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MITIGATED NEGATIVE DECLARATION
FOR THE
CENTRAL SAN PROPOSED SOLAR PANEL ARRAY
4451 BLUM ROAD
UNINCORPORATED MARTINEZ
CONTRA COSTA COUNTY, CALIFORNIA

PROJECT LOCATION AND DESCRIPTION SUMMARY

Central Contra Costa Sanitary District (Central San) proposes construction and operation of a 1.75 megawatt solar panel array on approximately 8.2 acres of a 48-acre parcel (APN 159-140-042-7), which is already owned by Central San and referred to as the “Lagiss parcel.” The 48-acre parcel is zoned for Heavy Industry (H-I) and is designated in the General Plan for Public/Semi-Public use.

The objective is to provide enough solar power to offset the electrical grid consumption of Central San’s wastewater treatment plant (WWTP) and eighteen pumping stations throughout the service area. The objective, physical presence, or operation of the proposed project on the project site would not conflict with a land use plan, policy, or regulation adopted to avoid or mitigate an environmental effect.

The proposed solar panel array would be accessed from the northern end of Blum Road via extension of an existing private driveway. The proposed solar panel array would be encircled by a service road and perimeter fence. The existing surface area to be covered by the proposed ground-mounted solar panel modules is approximately 2.5 acres. Combined, solar panel modules together with the service road and driveway, the area covered is approximately 4.0 acres of the 8.2 acres. The remainder (4.2 acres) is generally retention basins or aisle space between rows of panels, with only minor area being used for inverters; panelboards; main photovoltaic (PV) switchboard; step-up, pad-mounted transformer; and, intertie switchgear.

MITIGATION INCORPORATED INTO THE PROPOSED PROJECT

The proposed solar panel array will have limited potential for direct or indirect physical effects on the environment. Mitigation measures have been developed or incorporated into the design to reduce potentially significant impacts to less-than-significant effects or to minimize effects already considered less-than-significant. These measures are discussed in the Initial Study/Mitigated Negative Declaration (IS/MND). Several of these measures are inherent in applicable regulations governing the proposed project. (See Section 2 of the IS/MND for more details.)

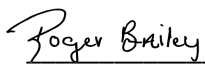
FINDINGS

In accordance with the California Environmental Quality Act (CEQA), Central San is the Lead Agency for the proposed project. As such, Central San has conducted an Initial Study of the proposed project to determine if the project may have significant effects on the environment. Central San staff prepared the Initial Study with consultant assistance.

Prior to considering approval of the Negative Declaration and the proposed project, a public hearing before the Central San Board of Directors is tentatively scheduled for September 2, 2021. For confirmation of the scheduling of this hearing, contact Russell Leavitt, Central San Environmental Coordinator, at (925) 925-768-3430 or rleavitt@centralsan.org. Following Central San Board approval, the Mitigated Negative Declaration will be considered by Responsible Agencies prior to the granting of approvals for activities associated with the project.

Approval of this Mitigated Negative Declaration by the Central San Board of Directors will constitute an independent finding that the MND adequately, accurately, and objectively evaluates the proposed project's potential impacts upon the environment. Furthermore, Public Resources Code Section 21081.6 regarding a mitigation-monitoring program is applicable to this project because mitigation measures will be implemented to avoid potentially significant environmental effects of the proposed project.

Proposed:



Roger S. Bailey
General Manager

7/12/2021

Date

Approved Pursuant to Resolution No. _____

Kate Young
Secretary of the District
Central Contra Costa Sanitary District

Date

INITIAL STUDY
MITIGATED NEGATIVE DECLARATION
FOR THE
CENTRAL SAN PROPOSED 1.75 MW SOLAR PANEL ARRAY
4451 BLUM ROAD, UNINCORPORATED MARTINEZ
CONTRA COSTA COUNTY, CALIFORNIA

JULY 9, 2021



LIST OF FIGURES

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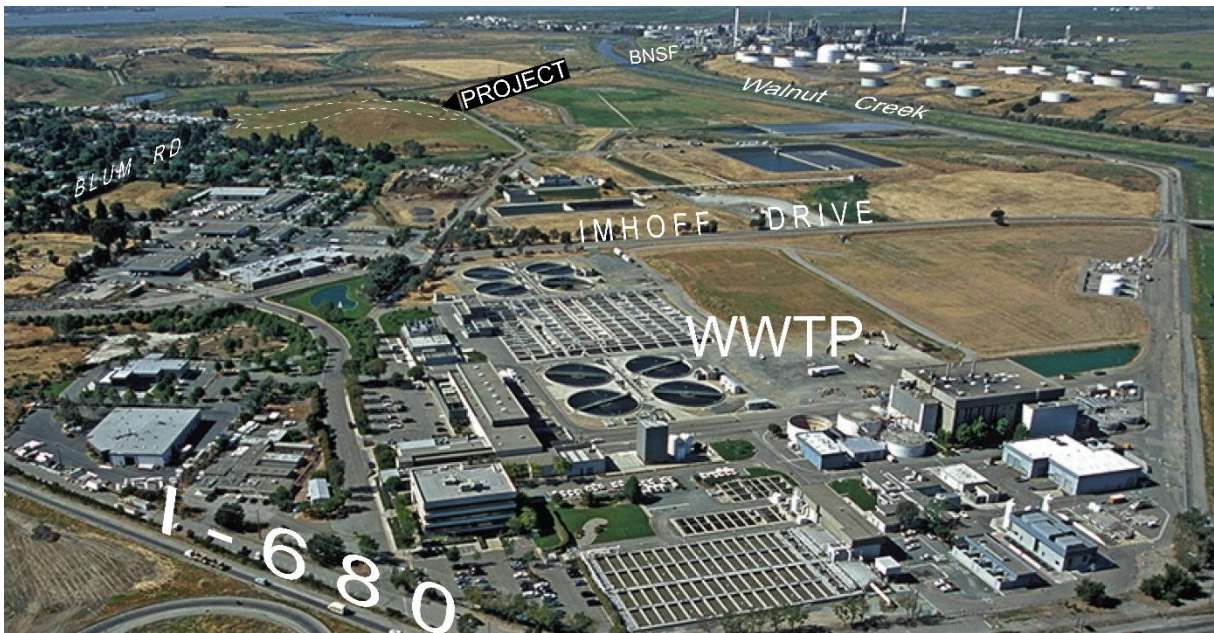
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SUMMARY AND DETERMINATION

A. PROJECT DESCRIPTION

The project is a ground-mounted, 1.75 megawatt (MW) solar energy facility at 4451 Blum Road in unincorporated Martinez, Contra Costa County, California. The project is proposed by Central Contra Costa Sanitary District (Central San). The objective is to provide enough solar power to offset the electrical grid consumption of Central San’s wastewater treatment plant (WWTP) and eighteen pumping stations throughout the service area.

The proposed project would be constructed on land designated by Contra Costa County for Public/Semi Public use. The land, already owned by Central San, consists of approximately 8.2 acres of a Central San-owned 48-acre parcel (APN 159-140-042-7), referred to as the “Lagiss parcel”; therefore, acquisition of land would not be necessary to implement the proposed project.



The proposed project is intended to replace grid power purchased from Pacific Gas & Electric (PG&E) and substitute zero-carbon electricity generated by the proposed photovoltaic (PV) solar energy source. Currently, cogeneration at the WWTP provides all but 5–10 percent (2,880–5,760 kWh/day) of the WWTP’s daily electrical power needs. The remainder of the WWTP’s daily electrical power needs is made-up with electrical power purchased from the PG&E grid. The eighteen, off-site pumping stations run entirely on purchased electrical power from PG&E’s grid. By substituting renewable or “zero-carbon” electricity, Central San could reduce its carbon footprint while still meeting its energy needs.

