dual needle, 6 mm spacing
Test Start Date: 10/27/21

Reading	Water Potential (-cm water)	Gravimetric Moisture Content (g/g, %)	Volumetric Moisture Content[1] (vol/vol, %)	Dry Bulk Density[1] (g/cm^3)	Test Temperature (°C)	K Thermal Conductivity W/(m·K)	ρ Thermal Resistivity °C·cm/W	C Specific Heat Capacity MJ/(m^3·K)	D Thermal Diffusivity (mm^2/s)
Initial	---	8.19	11.00	1.34	21.73	0.468	213.7	2.103	0.222
Saturated	0	37.66	50.60	1.34	19.97	1.433	69.8	3.578	0.400
Oven Dry	---	0.00	0.00	1.34	25.00	0.236	423.3	1.181	0.200

--- = Value not measured.

[1] Adjusted for volume changes during testing, if applicable.

Thermal Properties Data

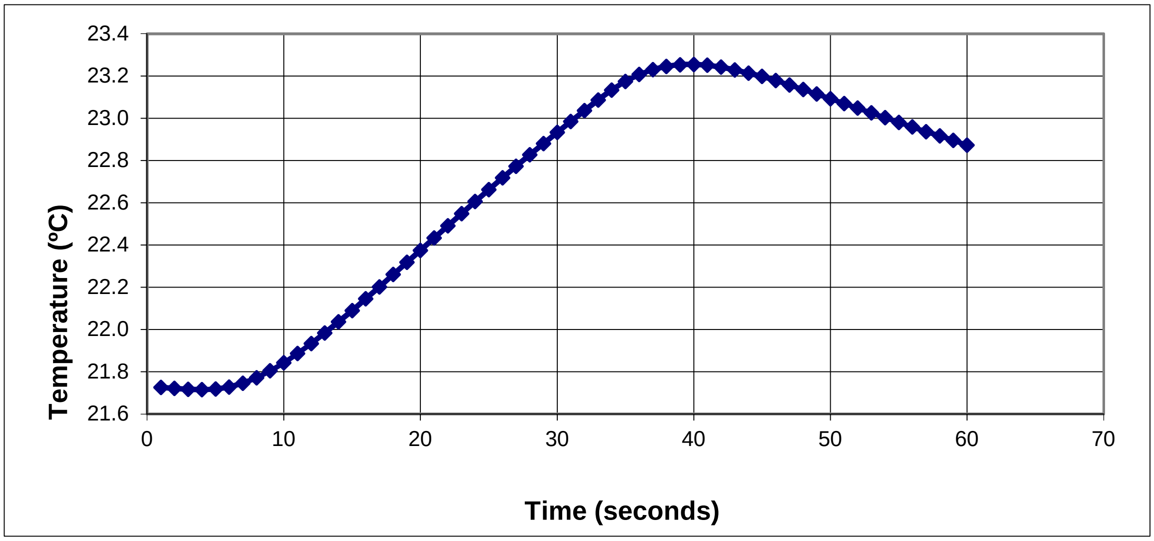
Sample Number: WR-1 TP-8 @ 3'
Potential (-cm water): Initial

Test Date/Time:	10/27/21 9:06 AM	*K (W/(m·K)):*	0.468
Sensor:	SH-1	*ρ (°C·cm/W):*	213.7
Test Temp.(°C):	21.7	*C (MJ/(m³·K)):*	2.103
KD2 Pro Sample ID:	W-TP8-AR	*D (mm²/s):*	0.222
Power (W/m):	21.770	*Err:*	0.0012
Current (amps):	0.145		

Raw Data

Second	Temp.(°C)	Second	Temp.(°C)	Second	Temp.(°C)	Second	Temp.(°C)
1	21.726	16	22.145	31	22.985	46	23.178
2	21.721	17	22.202	32	23.037	47	23.158
3	21.717	18	22.260	33	23.087	48	23.137
4	21.715	19	22.318	34	23.134	49	23.115
5	21.718	20	22.375	35	23.174	50	23.093
6	21.728	21	22.434	36	23.207	51	23.070
7	21.746	22	22.491	37	23.230	52	23.048
8	21.772	23	22.548	38	23.245	53	23.026
9	21.805	24	22.606	39	23.253	54	23.003
10	21.843	25	22.662	40	23.255	55	22.981
11	21.886	26	22.718	41	23.251	56	22.959
12	21.933	27	22.773	42	23.242	57	22.937
13	21.983	28	22.827	43	23.229	58	22.916
14	22.036	29	22.881	44	23.214	59	22.895
15	22.090	30	22.933	45	23.198	60	22.873

WR-1 TP-8 @ 3', Potential: Initial - Temperature vs. Time Graph



Laboratory analysis by: D. O'Dowd
Data entered by: J. Hines
Checked by: J. Hines

Thermal Properties Data

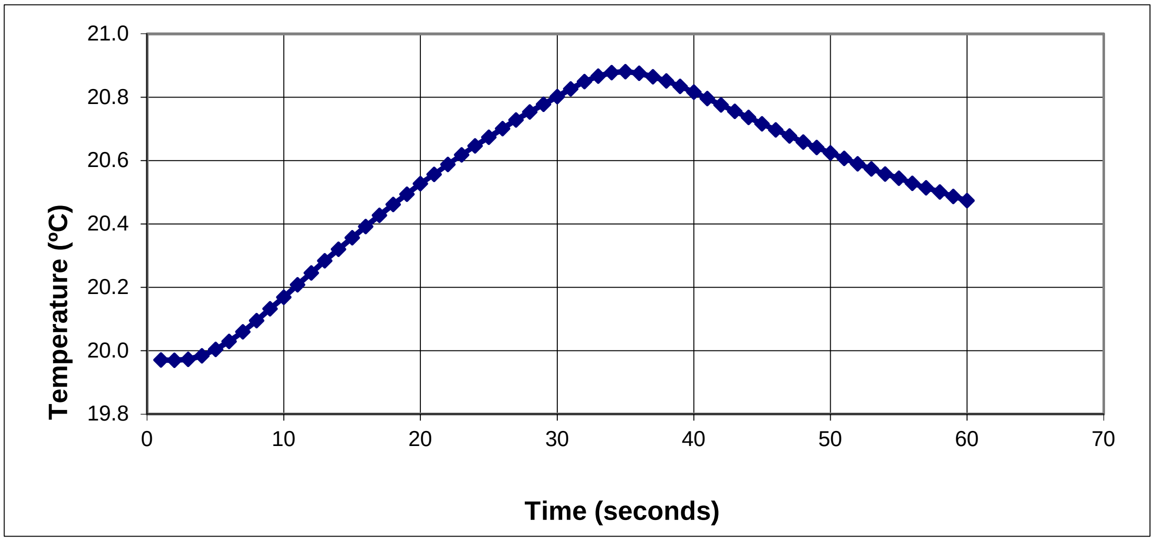
Sample Number: WR-1 TP-8 @ 3'
Potential (-cm water): 0