The proposed project is consistent with the *Contra Costa County 2005-2020 General Plan* as amended February 2020, and also is consistent with the County’s Solar Energy Facility Ordinance (Ordinance No. 2020-07) adopted in February 2020. The ordinance defines solar energy facility and establishes two classes: 1) accessory solar energy facility for on-site demand and 2) commercial solar energy facility for off-site demand. The ordinance allows commercial solar resources where the energy produced would be sold to an off-site purchaser, subject to review and development standards set forth in the ordinance. The proposed project by design is intended to meet the development standards of the Solar Energy Facility Ordinance.

The project site is located outside the 100-year floodplain, outside the Alquist–Priolo earthquake hazard zone, and outside mapped areas of moderate to very high liquefaction susceptibility. The project site is located within the Buchanan Field Airport Influence Area, but outside all of Buchanan Field’s four safety zones. Soils on the project site have been classified and mapped by the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS) as constrained for cultivation and, therefore, mainly suitable for grazing. The project site is not designated as Prime Farmland, Farmland of Statewide Importance, or Unique Farmland.

Existing vegetation includes native annual grasses without trees or shrubs on the project site. Trees located east of the project site would not be jeopardized by the construction or operation of the proposed project. In terms of wildland fire hazard, the project site is not located in a State Responsibility Area (SRA) for fire protection and is located outside of mapped moderate, high, or very high fire hazard severity zones.

The project site drains by overland flow of runoff, also called “sheet” runoff, in various directions depending on location and local slope. It does not adjoin the nearest local surface waters, namely Walnut Creek, Pacheco Creek, or Grayson Creek. The project site and other land within Central San’s APN 159-140-042-7 currently is leased to a rancher for cattle grazing and does not contain underground features such as pipelines, underground fuel storage tanks or septic tanks, or leach fields, although underground petroleum pipelines are located adjacent to the project site.

B. PROJECT SETTING

The project site is designated in the *Contra Costa County 2005-2020 General Plan* as Public/Semi Public (PS) land. The 8.2-acre project site and 40 acres of buffer land adjoining the project site are entirely owned by Central San and currently leased to a rancher for cattle grazing.

The project site is adjoined on all four sides by other Central San owned-land also designated in the *Contra Costa County 2005-2020 General Plan* as PS. Other existing land uses outside the buffer include the following:

Northwest: Light Industry (LI) land currently used by an RV storage business;

Southwest: Developed single-family residential (SH) land west of Blum Road along Explorer Way, Emshee Lane, Clipper Lane, and Arkinglander Lane;

South: Developed single-family residential (SH) land east of Blum Road along Austen Way, Alan Way, and Benita Way;

East: Additional Public/Semi Public (PS) land also owned by Central San; and,

North: BNSF railroad right-of-way and trackage.

C. CONSISTENCY WITH EXISTING ZONING, PLANS AND ORDINANCES

	<i>Applicable Potentially compatible</i>	<i>Applicable No potential for conflict</i>	<i>Not Applicable</i>
Discuss any variances, special authorizations, or changes proposed to the Planning Code or Zoning Map, if applicable.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Discuss any conflicts with any adopted plans and goals of the County or Region, if applicable.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Discuss any approvals and/or permits from County departments other than the Planning Department or the Department of Building Inspection, or from Regional, State, or Federal Agencies.	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

The System Operator for the proposed project would have to file a Notice of Intent (NOI) for coverage under the regional Construction General NPDES Permit. The NOI would be filed with the SWRCB. In view of the proposed addition of over 10,000 square feet of impervious surface for the perimeter service road, permanent stormwater management facilities (known as structural BMPs) also will be required, as documented in a Stormwater Control Operation and Maintenance Plan (the “Plan”) to be submitted by the System Operator to Contra Costa County. The entity(ies) responsible for maintenance shall be designated in the Plan. Unless a different performance period is provided for in the Plan, the entity(ies) responsible for maintenance shall inspect the stormwater management facilities at least annually. The Plan also shall describe how the maintenance costs will be funded.

As property owner, in compliance with Title 14, Chapter 1014-4.004(e), Central San would provide recorded covenants or easements, to allow access for inspection of structural BMPs by other responsible agencies. Such other agencies may include, for example, the California RWQCB, Contra Costa County Public Works County Watershed Program, the Contra Costa Mosquito and Vector Control District, and/or the Contra Costa County Fire Protection District.

The System Operator for the proposed project also would need to implement basic mitigation measures recommend by the BAAQMD and would comply applicable BAAQMD regulations including Regulation 6, Rule 6. This is the region’s soil anti-trackout regulation for minimizing soil tracked onto public streets from construction sites and dust re-entrained from those streets into the air.

The proposed project is consistent with the following local plans, policies, and ordinances:

- *Contra Costa County 2005-2020 General Plan*, as amended in February 2020;
- Policy 8-52 of the *Contra Costa County 2005-2020 General Plan*, as amended in February 2020;
- Ordinance No. 2020-07 (Solar Energy Facilities Ordinance), adopted in February 2020;
- *Contra Costa County Climate Action Plan (CAP)*, adopted in December 2015;
- *Buchanan Field Airport Master Plan Update*, revised October 2008; and,
- *Airport Land Use Compatibility Plan* (December 2000).

Ordinance No. 2020-07

Solar energy facility development standards were promulgated and adopted by Contra Costa County for those projects subject to review and permitting by the County. Based upon early consultation with County staff, the proposed project is not subject to a Land Use Permit, although other permits such as those for building and grading will be required. Central San is aware of the County’s solar energy facility development standards and has designed the proposed project to be consistent with those standards, which are being voluntarily met.

D. SUMMARY OF ENVIRONMENTAL EFFECTS

The proposed project could potentially affect the environmental factor(s) checked below. The following pages present a more detailed checklist and discussion of each environmental factor.

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

E. DETERMINATION

On the basis of 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 in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared to document revisions or mitigation measures to the project to avoid or lessen potential significant effects to less-than-significant.

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

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

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



Russell Leavitt, Environmental Coordinator
Central Contra Costa Sanitary District

7-9-2021

Date

1. PROJECT DESCRIPTION

The proposed project consists of the construction, operation, and maintenance of a photovoltaic solar panel array, inverters to convert DC current to AC current, and related amenities on land currently owned by the Central Contra County Sanitary District (Central San). The project site, which is located in unincorporated Contra Costa County, is located north of Central San's wastewater treatment plant (WWTP). The proposed project which is rated at 1.75 megawatts (MW) would produce solar power to offset the electrical grid power normally consumed by both the WWTP operations and also by remote pumping stations operated by Central San.

The location of the project site is shown in [Figure 1](#) and [Figure 2](#). On a topographic map, the project site appears as a minor hill form located southeast of Vine Hill (peak elevation 286 feet above mean sea level datum). In comparison, the project site attains a peak elevation of approximately 87 feet msl on an oblong north-south oriented hillcrest. The nearest surface water bodies are Pacheco Creek to the north and the Walnut Creek channel to the east.

The project site consists of approximately 8.2 acres of a larger Central San-owned parcel (APN 159-140-042-7). APN 159-140-042-7 contains approximately 48 acres and is located generally east of I-680, north of State Highway 4, north of Austen Way, and north and east of the north end of Blum Road. The project site at its closest point is located approximately 1,700 feet from the centerline of I-680 and approximately 500 feet north from the centerline of Austen Way.