Test Date/Time:	10/28/21 9:39 AM	*K (W/(m·K)):*	1.433
Sensor:	SH-1	*ρ (°C·cm/W):*	69.8
Test Temp.(°C):	20.0	*C (MJ/(m³·K)):*	3.578
KD2 Pro Sample ID:	W-TP8-SA	*D (mm²/s):*	0.400
Power (W/m):	23.120	*Err:*	0.0025
Current (amps):	0.149		

Raw Data

Second	Temp.(°C)	Second	Temp.(°C)	Second	Temp.(°C)	Second	Temp.(°C)
1	19.971	16	20.392	31	20.826	46	20.697
2	19.970	17	20.427	32	20.849	47	20.678
3	19.973	18	20.462	33	20.867	48	20.659
4	19.984	19	20.494	34	20.878	49	20.641
5	20.004	20	20.527	35	20.881	50	20.624
6	20.029	21	20.557	36	20.876	51	20.607
7	20.060	22	20.588	37	20.865	52	20.590
8	20.095	23	20.618	38	20.851	53	20.574
9	20.132	24	20.646	39	20.834	54	20.558
10	20.169	25	20.674	40	20.816	55	20.544
11	20.208	26	20.701	41	20.796	56	20.528
12	20.245	27	20.728	42	20.776	57	20.514
13	20.284	28	20.753	43	20.756	58	20.501
14	20.320	29	20.778	44	20.736	59	20.487
15	20.357	30	20.802	45	20.716	60	20.474

WR-1 TP-8 @ 3', Potential: 0 - Temperature vs. Time Graph



Laboratory analysis by: D. O'Dowd
Data entered by: J. Hines
Checked by: J. Hines

Thermal Properties Data

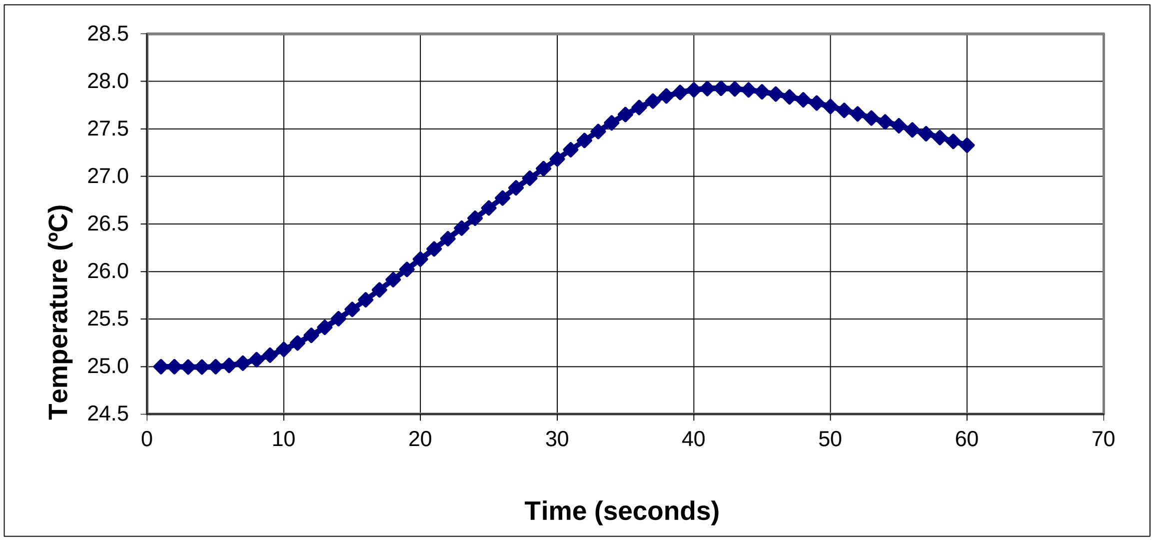
Sample Number: WR-1 TP-8 @ 3'
Potential (-cm water): Oven Dry

Test Date/Time:	11/1/21 2:00 PM	*K (W/(m·K)):*	0.236
Sensor:	SH-1	*ρ (°C·cm/W):*	423.3
Test Temp.(°C):	25.0	*C (MJ/(m³·K)):*	1.181
KD2 Pro Sample ID:	W-TP8-OD	*D (mm²/s):*	0.200
Power (W/m):	22.880	*Err:*	0.0021
Current (amps):	0.148		

Raw Data

Second	Temp.(°C)	Second	Temp.(°C)	Second	Temp.(°C)	Second	Temp.(°C)
1	24.999	16	25.703	31	27.281	46	27.867
2	24.997	17	25.808	32	27.378	47	27.838
3	24.995	18	25.914	33	27.474	48	27.807
4	24.996	19	26.022	34	27.565	49	27.772
5	24.999	20	26.130	35	27.651	50	27.735
6	25.012	21	26.239	36	27.727	51	27.696
7	25.036	22	26.346	37	27.792	52	27.657
8	25.072	23	26.455	38	27.845	53	27.616
9	25.119	24	26.562	39	27.883	54	27.575
10	25.179	25	26.669	40	27.909	55	27.533
11	25.249	26	26.774	41	27.923	56	27.491
12	25.327	27	26.879	42	27.928	57	27.450
13	25.413	28	26.981	43	27.922	58	27.409
14	25.505	29	27.082	44	27.910	59	27.369
15	25.602	30	27.182	45	27.891	60	27.328

WR-1 TP-8 @ 3', Potential: Oven Dry - Temperature vs. Time Graph



Laboratory analysis by: D. O'Dowd
Data entered by: J. Hines
Checked by: J. Hines

Thermal Properties Results Sheet for Sample: JID TP-2 @ 3'

Job Name: BSK Associates
Job Number: DB21.1033.00
Sample Number: JID TP-2 @ 3'
Job #: G21-315-10F
Job Name: White Pine Renewables JID & WR1

Instrument Description: Decagon KD2 Pro
Probe:
☐ KS-1, 6 cm length, 1.3 mm diameter, single needle
☐ TR-1, 10 cm length, 2.4 mm diameter, single needle
☑ SH-1, 3 cm length, 1.3 mm diameter, dual needle, 6 mm spacing
Test Start Date: 10/27/21

Reading	Water Potential (-cm water)	Gravimetric Moisture Content (g/g, %)	Volumetric Moisture Content[1] (vol/vol, %)	Dry Bulk Density[1] (g/cm^3)	Test Temperature (°C)	K Thermal Conductivity W/(m·K)	ρ Thermal Resistivity °C·cm/W	C Specific Heat Capacity MJ/(m^3·K)	D Thermal Diffusivity (mm^2/s)
Initial	---	6.90	11.69	1.69	21.81	1.282	78.0	3.329	0.385
Saturated	0	22.37	37.87	1.69	19.90	1.844	54.2	3.376	0.546
Oven Dry	---	0.00	0.00	1.69	24.91	0.403	248.4	1.552	0.259

--- = Value not measured.

[1] Adjusted for volume changes during testing, if applicable.

Thermal Properties Data

Sample Number: JID TP-2 @ 3'
Potential (-cm water): Initial

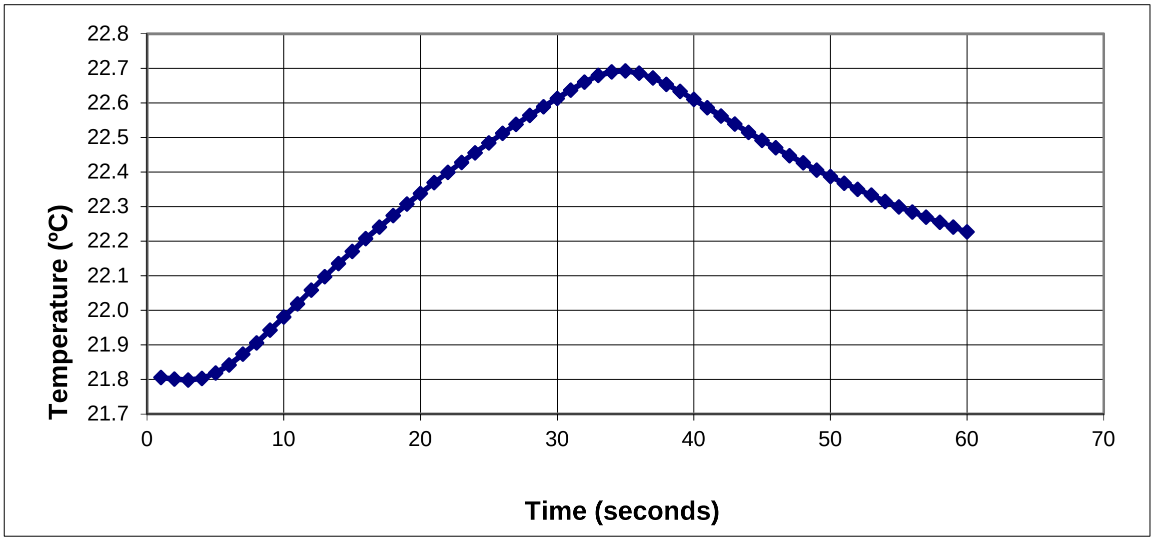
Test Date/Time: 10/27/21 9:14 AM
Sensor: SH-1
Test Temp.(°C): 21.8
KD2 Pro Sample ID: J-TP2-AR
Power (W/m): 22.410
Current (amps): 0.147

K (W/(m·K)): 1.282
ρ (°C·cm/W): 78.0
C (MJ/(m³·K)): 3.329
D (mm²/s): 0.385
Err: 0.0057

Raw Data

Second	Temp.(°C)	Second	Temp.(°C)	Second	Temp.(°C)	Second	Temp.(°C)
1	21.806	16	22.207	31	22.637	46	22.470
2	21.801	17	22.241	32	22.660	47	22.447
3	21.798	18	22.274	33	22.680	48	22.427
4	21.803	19	22.307	34	22.690	49	22.406
5	21.819	20	22.338	35	22.693	50	22.387
6	21.842	21	22.369	36	22.686	51	22.368
7	21.873	22	22.399	37	22.672	52	22.350
8	21.906	23	22.428	38	22.654	53	22.333
9	21.943	24	22.456	39	22.633	54	22.315
10	21.981	25	22.484	40	22.610	55	22.299
11	22.019	26	22.512	41	22.586	56	22.284
12	22.058	27	22.538	42	22.562	57	22.269
13	22.097	28	22.564	43	22.539	58	22.255
14	22.135	29	22.589	44	22.515	59	22.241
15	22.170	30	22.613	45	22.492	60	22.227

JID TP-2 @ 3', Potential: Initial - Temperature vs. Time Graph



Laboratory analysis by: D. O'Dowd
Data entered by: J. Hines
Checked by: J. Hines

Thermal Properties Data

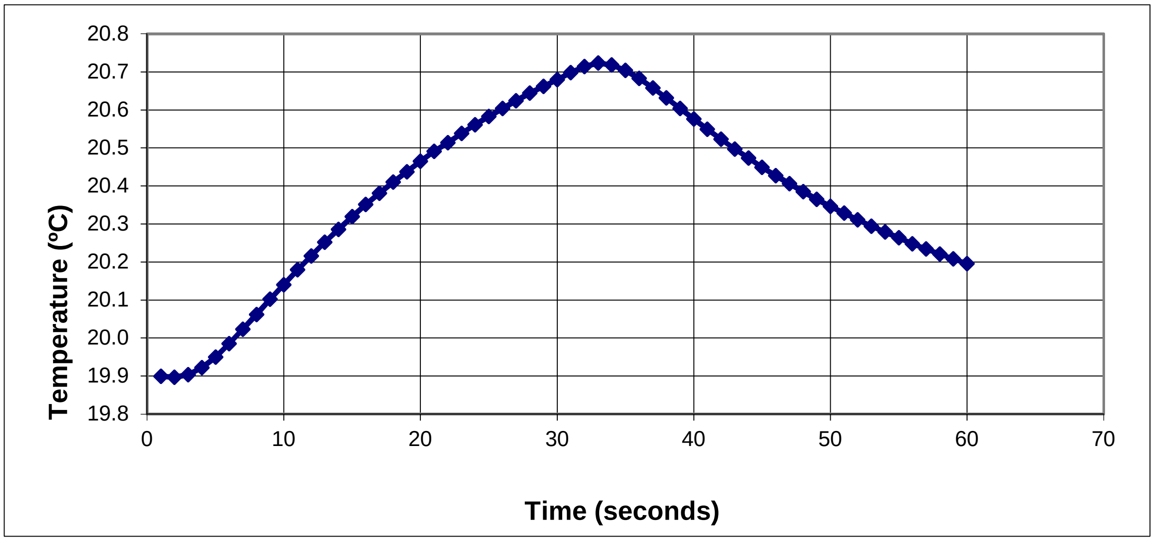
Sample Number: JID TP-2 @ 3'
Potential (-cm water): 0

Test Date/Time:	10/28/21 9:47 AM	*K (W/(m·K)):*	1.844
Sensor:	SH-1	*ρ (°C·cm/W):*	54.2
Test Temp.(°C):	19.9	*C (MJ/(m³·K)):*	3.376
KD2 Pro Sample ID:	J-TP2-SA	*D (mm²/s):*	0.546
Power (W/m):	23.050	*Err:*	0.0056
Current (amps):	0.149		