The project site consists of a grass-covered hill, which Central San leases to a rancher for cattle grazing. The project site and adjoining buffer land north, east, west, and south of the project site comprise a larger parcel, APN 159-140-042-7, which is entirely owned by Central San. The Land Use Element of the *Contra Costa County 2005-2020 General Plan* designates this larger 48-acre parcel for Public/Semi-Public (PS) use. The zoning of the 48-acre parcel is Heavy Industrial (H-I).

Adjoining the larger Central San-owned parcel to the northwest is land in an RV Storage parcel, which is designated for Light Industry (L-I). Land west and south of the larger Central San-owned parcel, along Blum Road and Austen Way, is developed with houses and is designated for Single-Family Residential High Density (SH) use. To the north, land between the Atchison Topeka & Santa Fe Railroad and Waterfront Road is designated for Heavy Industry (H-I), except for the creek corridors of Walnut Creek, Pacheco Creek, and Grayson Creek, which are designated for Open Space (OS) use.

Project Footprint—The proposed project would be constructed on approximately 8.2 acres, including driveway and retention basins, located entirely within the 48 acres of Central San-owned land. Solar panels would be secured within a proposed security fence and perimeter service road comprising 2,540 lineal feet of fence and 2,440 lineal feet of perimeter service road. The perimeter road would be 20 feet in width. The proposed security fence would be 7 feet in height. The perimeter road and fence would occupy approximately 1.3 acres of the 8.2 acres.

The proposed project footprint would avoid existing easements actively used for petroleum product conveyance. These existing easements vary in width from 10 feet to 30 feet and generally are located outside the project footprint, to the west and south of the project site.

The existing surface area to be covered by the proposed ground-mounted solar panel modules is approximately 2.5 acres. Combined, solar panel modules together with the service road and driveway would cover approximately 4.0 acres of the 8.2-acre site. The remainder (4.2 acres) is generally aisle

space between rows of panels or retention basins. Only minor area would be used for inverters; panelboards; main PV switchboard; a step-up, pad-mounted transformer; and, intertie switchgear.

Key Project Features and Scale—Details of the proposed solar panel installation are shown in the preliminary engineering diagrams. Manufacturers and models of system components, where listed, are preliminary and, therefore, subject to substitutions during procurement, which would not alter environmental consequences.

The proposed service road would consist of a 20-foot wide constructed of a combination of crushed rock and Class II base rock or a 3-inch lift of asphalt pavement over a 9 inch –lift of Class II base rock. A security fence around the service road and solar panel installation would be added for security and service. Three (3) small retention basins would be constructed to retain runoff from the added asphalt pavement. One (1) of these basins would be located in the southeastern corner of the project site and two others would be located just outside the security fence at the northeastern and southwestern corners. The existing District-owned property fence around the perimeter of the larger 48-acre Lagiss parcel would remain.

Project facilities consist of 5,460 photovoltaic (PV) panels and related electrical equipment (*e.g.*, inverters, 2,000 kilovolt-ampere (kVA) step-up transformer, switchboard, main PV AC disconnect). The PV panels are the visually prominent project feature. The PV panels would be ground-mounted on structural supports in rows like grape vines in a vineyard. The PV panels are treated with an anti-reflective (AR) coating to reduce reflection of sunlight. The panels would convert incident sunlight into direct current (DC) electricity. Direct current is the same kind of current as provided a flashlight battery or car battery. Inverters would modify DC current to alternating current (AC). A switchboard and 2,000 kVA step-up transformer would condition the electrical power for local distribution. Connection to the existing distribution system would be made via approximately 300 lineal feet of underground power line to a PG&E service drop located southwest of the project site.

Operating PV panels neither directly consume fossil fuel nor produce air pollutant emissions. Minor indirect consumption of fossil fuel and water is entailed in periodic inspection and maintenance of the panels and associated electrical equipment.

Ground-mounts would retain the panels in a fixed tilt orientation. Flat like a kitchen table would be 0 degrees, and upright like a door would be 90 degrees. The amount of proposed tilt is 21 degrees. So the proposed tilt of 21 degrees is not close to upright and is only slightly sloped compared to a kitchen table orientation.

The solar panels would be organized in northwest-to-southeast rows positioned to receive optimal afternoon solar energy. Panels would face southwest in portrait orientation two tall. The proposed mounting system is fixed and, therefore, panels would not move to track the azimuth or elevation (*i.e.*, the path of the sun). Site layout and design details are provided in Preliminary Design Drawings included in Appendix A.

Each panel is approximately 3.3 feet by 6.6 feet in size. The bottom edges of panels are mounted off the ground by approximately 1-2 feet. In portrait orientation and stacked two (2) tall, the overall height would be 14-15 feet if the panels were upright like a door rather than tilted. However, owing to the tilt, the top edge of the upper panel in a stack would not be nearly as tall as 15 feet. The top edge of the highest fixed-tilt panels would be approximately 6 feet above ground level, allowing for 1.3 feet of ground clearance.

Ground-mount steel supports: Ground-mounting of the solar panels would use steel supports with corrosion protection, custom designed and fabricated by RBI Solar. Standard ground mounts or pole mounts may be used depending on soil conditions, expected lateral loads and engineering. Alternatively, installation of the ground mounts may use foundations such as ballasted, driven piers, or helical piles.

Standard ground mount—a mounting system that uses poles set in place in multiple drilled “augered” holes that are then backfilled.

Pole mounts—Similar to standard ground mount except single larger poles are placed into pre-augered holes that are backfilled.

Ballasted mount—A standard ground mount but with concrete footings that are above-ground where auger drilling is infeasible.

Driven Piers—pile-driven poles that are driven deep into the ground using specialized equipment.

Helical Piles—also known as “ground screws,” “screw piles,” “screw anchors,” or “earth screws,” are specially fabricated and are installed by rotating the shaft of the pile. As the shaft rotates, the helical plates or anchor plates advance into the ground “pulling” the shaft with it. Helical piles are not placed into pre-augered holes; rather, they are screwed into the soil with minimal soil disturbance.

Panels: Solar panels would be TallMax Plus framed 144 half-cell modules manufactured by Trina Solar. Cells are made of monocrystalline silicon, arranged in a 6 x 24 matrix in each module.¹ Modules have a rated power output range of 385-400 Watts (W) and 19.7% maximum efficiency. Maximum system voltage is 1500 volts direct current (DC).

Panels have anodized aluminum alloy frames with dimensions of approximately 80 inches x 39.5 inches x 1³/₈ inches (1 m x 2 m x 3.5 cm). The glass skin is anti-reflective (AR) coated, heat strengthened glass 0.13 inch (3.2 mm) thick.

A total of 5,460 solar panels would deliver DC power to three clusters of inverters located within the project footprint.

Inverters: Dispersed on the project site, there would be three (3) clusters of five (5) string inverters in each cluster. Each inverter would serve 26 strings of solar panels. Each string would consist of 11 to 16 panels, or also called “modules.” Inverters would convert DC current from the solar panels to 3-phase alternating current (AC). Inverters, or also called “Multiple String Inverters,” would be ground-mounted on brackets.

The fifteen (15) inverters would be 100 kW or 125 kW high-power 3-phase string inverters, such as those manufactured by SMA Solar Technology America or Chint Power Systems America (CPS-America). Power output from one inverter would be 3-phase at 150 amps to 175 amps. String inverters would be housed in outdoor-rated weather-resistant NEMA Type 4X enclosures manufactured by Nemaco Technology (NEMACO™).