Raw Data

Second	Temp.(°C)	Second	Temp.(°C)	Second	Temp.(°C)	Second	Temp.(°C)
1	19.899	16	20.351	31	20.698	46	20.427
2	19.897	17	20.381	32	20.714	47	20.406
3	19.904	18	20.410	33	20.723	48	20.385
4	19.922	19	20.437	34	20.718	49	20.365
5	19.950	20	20.465	35	20.704	50	20.346
6	19.985	21	20.491	36	20.683	51	20.329
7	20.023	22	20.514	37	20.658	52	20.311
8	20.062	23	20.538	38	20.632	53	20.294
9	20.102	24	20.561	39	20.604	54	20.279
10	20.140	25	20.583	40	20.576	55	20.264
11	20.180	26	20.604	41	20.549	56	20.248
12	20.216	27	20.624	42	20.523	57	20.234
13	20.252	28	20.644	43	20.497	58	20.221
14	20.286	29	20.662	44	20.473	59	20.208
15	20.319	30	20.680	45	20.449	60	20.196

JID TP-2 @ 3', Potential: 0 - Temperature vs. Time Graph



Laboratory analysis by: D. O'Dowd
Data entered by: J. Hines
Checked by: J. Hines

Thermal Properties Data

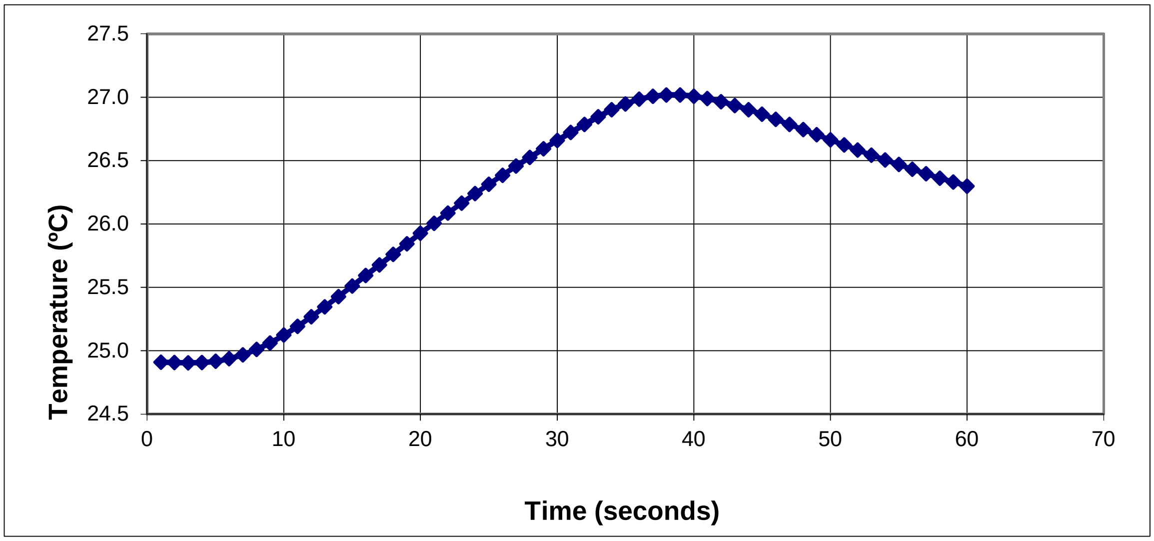
Sample Number: JID TP-2 @ 3'
Potential (-cm water): Oven Dry

Test Date/Time:	11/1/21 1:35 PM	*K (W/(m·K)):*	0.403
Sensor:	SH-1	*ρ (°C·cm/W):*	248.4
Test Temp.(°C):	24.9	*C (MJ/(m³·K)):*	1.552
KD2 Pro Sample ID:	J-TP2-OD	*D (mm²/s):*	0.259
Power (W/m):	23.080	*Err:*	0.0030
Current (amps):	0.149		

Raw Data

Second	Temp.(°C)	Second	Temp.(°C)	Second	Temp.(°C)	Second	Temp.(°C)
1	24.909	16	25.593	31	26.722	46	26.825
2	24.906	17	25.678	32	26.785	47	26.786
3	24.904	18	25.761	33	26.846	48	26.745
4	24.907	19	25.844	34	26.902	49	26.704
5	24.916	20	25.926	35	26.948	50	26.663
6	24.936	21	26.006	36	26.984	51	26.623
7	24.968	22	26.086	37	27.007	52	26.583
8	25.010	23	26.163	38	27.018	53	26.544
9	25.062	24	26.239	39	27.018	54	26.506
10	25.125	25	26.313	40	27.007	55	26.469
11	25.193	26	26.385	41	26.989	56	26.432
12	25.267	27	26.456	42	26.965	57	26.397
13	25.345	28	26.525	43	26.935	58	26.362
14	25.426	29	26.593	44	26.901	59	26.330
15	25.509	30	26.658	45	26.865	60	26.298

JID TP-2 @ 3', Potential: Oven Dry - Temperature vs. Time Graph



Laboratory analysis by: D. O'Dowd
Data entered by: J. Hines
Checked by: J. Hines

Thermal Properties Results Sheet for Sample: JID TP-4 @ 3'

Job Name: BSK Associates
Job Number: DB21.1033.00
Sample Number: JID TP-4 @ 3'
Job #: G21-315-10F
Job Name: White Pine Renewables JID & WR1

Instrument Description: Decagon KD2 Pro
Probe: ☐ KS-1, 6 cm length, 1.3 mm diameter, single needle
☐ TR-1, 10 cm length, 2.4 mm diameter, single needle
☑ SH-1, 3 cm length, 1.3 mm diameter, dual needle, 6 mm spacing
Test Start Date: 10/27/21

Reading	Water Potential (-cm water)	Gravimetric Moisture Content (g/g, %)	Volumetric Moisture Content^1 (vol/vol, %)	Dry Bulk Density^1 (g/cm^3)	Test Temperature (°C)	K Thermal Conductivity W/(m·K)	ρ Thermal Resistivity °C·cm/W	C Specific Heat Capacity MJ/(m^3·K)	D Thermal Diffusivity (mm^2/s)
Initial	---	7.50	12.58	1.68	21.93	1.199	83.4	3.894	0.308
Saturated	0	22.95	38.51	1.68	19.39	1.764	56.7	3.700	0.477
Oven Dry	---	0.00	0.00	1.68	24.35	0.377	265.1	1.580	0.239

--- = Value not measured.

[1] Adjusted for volume changes during testing, if applicable.

Thermal Properties Data

Sample Number: JID TP-4 @ 3'
Potential (-cm water): Initial

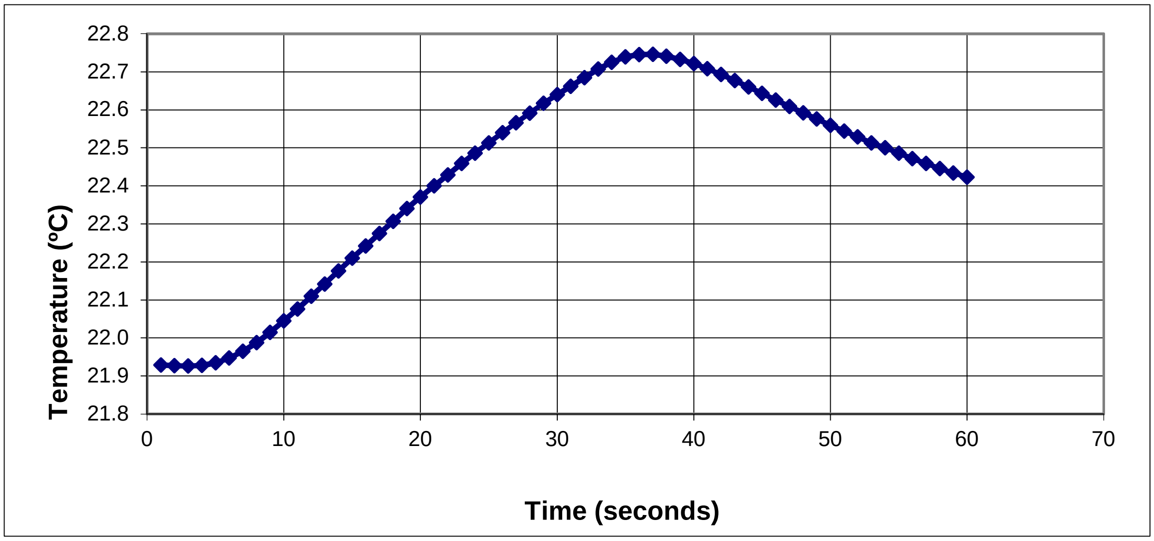
Test Date/Time: 10/27/21 9:22 AM
Sensor: SH-1
Test Temp.(°C): 21.9
KD2 Pro Sample ID: J-TP4-AR
Power (W/m): 22.470
Current (amps): 0.147

K (W/(m·K)): 1.199
ρ (°C·cm/W): 83.4
C (MJ/(m³·K)): 3.894
D (mm²/s): 0.308
Err: 0.0034

Raw Data

Second	Temp.(°C)	Second	Temp.(°C)	Second	Temp.(°C)	Second	Temp.(°C)
1	21.929	16	22.242	31	22.662	46	22.626
2	21.927	17	22.275	32	22.685	47	22.609
3	21.926	18	22.307	33	22.707	48	22.592
4	21.928	19	22.340	34	22.725	49	22.576
5	21.935	20	22.371	35	22.739	50	22.559
6	21.947	21	22.400	36	22.745	51	22.544
7	21.965	22	22.429	37	22.746	52	22.529
8	21.988	23	22.459	38	22.741	53	22.513
9	22.015	24	22.486	39	22.733	54	22.500
10	22.045	25	22.513	40	22.722	55	22.486
11	22.076	26	22.540	41	22.708	56	22.472
12	22.110	27	22.566	42	22.693	57	22.459
13	22.142	28	22.591	43	22.677	58	22.446
14	22.176	29	22.617	44	22.660	59	22.434
15	22.210	30	22.640	45	22.643	60	22.423

JID TP-4 @ 3', Potential: Initial - Temperature vs. Time Graph



Laboratory analysis by: D. O'Dowd
Data entered by: J. Hines
Checked by: J. Hines

Thermal Properties Data

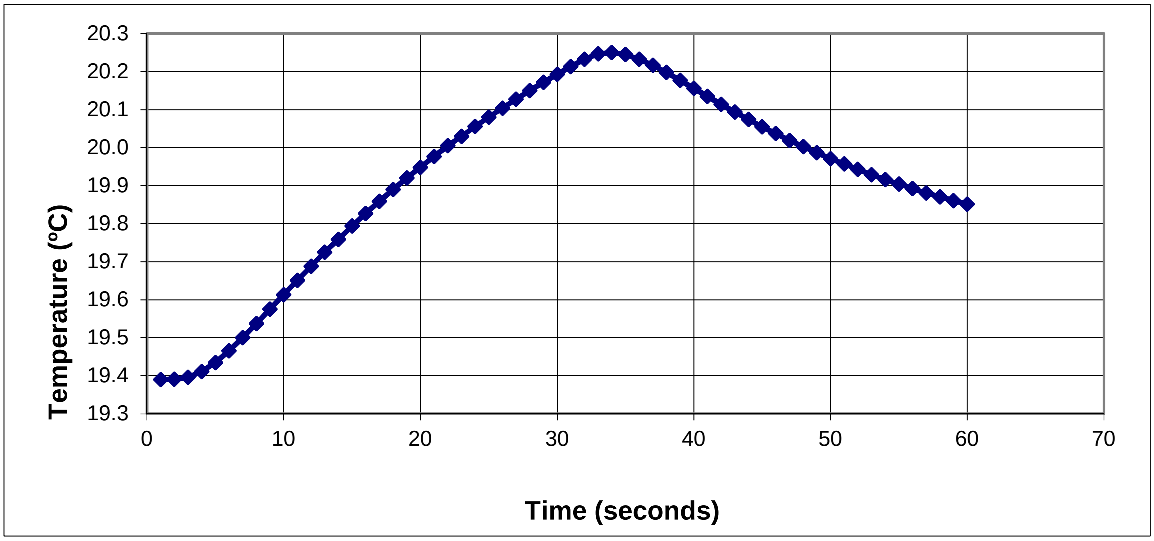
Sample Number: JID TP-4 @ 3'
Potential (-cm water): 0

Test Date/Time:	10/28/21 9:53 AM	*K (W/(m·K)):*	1.764
Sensor:	SH-1	*ρ (°C·cm/W):*	56.7
Test Temp.(°C):	19.4	*C (MJ/(m³·K)):*	3.700
KD2 Pro Sample ID:	J-TP4-SA	*D (mm²/s):*	0.477
Power (W/m):	22.940	*Err:*	0.0044
Current (amps):	0.149		