¹ Solar panels are also termed solar “modules” to avoid potential confusion with “panelboards” or “power collector panels.”

Each inverter has approximate (Width × Height × Depth, W×H×D) dimensions of 45.3 inches × 24.25 inches × 9.8 inches (115 cm × 62 cm × 25 cm) with a Standard Wire Box or 39.4 inches × 24.25 inches × 9.8 inches (100 cm × 62 cm × 25 cm) with a Centralized Wire Box.

Panelboards/Power Collector Panels: A power collector panel, or also called a “Solar Aggregator Panel,” combines the electrical power from multiple string inverters. Three power collector panels would be used, one for each of five inverters. Panelboard -1, -2, and -3 (PNL-1, -2, and -3) would each convey 800-875 amps of 3-phase current at 600 volts.

Main PV Switchboard/Solar Aggregator Switchboard: The solar aggregator switchboard combines electrical power from multiple power collector panels.

2,000 kVA step-up transformer: Three-phase AC current generated by the system would be at approximately 480 volts (480 VAC) and 3,000 amps. PG&E will install a step-up transformer next to the proposed switchgear that will step up the 480 VAC voltage to 21,000 volts (21 kV). The medium voltage line will be run in underground conduit to the existing pole on the west side of the Lagiss parcel for interconnection to the electrical grid.

New Main Switchgear/Intertie Switchgear: The function of “main” or “intertie” switchgear is to pass electrical energy safely from Central San’s proposed PV solar panel project to PG&E’s secondary electrical distribution system. As voltage regulation, surge protection, and isolation are parts of the main function, the main switchgear will regulate the passage of electrical current from the project to PG&E’s secondary electrical distribution system. Main switchgear and the step-up transformer will be pad-mounted in environmental enclosures to be located within the project site near the gated entryway.

Switchgear combine power conditioning, circuit breakers, and electrical switches, to control, protect, and isolate electrical equipment. The main intertie will enable rapid isolation from the PG&E’s secondary electrical distribution system in the non-routine event of a fault condition. Multi-function, three-phase protective relays will have redundant back-up relays. Utility-grade relays, as required by PG&E for interconnection to its system, will have high reliability and accuracy. They are constructed to high standards to operate in a high voltage, high energy environments. Circuit breakers will be trip-tested by the System Operator at least once a year.

Proposed intertie switchgear will be evaluated independently by PG&E during a detailed interconnection study, to identify any modifications required by PG&E before interconnecting the proposed project to PG&E’s secondary electrical distribution system. Such potential modifications would be in addition to any distribution system upgrades that PG&E may identify in its interconnection study.

Lighting: Security lighting for the solar field area would be minimal. To illuminate the entry gate and Knox box, two (2) shoebox type luminaires mounted on 15-foot poles would be installed at the project site entrance. These lights would be aimed downward and would have full cutoff “baffles” or “visors” to avoid potential spill light and glare. There would be no lighting within the solar array or around the perimeter fence. Portable lights would be used for any maintenance activity at inverters that needs to be performed at night.

Perimeter Fence: Within the perimeter road, the solar field area would be surrounded by a perimeter chain link security fences. The fence would be 7 feet in overall height, with 6 feet of chain link topped by 1 foot (3 strands) of barbed wire.

Fence materials would be industrial-grade galvanized steel. Storm water runoff would flow through the chain link fence.

Construction—Elapsed time for construction, safety inspections, commissioning, and performance testing would be approximately 5 months or 150 calendar days, from September 2021 through January 2022. The construction process and general timing are described as follows:

Site construction work – September-October 2021. Includes such as grading for the perimeter access driveway, security fence installation, and trenching for underground conduits.

Mechanical installation – October-November 2021. Includes pile driving, installation of racks/purlins, installation of PV modules (also known as solar panels), forming and pouring of equipment pads, and alignment of PV modules.

Electrical, switchgear, and transformer installation – October 2021-January 2022. Includes module/rack bonding, DC string wiring, installation and termination of panelboards and string inverters, system tie-in, and testing.

Quality inspections – October 2021-January 2022. Include progress inspections and final Quality Control Audit. Performance testing would occur later, after final Quality Control Audit.

System Operation and Maintenance—The third-party operator, Duke Energy (“System Operator”) will operate the equipment in a manner following manufacturer’s recommendations to keep in force all applicable manufacturer equipment warranties. Due to their constant use, power cycling, and exposure to natural elements, solar systems require maintenance. Maintenance is paramount not only to qualify under the manufacturer warranties but also to assure performance of the system over its projected useful lifetime and optimize energy production.

The System Operator will provide the following off-site and on-site Operation & Maintenance (O&M). It is noted here that Central San and PG&E will not provide any of the O&M services listed below:

- Monitoring system and system alarms
- Vegetation management
- Periodic panel visual inspection and washing
- Cleaning electrical equipment cabinets and filters
- Oiling cabinet hinges and repairing weather stripping and minor corrosion
- Applying dielectric grease
- Checking mechanical torques (*e.g.*, on DC connections to the inverters, circuit breakers and ground fault interrupters)
- Confirming accuracy of sensors
- Exercising equipment (*e.g.*, meters, irradiance sensors, and temperature sensors in the monitoring system) to make sure it will work as needed
- Recording operational data

A Site Manager designated by the System Operator will optimize and monitor system performance, respond to system alarms, mobilize field technicians, regularly communicate production, operations and maintenance results to Central San, resolve any issues in a timely manner. Key elements of System Monitoring & Reporting will include the following:

System Monitoring & Reporting: The System Operator will apply a Supervisory Control and Data Acquisition (SCADA) system and/or Data Acquisition System (DAS) to monitor and prevent unnecessary down time or costly site mobilizations. The System Operator’s designated Site Manager will review and provide continuous data about the system’s performance and control capabilities and will provide analysis to ensure that the system is operating at peak efficiency.

Any system performance issues will automatically trigger a response protocol, notifying the System Operator’s team to respond, review triggered alarm(s) and system/equipment history, file warranty claims, and dispatch technicians, as needed.

Infrared Imaging (IR): System Operator’s field technicians will be equipped with IR cameras for scanning equipment for vulnerable spots and will correct them before they fail or become a safety issue.

Monitoring System Verifications: Verifying the accuracy and condition of components of the monitoring system will be performed regularly by the System Operator. Verification and calibration will include meters, irradiance sensors, and temperature sensors. Verification and calibration information will be provide to Central San by the System Operator on a schedule to be determined.

Module Washing Process: Module washing includes brushing, low-pressure spray washing, water rinsing, and visual inspection of the array. Visual inspection during module washing is performed to identify damage, burn marks, or glass fracturing. Inspection Reports will be prepared as part of each washing.

Vegetation Management or Control: Vegetation control may include weed spraying, trimming, mowing, weed control mat/sheeting, or other appropriate means of removal. An alternative to conventional vegetation management is grazing by sheep. During construction and operations removal of cleared vegetation would include off-site transport to an approved off-site location for composting. Tree removal would not be necessary for the construction and is not proposed. Vegetation Control Action Reports will be prepared by the System Operator after each vegetation control event.

Warranty Administration: The System Operator’s designated Site Manager will file any warranty claims on modules, inverters, circuit breakers, transformer, sensors or other monitoring equipment.

Stormwater Management—Earthwork would be necessary to provide an engineered base for the proposed perimeter service road and small equipment pads for the inverters, panels, and transformer. General construction also would involve considerable travel over unpaved soil during construction of the ground mounts and racking. “Trampling” has considerable potential to disturb stabilizing plant cover, leaving the soil relatively exposed.

The Natural Resources Conservation Service (NRCS) assigns an agricultural Land Capability Classification of 4e and 6e to the project site. The “e” in 4e and 6e means that soil on the project site generally has a risk of erosion unless close-growing plant cover is maintained. In similar hillslope settings with overland flow of rainwater runoff, also termed “sheet” flow, the combination of disturbance of plant cover and erosive soils is prone to develop rills and gullies.

The National Renewable Energy Laboratory (NREL) reported experience on solar PV developments that suggests a best practice. NREL noted that grading performed prior to PV system installation can expose soil that is susceptible to runoff and erosion due to rainfall. Post-construction, rills and gullies that can form may undermine PV equipment pads, fences, and service roads. NREL reported that a best practice is to design specific pathways for storm-water runoff that include check-dams throughout a solar PV site, which feed into V-ditches or channels lined with rock. Terminations of such channels should have energy dissipating rock, also known as Gabion dissipaters. The potential additional need for detention basins depends on site-specific conditions.

Long-term stabilization may necessitate re-establishment of the close-growing ground cover. Short-term stabilization until this is re-established can be accommodated by stabilizing the aggregates found at the soil surface with polymeric soil conditioners.

Before earthwork begins, a Stormwater Pollution Prevention Plan (SWPPP) would be prepared so that appropriate temporary erosion controls are designed for the construction phase of the proposed project. Monitoring of close-growing groundcover would be performed until it is re-established. Permanent stormwater drainage systems have been designed and described in a Storm Water Control Plan (SWCP).

Photovoltaic Cell

In 1839, French scientist Edmond Becquerel discovered that certain materials would throw sparks of electricity when in sunlight. This property, called the *photoelectric effect*, was harnessed first in the late 1800s. By the 1950s, scientists at Bell Labs produced photovoltaic (PV) cells using silicon that converted about 4 percent of the energy in incident sunlight into electricity.

Current PV cells consist of two separate layers of semiconducting material, which most commonly is composed of thinly sliced silicon crystals doped with boron or phosphorus. The bottom layer of a PV cell usually is doped with boron, which tends to accept electrons (Positive or "P"). The top layer is doped with phosphorus, which tends to give up electrons (Negative or "N"). The interface between the resulting positive or "p-type" and negative or "n-type" semiconductors is called the *P-N junction*.

When sunlight enters a PV cell, its energy knocks electrons from the silicon in both layers. Electrons at the P-N interface produce an electric field that restricts electrons from moving freely from the n-type layer to the p-type layer. Adding a conducting metal backing layer ("back ribbon") and conducting strips called the "front ribbon" on the top (sun-side) n-type layer enable flow of electrons—a current—from the n-type top layer through the conducting metal front and back ribbons to the p-type layer.

The net effect is like a battery—except the source that induces electric current in a battery or "electrochemical cell" is chemical. A battery consists of a negative electrode, a positive electrode, and an electrolyte that transfers or conducts ions. When a battery is connected to a device to be powered, the negative electrode (anode) supplies a current of electrons that flow through the device and back to the positive electrode (cathode). Periodic recharging with an external electrical energy source is necessary to rebuild a surplus of electrons at the anode. The cycle of depletion or discharge and recharge is perpetual. In a PV cell, the current of electrons is a manifestation of the sun's energy rather than a chemical reaction. Recharging is never required.

A solar module is an organized collection of smaller solar cells. A solar panel includes the module, frame and protective glass skin that protects relatively delicate solar cells from damage.

Efficiencies of commercially available solar panels vary depending on the design and build quality. Thin films typically are least efficient, and monocrystalline designs are most efficient, with the efficiency of polycrystalline designs being somewhere between. Typical efficiencies are in the range 10 to 22 percent. The highest efficiency at October 2020 is 20-22 percent.

Solar cells themselves are somewhat fragile and susceptible to damage from heating and cooling and also from impact. Therefore, panel design includes protective sheet glass in a rigid frame. The number of cells ranges typically from 60 to 144. The higher number of cells is associated with a design called "half-cell module." This design incorporates smaller cells with tighter spacing between the cells.

The half-cell design provides an improvement in efficiency over full-cell design. Half-cell efficiency gains accrue from better optics (reduced shadow losses) and reduced electrical losses. Since the 1950s, PV cell efficiency has progressed from 4 percent in the 1950s to 22 percent in 2020, and higher in laboratory conditions.

NOTES: Current efficiency and technology developments, <https://www.cleanenergyreviews.info/blog/most-powerful-solar-panels>

Dust & Emission Control—Solar PV projects have temporary emissions during the construction phase but *de minimis* recurring emissions after construction. Vapor, gases, or particles are not emitted from solar PV modules, inverters, panels, transformers, or switchgear.

To minimize dust (PM₁₀, PM_{2.5}) during construction, best management practices listed by the Bay Area Air Quality Management District (BAAQMD) include, for example:

- Frequent water spray and watering to maintain a crust over exposed soil.
- Covering friable materials and aggregates such as sand, gravel, and base rock in haul trucks and in stockpiles.
- Reducing driving speed on unpaved off-road surfaces to 5 mph.

Also, to minimize diesel exhaust emissions, non-road construction equipment and haul trucks will be tuned and will have diesel filtration systems (DPF or other) to minimize particulate emissions. and other flammable materials during construction would follow California OSHA and local standards. A Worker Health, Safety and Hazard Awareness Plan (HSHAP) would be developed and monitored for implementation during the construction.

On-Site Fuel & Hazardous Materials Storage—The proposed project includes only the listed solar PV panels and related equipment that would be necessary for generating electricity. A Battery Energy Storage System (BESS) is not proposed. Fuel storage tanks would not be installed on the project site during or after construction. Diesel fuel for fueling non-road, diesel-powered construction equipment would be dispensed from a refueling service truck. Sheds or other storage facilities for storing maintenance tools or materials also would not be constructed. Tools or materials needed for periodic maintenance would be stored off site and brought as-needed to the project site.

Relation to County and Regional Plans—The proposed project is intended to develop a renewable energy resource to replace purchase of grid power. The proposed project is consistent with Conservation Element Policy 8-52, which allow solar energy facilities on lands designated by the County for Commercial (CO), Light Industry (L-I), Heavy Industry (H-I), Agricultural Lands (AL), and Public/Semi-Public uses (PS). The proposed project also is consistent with Contra Costa County's Climate Action Plan (CAP), which calls for reductions of greenhouse gases (GHGs) through building energy efficiency, renewable energy, increased infill land use.

For additional details about relevant plans, programs, and policies, refer also to Section 2.

2. PROJECT SETTING, APPLICABLE PLANS AND POLICIES

The project site is designated by Contra Costa County in its *2005-2020 General Plan Land Use Element* for Public/Semi-Public (PS) use. Buffer land adjoining the north, east, west, and south sides of the project site is also PS land. The project site is zoned for Heavy-Industry (H-I) by Contra Costa County.

Contra Costa County's Conservation & Development Department recently has studied renewable energy development in unincorporated areas of the County. Its 2018 study titled *Renewable Resource Potential Study* (the "2018 Study") was presented to the County Board of Supervisors in December 2018.