Raw Data

Second	Temp.(°C)	Second	Temp.(°C)	Second	Temp.(°C)	Second	Temp.(°C)
1	19.390	16	19.827	31	20.213	46	20.037
2	19.391	17	19.859	32	20.233	47	20.019
3	19.396	18	19.890	33	20.247	48	20.003
4	19.411	19	19.920	34	20.250	49	19.987
5	19.435	20	19.948	35	20.245	50	19.971
6	19.466	21	19.977	36	20.233	51	19.957
7	19.500	22	20.005	37	20.217	52	19.943
8	19.537	23	20.030	38	20.198	53	19.929
9	19.575	24	20.056	39	20.177	54	19.916
10	19.613	25	20.080	40	20.156	55	19.904
11	19.651	26	20.104	41	20.135	56	19.893
12	19.688	27	20.127	42	20.114	57	19.881
13	19.725	28	20.150	43	20.094	58	19.871
14	19.759	29	20.172	44	20.074	59	19.861
15	19.794	30	20.193	45	20.055	60	19.851

JID TP-4 @ 3', Potential: 0 - Temperature vs. Time Graph



Laboratory analysis by: D. O'Dowd
Data entered by: J. Hines
Checked by: J. Hines

Thermal Properties Data

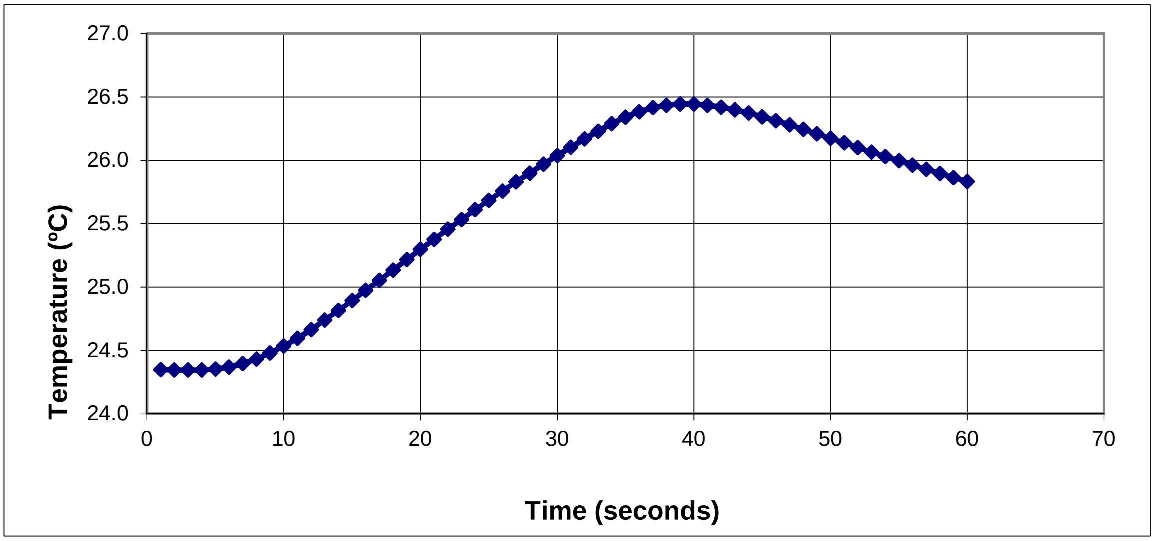
Sample Number: JID TP-4 @ 3'
Potential (-cm water): Oven Dry

Test Date/Time:	11/1/21 2:09 PM	*K (W/(m·K)):*	0.377
Sensor:	SH-1	*ρ (°C·cm/W):*	265.1
Test Temp.(°C):	24.4	*C (MJ/(m³·K)):*	1.580
KD2 Pro Sample ID:	J-TP4-OD	*D (mm²/s):*	0.239
Power (W/m):	22.690	*Err:*	0.0025
Current (amps):	0.148		

Raw Data

Second	Temp.(°C)	Second	Temp.(°C)	Second	Temp.(°C)	Second	Temp.(°C)
1	24.348	16	24.974	31	26.103	46	26.313
2	24.346	17	25.054	32	26.168	47	26.279
3	24.345	18	25.135	33	26.230	48	26.245
4	24.346	19	25.217	34	26.290	49	26.210
5	24.353	20	25.297	35	26.342	50	26.174
6	24.369	21	25.377	36	26.384	51	26.138
7	24.396	22	25.456	37	26.416	52	26.102
8	24.432	23	25.533	38	26.435	53	26.066
9	24.480	24	25.610	39	26.444	54	26.031
10	24.535	25	25.685	40	26.444	55	25.997
11	24.597	26	25.758	41	26.435	56	25.962
12	24.665	27	25.830	42	26.420	57	25.929
13	24.739	28	25.900	43	26.398	58	25.896
14	24.815	29	25.969	44	26.373	59	25.864
15	24.893	30	26.037	45	26.344	60	25.833

JID TP-4 @ 3', Potential: Oven Dry - Temperature vs. Time Graph



Laboratory analysis by: D. O'Dowd
Data entered by: J. Hines
Checked by: J. Hines

Laboratory Tests and Methods

Tests and Methods

Thermal Properties:	ASTM D5334

Appendix F

Noise Modeling

```
                        Roadway Construction Noise Model (RCNM),Version 1.1

Report date:             01/09/2022
Case Description:        Construction

                                **** Receptor #1 ****

                                           Baselines (dBA)
Description                       Land Use        Daytime    Evening    Night
-----------                       --------        -------    -------    -----
Reference Distance at 100 feet    Residential        60.0       55.0     50.0

                                     Equipment
                                     ---------
                                             Spec    Actual    Receptor    Estimated
                            Impact  Usage    Lmax    Lmax      Distance    Shielding
Description                 Device   (%)     (dBA)   (dBA)      (feet)       (dBA)
-----------                 ------  -----    -----   -----     --------    ---------
Vibratory Pile Driver           No     20            100.8        100.0          0.0
Front End Loader                No     40             79.1        100.0          0.0
Slurry Trenching Machine        No     50             80.4        100.0          0.0

                                     Results
                                     -------
                                                              Noise Limits (dBA)                          Noise Limit Exceedance (dBA)
                                             ----------------------------------------------    ----------------------------------------------
                          Calculated (dBA)         Day           Evening          Night              Day           Evening          Night
                          ----------------   --------------   -------------  --------------    --------------  --------------  --------------
Equipment                    Lmax    Leq        Lmax    Leq     Lmax    Leq     Lmax    Leq       Lmax    Leq     Lmax    Leq     Lmax    Leq
----------------------    ------  ------     ------  ------  ------  ------  ------  ------    ------  ------  ------  ------  ------  ------
Vibratory Pile Driver       94.8    87.8        N/A     N/A     N/A     N/A     N/A     N/A       N/A     N/A     N/A     N/A     N/A     N/A
Front End Loader            73.1    69.1        N/A     N/A     N/A     N/A     N/A     N/A       N/A     N/A     N/A     N/A     N/A     N/A
Slurry Trenching Machine    74.3    71.3        N/A     N/A     N/A     N/A     N/A     N/A       N/A     N/A     N/A     N/A     N/A     N/A
                 Total      94.8    88.0        N/A     N/A     N/A     N/A     N/A     N/A       N/A     N/A     N/A     N/A     N/A     N/A
```

```
                              **** Receptor #2 ****

                                           Baselines (dBA)
Description                Land Use        Daytime    Evening    Night
-----------                --------        -------    -------    -----
Closest Rural Residence    Residential        60.0       55.0     50.0

                                     Equipment
                                     ---------
                                             Spec    Actual    Receptor    Estimated
                            Impact  Usage    Lmax    Lmax      Distance    Shielding
Description                 Device   (%)     (dBA)   (dBA)      (feet)       (dBA)
-----------                 ------  -----    -----   -----     --------    ---------
Vibratory Pile Driver           No     20            100.8        600.0          0.0
Front End Loader                No     40             79.1        600.0          0.0
Slurry Trenching Machine        No     50             80.4        600.0          0.0

                                     Results
                                     -------
                                                              Noise Limits (dBA)                        Noise Limit Exceedance (dBA)
                                             ----------------------------------------------    ----------------------------------------------
                          Calculated (dBA)         Day           Evening          Night              Day           Evening          Night
                          ----------------   --------------   -------------- --------------    --------------  --------------  --------------
Equipment                    Lmax    Leq        Lmax    Leq      Lmax    Leq      Lmax    Leq       Lmax    Leq      Lmax    Leq      Lmax    Leq
----------------------    ------  ------     ------  ------  ------  ------  ------  ------    ------  ------  ------  ------  ------  ------
Vibratory Pile Driver       79.2    72.2        N/A     N/A     N/A     N/A     N/A     N/A       N/A     N/A     N/A     N/A     N/A     N/A
Front End Loader            57.5    53.5        N/A     N/A     N/A     N/A     N/A     N/A       N/A     N/A     N/A     N/A     N/A     N/A
Slurry Trenching Machine    58.8    55.8        N/A     N/A     N/A     N/A     N/A     N/A       N/A     N/A     N/A     N/A     N/A     N/A
                 Total      79.2    72.4        N/A     N/A     N/A     N/A     N/A     N/A       N/A     N/A     N/A     N/A     N/A     N/A
```

250/275kW, 1500Vdc String Inverters for North America

CPS SCH275KTL-DO/US-800

The 250/275kW high power CPS three phase string inverters are designed for ground mount applications. The units are high performance, advanced and reliable inverters designed specifically for the North American environment and grid. High efficiencies, wide operating voltages, broad temperature ranges and NEMA Type 4X enclosure enable this inverter platform to operate at high performance across many applications. The SCH275KTL inverters include a selectable Active Power of either 250kW or 275kW (factory default) with 12 MPPTs and are available with either 36 fused PV string inputs or 24 unfused PV string inputs. The CPS FlexOM solution enables communication, controls and remote product upgrades.

Key Features

- NFPA 70, NEC 2017 compliant
- Touch safe DC Fuse holders adds convenience and safety
- CPS FlexOM Gateway enables remote FW upgrades
- Integrated DC disconnect switch
- Protection Functions for enhanced reliability and safety
- Selectable Max AC Active Power of 250kW or 275kW
- 12 MPPTs with 36 fused inputs or 24 unfused inputs
- Copper and Aluminum compatible AC connections
- NEMA Type 4X outdoor rated, tough tested enclosure
- Full power capacity up to 42°C
- Standard 5 year warranty with extensions to 20 years
- Supported comm protocols (Modbus RTU, TCP/IP, PLC, CAN)

This device complies with part 15 of the FCC Rules

Model Name	CPS SCH275KTL-DO/US-800-36	CPS SCH275KTL-DO/US-800-24
DC Input		
Max. DC Input Voltage	1500V	
Operating DC Input Voltage Range	500-1450Vdc	
Start-up DC Input Voltage / Power	550Vdc / 500W	
MPPT Voltage Range @ PF>0.99[1]	900-1300Vdc	
Number of MPP Trackers	12	12
Max. PV Input Current	26A per MPPT	30A per MPPT
Max. PV Short-Circuit Current	600A, 50A per MPPT	600A, 50A per MPPT
Number of DC Inputs	36 Fused Inputs, 3 per MPPT	24 Non-Fused Inputs
DC Disconnection Type	Load-rated DC switches	
DC Surge Protection	Type II	
AC Output		
Max AC Output Power (Selectable) @ PF>0.99	250kW / 275kW	
Max. AC Apparent Power	275kVA	
Rated Output Voltage	800Vac	
Output Voltage Range[2]	704-880Vac	
Grid Connection Type	3-Phase / PE	
Max. AC Output Current @800Vac	198.5A	
Rated Output Frequency	60Hz	
Output Frequency Range[2]	57 - 63Hz	
Power Factor	>0.99 (±0.8 adjustable)	
Current THD @ Rated Load	<3%	
Max. Fault Current Contribution (1 Cycle RMS)	215.2A	
Max. OCPD Rating	300A	
AC Surge Protection	Type II	
System and Performance		
Max. Efficiency	99.0%	
CEC Efficiency	98.5%	
Stand-by / Night Consumption	5W	
Environment		
Enclosure Protection Degree	NEMA Type 4X	
Cooling Method	Variable speed cooling fans	
Operating Temperature Range[3]	-22°F to +140°F / -30°C to +60°C (derating from +107°F / +42°C)	
Operating Humidity	0 to 100%	
Operating Altitude	8202ft / 2500m (no derating)	
Audible Noise	<80dBA @ 1m and 25°C	
Display and Communication		
User Interface and Display	LED indicators, WiFi + APP	
Inverter Monitoring	Modbus RS485 / Ethernet TCP/IP / PLC / CAN	
Site Level Monitoring	CPS FlexOM (1 per 32 inverters)	
Modbus Data Mapping	SunSpec / CPS	
Remote Diagnostics / FW Upgrade Functions	Standard / (with FlexOM Gateway)	
Mechanical		
Dimensions (HxWxD)	27.2 x 41.3 x 15.7in (690 x 1050 x 400mm)	
Weight	Approx. 262lbs / 119kg	
Mounting / Installation Angle	Vertical installation	
AC Termination	Stud Type Terminal (Wire range: 3/0AWG – 600kcmil AL/CU, Lugs not supplied)	
DC Termination	36 Fused Input: Screw Clamp Fuse Holder (Wire range: #14 - #6 AWG CU) 24 Non-Fused Input: Screw Clamp Terminal (Wire range: #14 - #8 and #6 - #4 AWG CU)	
Fused String Inputs (3 per MPPT)[4]	20A fuses provided (Fuse values up to 30A acceptable)	
Safety		
Certifications and Standards	UL1741-SA Ed. 2, CSA-22.2 NO.107.1-16, IEEE1547-2018, FCC PART15	
Selectable Grid Standard	IEEE 1547a-2014, CA Rule 21, ISO-NE	
Smart-Grid Features	Volt-RideThru, Freq-RideThru, Ramp-Rate, Specified-PF, Volt-Var, Freq-Watt, Volt-Watt	
Protection Functions		
Reactive Power at Night	Yes	
IV Curve Tracing	Yes	
Insulation Resistance Monitoring	Yes	
Onboard Fault Oscillography	Yes	
PV String Current Monitoring	Yes	
Residual Current Monitoring	Yes	
Input Reverse Polarity Protection	Yes	
Output Overcurrent Protection	Yes	
Output Short-Circuit Protection	Yes	
Output Overvoltage Protection	Yes	
Warranty		
Standard	5 Years	
Extended Terms	10, 15 and 20 years	