The 2018 Study found that there is substantial potential for renewable energy sources in unincorporated Contra Costa County including both distributed generation where generator is user and electrical power generation for sale back to the public utility power grid. The 2018 Study found that 50 to 80 percent of the electricity consumed throughout the County could be generated from local renewable electrical power sources—wind and solar with minor contributions by biogas and biomass technologies. The 2018 Study further showed that many opportunities for solar development were available on marginal lands in unincorporated county, which may not have a higher economic use, do not support intensive agriculture, and are not otherwise valued (*e.g.*, as a scenic, recreational, or open space or habitat resource). The 2018 Study illustrated candidate lands having technical potential for wind energy or ground-mounted solar energy.

Following the 2018 Study and the recommendations contained therein, this work culminated in the County's adoption of Ordinance No. 2020-07 (Solar Energy Facilities Ordinance) and text amendments to the General Plan. Text amendments adopted on February 25, 2020, modify Conservation Element Policy 8-52 to allow solar energy facilities on lands designated by the County for Commercial (CO), Light Industry (L-I), Heavy Industry (H-I), Agricultural Lands (AL), and Public/Semi-Public uses (PS).

RELEVANT CALIFORNIA LEGISLATION & PLANS

Selected relevant State of California legislation and local planning documents are identified below:

Renewable Energy Self-Generation Bill Credit Transfer program (RES-BCT)

The Renewable Energy Self-Generation Bill Credit Transfer program (RES-BCT) was established under AB 2466 (Laird) by the California legislature filed September 28, 2008, and effective January 1, 2009, and is codified in Section 2830 of the Public Utilities Code. It allows a qualified public entity (*e.g.*, a city, county, special district, school district, university,² political subdivision or other local public agency but not a state government or department) having one or more eligible renewable generating facilities to export energy to the grid and receive generation credits to benefiting accounts of the same public entity. AB 512, which was signed into law in 2011 and became effective on January 1, 2012, further modified the RES-BCT program to increase the generator size limit to 5 MW per generation account.

The generator must be renewable, no larger than 5 MW, and meet the definition of an "eligible renewable energy resource" pursuant to the California Renewables Portfolio Standard Program as is defined in Public Utilities Code Section 399.12 (c). In addition to the 5 MW size limit, the renewable generating system must be sized so annual generation is no larger than the annual electricity usage of the Arrangement, which includes both generating and benefiting accounts. PG&E's RES-BCT program is offered on a first-come-first-served basis until 105.25 MW, which is PG&E's portion of the 250 MW program cap, is reached. As of July 31, 2020, 44 MW were counted towards the PG&E 105.25 MW cap and an additional 33 MW were pending.

² AB 1031 expanded applicability to state colleges and universities.

Eligibility criteria for RES-BCT include:

- A customer must be a city, county, special district, school district, university, political subdivision or other local public agency.
- The maximum generator size is 5 MW, and multiple arrangements are allowed.
- The benefiting account may be at remote locations within the same city or county.
- Generating and benefiting accounts in the "arrangement" must be on a time-of-use rate schedule.

Ownership of Renewable Energy Credits is not affected by the RES-BCT arrangement. The ownership of the renewable energy credits stays with the Local Government or Third Party System Owner, depending on the agreed upon arrangement between both parties.

California's Mandate to Reduce Greenhouse Gases (GHGs)

The San Francisco Bay Area's (SFBA's) need for GHG emission reductions through alternative energy aligns with California's implementation of the Global Warming Solutions Act of 2006 (AB 32). This landmark state legislation calls for the reduction of climate change-causing greenhouse gas (GHG) emission in California to 1990 levels by 2020. Ten years later, in 2016, this was extended to reduce GHG emission 40 percent below the 1990 level by 2030. Use of alternative energy is a cornerstone to the state's goals.

The California Air Resources Board (California ARB) adopted regulations to help meet these targets, including a Renewable Energy Standard (RES) that requires the state's utility companies to purchase 33 percent of their energy mix from renewable sources. In April 2009, California ARB also adopted the Low Carbon Fuel Standard (LCFS), which requires a 10 percent reduction in GHGs emitted by combustion of transportation fuels by 2020. A key element of this regulation will be the use of clean alternative fuel sources.

In 2006, AB 32, Chapter 488 (Núñez/Pavley) established the goal of limiting statewide emissions of greenhouse gases (GHGs) to the 1990 level by 2020. The numerical limit is 431 million metric tons of carbon dioxide equivalent (MMT CO₂e) in 2020. In 2016, SB 32, Chapter 249 (Pavley/Garcia) extended the 2020 limit and required a reduction of 40 percent below the 1990 level by 2030. The numerical limit is 259 MMT CO₂e in 2030.

These are overall objectives for total statewide emissions of GHGs. California also passed legislation on specific GHG-emitting sectors such as electricity generators and providers or "load-serving entities." Beginning with the Renewables Portfolio Standard in 2003, over the two decades, the State of California has implemented a variety of policies intended to reduce GHG emissions from electrical power generation.

2002: SB 1078 (Sher, 2002), Chapter 516, set the initial Renewables Portfolio Standard (RPS) requirement that 20 percent of total electricity retail sales must be served by renewable energy resources by 2017.

2006: SB 107 (Simitian), Chapter 464, accelerated the 20 percent RPS requirement to 2010.

2011: SBX1 2 (Simitian), Chapter 1, established a 33 percent RPS requirement that 33 percent of total electricity retail sales must be served by renewable energy resources by 2020.

2015: SB 350 (de León), Chapter 547, mandated that 50 percent of total electricity retail sales must be served by renewable energy resources by 2030. Further, SB 350 requires the California

Air Resources Board to establish 2030 GHG targets for the electricity sector (to be set at a range of 30 MMT CO₂e to 53 MMT CO₂e).

2018: SB 100 (de León), Chapter 312, again accelerated RPS by requiring that 60 percent of total electricity retail sales must be served by renewable energy resources by 2030. Further, SB 100 establishes a state policy of 100 percent carbon-free electricity by 2045.

Distributed Energy Resources

The legislative history reveals only part of California’s thinking about substituting solar and wind for coal-fired and natural gas-fired electrical power generation. In addition to direction given to load-serving entities about how to electrify the electrical power distribution grid, for decades now California has legislated goals and policies for distributed electrical power generation. Distributed power generation refers to electricity produced near the point-of-use, on a smaller scale than utility-scale electrical power generation. The proposed project is an example of an on-site, or “point-of-use” distributed generation (DG) project, which is smaller in scale than utility-scale solar projects.

The Self-Generating Incentive Program (SGIP) was established by the California Public Utilities Commission (CPUC) in 2001. SGIP was initially conceived as a peak generation and peak-load reduction program in response to the California energy crisis of 2000-2001, during which power blackouts were experienced. Assembly Bill 970 (Ducheny, 2000) designed the SGIP as a complement to the California Energy Commissions’ Emerging Renewables Program, which focused on smaller systems than the SGIP. The SGIP included renewable energy development, except hydroelectric, for both on-site distributed energy and commercial scale projects.

The original SGIP has changed significantly. It no longer supports development of solar photovoltaic technologies. Solar PV was moved to the purview of the California Solar Initiative after its launch in 2006. SGIP today offers incentives only for energy storage technologies.

Senate Bill 412 (Kehoe, 2009) modified the focus of the SGIP to include greenhouse gas reductions. Specifically, this bill directed the CPUC, in consultation with the Air Resources Board, to identify distributed energy resources that will contribute to greenhouse gas reduction goals and to set appropriate incentive levels to encourage their adoption. In response, the CPUC expanded the portfolio of eligible technologies (other than solar PV) and modified the incentives approach.

2000: AB 970 (Ducheny), Chapter 329, also known as the California Energy Security and Reliability Act of 2000, was intended to provide assistance to persons proposing to construct electrical generation facilities—both thermal power plants known as peaker plants and on-site DG technologies.

2003: AB 1685 (Leno), Chapter 894, extended SGIP, requiring the CPUC, in consultation with the California Energy Commission, to administer the program for distributed generation resources including, but not limited to, incentives for renewable or super clean distributed generation resources, until January 1, 2008.

2006: SB 1 (Murray/Levine), Chapter 132, required the CPUC, in implementing the California Solar Initiative, to authorize monetary incentives for up to the first megawatt of alternating current generated by an eligible solar energy system that meets the eligibility criteria established by the California Energy Commission. CPUC adopted the California Solar Initiative, which modified the SGIP for DG resources and provided incentives to customer-side photovoltaic projects under one megawatt.

2006: AB 2778 (Lieber), Chapter 612, extended SGIP until January 1, 2008. This bill required the CPUC, in consultation with the California Energy Commission, to administer, until January 1, 2012, a self-generation incentive program for DG resources. The program remained applicable to all eligible technologies until January 1, 2008, except for solar PV technologies, which the CPUC was required to administer separately after January 1, 2007, pursuant to the California Solar Initiative. During January 1, 2008, through January 1, 2012, SGIP eligibility was limited to non-solar technologies such as fuel cells and wind technologies.

2009: SB 412 (Kehoe) modified the primary purpose of SGIP from peak load reduction to GHG emissions reduction. Subsequently, in 2011, CPUC modified its SGIP eligibility criteria to support technologies that achieve GHG emissions reductions. Eligible DG technologies include energy storage, wind turbines, pressure reduction turbines, fuel cells, waste heat capture and combined heat and power, internal combustion engines, micro-turbines and gas turbines—and not solar technologies. DG solar technologies have been administered separately since January 1, 2007.

2014: SB 861 extended administration of the SGIP through 2020.

2016: AB 2868 (Gatto), Chapter 681, provided for distributed energy storage systems. AB 2868 authorized CPUC to approve programs and investments in distributed energy storage systems and required CPUC to prioritize programs and investments providing distributed energy storage systems to public sector and low-income customers. As a result, 75 percent of the total incentive budget was allocated to energy storage technologies.

LOCAL & REGIONAL PLANS

Contra Costa County's Climate Action Plan

The Climate Action Plan (CAP), adopted by the Contra Costa County Board of Supervisors in December 2015, applies in unincorporated areas of the county. Incorporated areas are responsible for their own climate action plans. The County's CAP calls for reductions of greenhouse gases (GHGs) through building energy efficiency, renewable energy, increased infill land use and increased public transportation, soil waste diversion and water conservation. Of the CAP's planned total reductions in GHGs, renewable energy accounts for approximately 12 percent in 2035.

The CAP includes GHG reduction strategies and measures that promote development of alternative energy facilities such as solar and waste-to energy. Measure RE 2 calls for continued participation in the Regional Renewable Energy Procurement Project or similar bulk purchasing programs to purchase solar photovoltaic systems for on-site generation at public facilities, small- and medium-sized alternative energy installations, and energy storage installations, which are not covered under AB 2188.

Measure RE 2: Alternative Energy Facilities

Action Items:

1. Continue to install alternative energy facilities (*e.g.*, photovoltaic panels and electric vehicle charging stations) on public buildings and lands in the unincorporated county.
2. Continue to participate in the Regional Renewable Energy Procurement initiative or similar bulk purchasing programs to purchase solar photovoltaic systems for on-site generation at public facilities.
3. Work with East Bay Municipal Utility District (EBMUD) and other wastewater processors to install cogeneration infrastructure on wastewater treatment facilities.

Alameda County, Joint Venture Silicon Valley, and the Contra Costa Economic Partnership set into motion Regional Renewable Energy Procurement (R-REP), to apply collective procurement for renewable energy projects. Participating agencies include public agencies throughout Alameda, Contra Costa, San Mateo and Santa Clara Counties, including the counties and some of the cities and special districts therein.³

Measure RE 2 mentions specifically EBMUD and cogeneration on wastewater treatment facilities. However, the general intent of Measure RE 2 is to foster development of alternative energy facilities at public and quasi-public buildings and land throughout unincorporated Contra Costa County.

Contra Costa County 2005-2020 General Plan

Chapter 3: Land Use Element of the *Contra Costa County 2005-2020 General Plan* contains policies for the Vine Hill/Pacheco Boulevard area:

- 3-105. The scenic assets and unstable slopes of the Vine Hill Ridge are to be protected for open space/agricultural use.
- 3-106. The residential neighborhood east of I-680 shall be buffered from the industrial/landfill-related uses.
- 3-107. Approximately 40 acres of land south of the Burlington Northern Santa Fe tracks, between Morello and Pacheco, is designated Agricultural Lands, to encourage the continued operation of the Viano family vineyards and winery.

Chapter 8: Conservation Element of the *Contra Costa County 2005-2020 General Plan* contains policies to foster development of renewable energy resources in unincorporated Contra Costa County:

- 8-K. To encourage the use of renewable resources where they are compatible with the maintenance of environmental quality.
- 8-L. To reduce energy use in the county to avoid risks of air pollution and energy shortages which could prevent orderly development.

Contra Costa County Airport Land Use Compatibility Plan

The project site is located within the Buchanan Field Airport Influence Area but outside all four its delineated safety zones 1 -4 and outside the 55-60 dBA CNEL noise contour.

Any major land use action on the project site shall be referred to the Airport Land Use Commission for comment. Chapter 2 of the Contra Costa County Airport Land Use Compatibility Plan defines a major land use action within the Airport Influence Area. Based upon review of qualifying criteria for a major land use action, the proposed project could qualify as a major land use action if it would create glare in the eyes of pilots of aircraft using the airport. Qualifying criteria are listed below and on the following page:

³ <https://jointventure.org/initiatives/completed-initiatives/solar-procurement/r-rep>

Within the Airport Influence Area: Potential for glare is a possibility that warrants consideration. Except for the possibility of potential glare, the proposed project would not generally qualify as a major land use action under other qualifying criteria used to identify such actions. These criteria are:

- Any proposal for new development (including buildings, antennas, and other structures) more than 150 feet tall.
- Any obstruction reviewed by the Federal Aviation Administration in accordance with Part 77 of the Federal Aviation Regulations which receives a finding of anything other than “not a hazard to air navigation.”
- Any project having the potential to create electrical or visual hazards to aircraft in flight, including electrical interference with radio communications or navigational signals; lighting which could be mistaken for airport lighting; glare in the eyes of pilots of aircraft using the airport; and impaired visibility near the airport.
- Projects having the potential to attract an increased number of birds to the vicinity of an airport.

Within the 55-60 dBA CNEL Contour or Any Safety Zone: The following major land use action criteria do not apply to the proposed project, because the project site is located outside the 55-60 dBA CNEL contour and outside all four safety zones.

- Proposed residential development, including land subdivisions, consisting of 20 acres or larger or five (5) or more lots.
- Any discretionary development proposal for projects having a building floor area of 20,000 square feet or greater.
- Major capital improvements (*e.g.*, water, sewer, or roads) which could promote urban uses in undeveloped or agricultural areas if such uses are not reflected in a previously reviewed general plan or specific plan.
- Proposed land acquisition by a government entity for any facility accommodating a congregation of people (*e.g.*, schools, auditoria, community recreation centers, government administrative offices).