1) See user manual for further information regarding MPPT Voltage Range when operating at non-unity PF
2) The "Output Voltage Range" and "Output Frequency Range" may differ according to the specific grid standard.
3) See user manual for further requirements regarding non-operating conditions.
4) Fused string inputs only applicable to the SCH275KTL 36 input model.

ABB

Transformer Performance Specification

For: For reference only Date: 3/20/2019
Quote: Item: Spec:

Rating								
Type	Substation Non-Auto	Class	H Winding		X Winding		Y Winding	
Phase	3		69	kV	34.5	kV	-	
Hertz	60	ONAN	72000	KVA	72000	KVA	-	KVA
Temp Rise	65 C	ONAF	96000	KVA	96000	KVA	-	KVA
Insulating Type	Mineral Oil	ONAF	120000	KVA	120000	KVA	-	KVA

Additional Tap Voltages	
H Winding (kV)	+2 -2 2.5%, DETC
X Winding (kV)	No Taps
Y Winding ()	-

Connections for Operation									
Transformers in Bank	To Transform from	Phase	Connected	To Transform from	Phase	Connected	To Transform To	Phase	Connected
1	69 kV	3	Delta	34.5 kV	3	Wye	-	3	-

Dielectric Tests			
Applied Voltage (To other windings and ground)	H Winding	34	kV
	X Winding	34	kV
	Y Winding	-	kV
Induced Voltage	Enhancement level / 7200 Cycle (L-G)	72	kV
	One hour level (L-G)	63	kV

Insulation Levels	
ITEMS	Basic Lightning Impulse Insulation Level (BIL kV)
H line	350
H neutral	-
X line	150
X neutral	150
Y line	-

Loss Data based on	NL @ 20C, LL @ 85C				
Based on loading at	69 kV	To	34.5 kV		
Winding Load KVA	H	72000	X	72000	Y -
No Load Loss	TBD kW	Total Loss	TBD kW		

Regulation at		
69 kV	/	34.5 kV
72000		KVA
Power Factor	% Reg	% Load
1.0	TBD	100
0.8	TBD	100

Auxiliary Losses (Not included in above)	Percent Exciting Current	
	100% V	110% V
TBD kW	TBD	TBD

Average Sound Level	
dB(A)	Class
77	ONAN
79	ONAF
80	ONAF

Percent Impedance Voltage		
% IZ	Between Windings	At KVA
7.5	HV-XV	72000

Mechanical Data
Not for Construction Purposes

Drawing		
Height	(A)	216 in
Length	(B)	317 in
Width	(C)	188 in
Height over Cover	(D)	172 in
Untanking (Plus Slings)	(E)	291 in
Shipping Height		168 in
Shipping Width		118 in
Shipping Length		170 in
Oil Preservation		InertAir
Weights (approximate) (lbs)		
Core and Coils		112900 lbs
Tank and Fittings		66600 lbs
Fluid	7400 gal	54900 lbs
Total Weight		234400 lbs
Untanking Weight		112900 lbs
Shipping Weight		134900 lbs
Shipped in		Dry Air

For reference only – Losses and dimensions needs to be revised

WEG Transformers USA
One Pauwels Drive, Washington, MO 63090, USA
www.weg.net T: 1-636-239-9300 F: 1-636-239-9395

TECHNICAL SPECS

Customer Line No.:	Battery Storage System	**Quantity:**	36

Three Phase Pad-Mount Transformer(s)

kVA Rating:	3360 kVA	**Model #:**	
	Envirotemp FR3	**Cooling Class:**	KNAN
		Frequency:	60 Hz
		Avg. Winding Temp.	65 °C
Primary Voltage:	34500 Delta volts	**Secondary Voltage:**	600Y volts
Primary BIL Rating:	150 kV	**Secondary BIL Rating:**	45 kV
HV Winding Matl:	Aluminum	**LV Winding Matl:**	Aluminum

High Voltage Taps: B Taps - Two 2.5% Taps below Nominal and Two 2.5% Taps above Nominal

No Load Loss: 4200 Watts **Load Loss:** 24300 Watts **Total Loss:** 28500 Watts

Impedance: 5.75 %

Tank Enclosure:
Welded Cover w/(1) Handhole(s) - 14x24
Cabinet Depth: 40 Inches, Pentahead Security Bolts
Steel HV-LV Barrier

Bushings:
Loop Feed ANSI Minimum Dimensions
Dead Front Primary Terminations: Integral Non-Loadbreak Bushings 600 Amp
Secondary Terminations: Epoxy Bushings w/Non-removable 12 Hole Spades, Spade Support

Protection:
PRCLF (), Weak Link Cartridge ()

Accessories:
Pressure Relief Valve Viat, Cover-Mounted Pressure Relief Device (), Drain valve w/Sampler
Liquid Level Gauge /w Contacts (Qty=1), Liquid Temperature Gauge, Pressure Vacuum Gauge

2-Winding SOLARPAD: Stadium Style Stacked Core Construction with Semi-Round Windings, Reduced Flux Density, Electrostatic Winding Shields, Increased Cooling, Door Gasketing, Hold down anchoring (x4 holes), Drain Valve & Sampler in External Box, Isolated Core Ground, Nitrogen Blanket, Schrader Valve, UL Listed

-Externally mounted gauges in pad lockable enclosure
-Externally mounted MV Switch in pad lockable enclosure
-HV located on the left and LV compartment located on the right
-Oil Temp Sensor: Analog output with 4-20mA transmitter, -50C to +150C
-Losses are at 20C core and 85C winding and are for reference only. ANSI tolerances will apply to quoted losses.

Switching:
Internally Isolated and Floating Neutral , One ON/OFF Transformer Switch (300 Amps)

Paint Color:
ASA #70 GRAY (Munsell 5.0BG7.0/0.4), Touch-up Paint Spray Can ,

Standards:
Quoted in compliance with the latest applicable ANSI standards unless otherwise specified by the customer.