Within Safety Zone 1, 2, 3 and 4: The following major land use action criteria do not apply to the proposed project, because the project site is located outside all four safety zones.

- Within *Safety Zones 1* and *2*: Any proposal for new non-aviation development (including buildings, antennas, and other structures).
- Within *Safety Zones 3* or *4*: Any proposal for new development (including buildings, antennas, and other structures) more than 50 feet tall.

Bay Trail Plan

The ultimate Bay Trail Plan calls for connection of the Bay Trail with Iron Horse Trail, which roughly follows I-680 from Concord to the northeastern edge of Pleasanton. At its current northern end, the Iron Horse Trail begins east of I-680, just south of State Highway 24, near the northeastern corner of Buchanan Field Airport in Concord. North of this, there are plans to continue or connect the Iron Horse Trail to the Bay Trail northward to Suisun Bay.

The trailhead of the Contra Costa Canal Regional Trail is located west of I-680, just south of State Highway 4. It crosses and connects to the Iron Horse Trail south of State Highway 4. The proposed project would have no effect on these trail plans.

3. EVALUATION OF ENVIRONMENTAL EFFECTS

<u>Topics:</u>	<u>Potentially Significant Impact</u>	<u>Less Than Significant with Mitigation Incorporated</u>	<u>Less Than Significant Impact</u>	<u>No Impact</u>	<u>Not Applicable</u>
I. LAND USE AND PLANNING—					
Would the project:					
a) Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Existing Conditions

The project site is located within a large Central San-owned parcel. Therefore, it is adjoined by Central San-owned buffer land to the north, east, south and west. The project site and buffer land currently are leased to a rancher for cattle grazing. Central San-owned buffers around the project site vary in width, with none being less than approximately 270 feet in width. The *Contra Costa County 2005-2020 General Plan* designates the project site and adjoining buffer land north, east, west, and south as Public/Semi-Public (PS).

Farther away, there is a privately-owned RV Storage park to the west, single-family housing to the southwest and south, Pacheco Creek and Conco Concrete to the north, and Conco Road and more Central San-owned land east of Conco Road.

Existing Programs and Policies

Renewable Energy Self-Generation Bill Credit Transfer (RES-BCT) Program—Central San proposes to apply to PG&E under the Renewable Energy Self-Generation Bill Credit Transfer (RES-BCT) program, to develop a qualifying renewable energy system, export electrical energy to the grid, and receive generation credits to benefiting accounts designated by CCCSD. The proposed project is intended by design to meet eligibility criteria to qualify for RES-BCT. The proposed solar project will be under 5 MW, and will meet the definition of an “eligible renewable energy resource” pursuant to the California Renewables Portfolio Standard Program as is defined in Public Utilities Code Section 399.12 (c). The proposed project is sized so that annual generation would not exceed the annual electricity usage of under the designated generating and benefiting accounts.

Contra Costa County’s Ordinance No. 2020-07 (Solar Energy Facilities Ordinance)—The proposed project is intended by design to be consistent with development standards of Contra Costa County’s Ordinance No. 2020-07 (Solar Energy Facilities Ordinance). The purpose of the development standards adopted by the County for commercial solar energy projects is to avoid potential adverse environmental impacts of solar energy facilities on the land and neighborhoods in which they are developed.

At the time of its review for the Solar Energy Facilities Ordinance, Planning Staff determined that H-I Zoning District and PS land use designation were broadly enough defined to accommodate development of solar energy facilities without language changes to the Zoning Code. General Plan Policy 8-52 was modified by the County Board of Supervisors to read as follows:

- 8-52. Solar energy facilities may be established in areas designated Commercial, Light Industry, Heavy Industry, Agricultural Lands, and Public and Semi-Public on the Land Use Element Map, in accordance with the Solar Energy Facilities Ordinance.

Therefore, development of a solar project on the H-I zoned project site would be consistent with the County's General Plan Policy 8-52 and Zoning Code determination for its Solar Energy Facilities Ordinance.

Contra Costa County Airport Land Use Compatibility Plan

The proposed project also is intended by design to be consistent with the Contra Costa County Airport Land Use Compatibility Plan. Proposed solar panels have a general potential to create glare; therefore, the proposed project could be considered by the County's Airport Land Use Commission as a major development action. PV panels have a front surface made of glass that is heat strengthened and coated with an anti-reflective (AR) coating; even so, reflected sunlight has the potential to cause glare impact. Solar reflection may cause glint (a quick reflection) or glare (a longer reflection) to pilots near the line-of-sight of light reflected off the glass. In view of the orientation of the panels toward the southwest, much of the potential glare effect would be directed away from the flight paths and line-of-sight.

Manufacturers typically reduce reflectance of the glass by using low iron in high-transmissivity glass followed by treatment with an AR coating. In recent generations of PV panels, an extra layer of AR material on the outer surface of the glass is employed to further limit sunlight reflection. Reflectance can be brought down to 0.10, or below, with AR coatings. The reflectance of aged asphalt is approximately 0.11, aged concrete 0.25, aged plaster is 0.42, and matt aluminum 0.57. Increasing reflectance indicate higher proportions of incident light that is reflected.

Discussion

a) Would the project physically divide an established community?

The proposed project is separated from nearby residential and light industrial uses by 300 feet or more. The Land Use Element of the *Contra Costa County 2005-2020 General Plan* shows Public/Semi-Public (PS) use of the project site for the future and does not show any future areas of residential, commercial, or industrial use in connection with the project site. The proposed project, therefore, would not divide an established community. (No impact)

b) Would the project conflict with any applicable land use plan, policy or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

The proposed project is a solar energy project whose objective is to provide its proponent, Central San, with reliability and cost savings, relative to existing setting of purchasing its electrical power from the grid. The project site is designated Public/Semi-Public land within an H-I Zoning District, use of which is allowed for solar energy facilities. Conservation Element Policy 8-52 was modified by the County Board of Supervisors to read as follows:

8-52. Solar energy facilities may be established in areas designated Commercial, Light Industry, Heavy Industry, Agricultural Lands, and Public and Semi-Public on the Land Use Element Map, in accordance with the Solar Energy Facilities Ordinance.

The objective, physical presence, or operation of the proposed project on the project site would not conflict with a land use plan, policy, or regulation adopted to avoid or mitigate an environmental effect. (No impact)

<u>Topics:</u>	<u>Potentially Significant Impact</u>	<u>Less Than Significant with Mitigation Incorporated</u>	<u>Less Than Significant Impact</u>	<u>No Impact</u>	<u>Not Applicable</u>
II. AESTHETICS—Would the project:					
a) Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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 which are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Existing Conditions

Mt. Diablo, Suisun Bay, Walnut Creek and Pacheco Creek, adjoining marshes, are scenic resources that beneficially contribute to the area’s visual quality, despite the nearby industrial elements. These are defining features of the study area’s visual character. Suisun Bay and the baylands near the mouth of Walnut Creek, north of the project site, and Mt. Diablo, south of the project, site are key visual resources in the general area. A key part of the scenic quality of views from Highway 4, Highway 24, I-680 derives from Mt Diablo, which rises from the Walnut Creek plain to an elevation of 3,849 feet above mean seal level (msl).

Within the State Scenic Routes program, Highway 24 from the Alameda County line to the Highway 24/I-680 interchange and I-680 south of that interchange to the Alameda County line are existing designated California scenic routes. Highway 4 from Hercules to the interchange at Railroad Avenue and Bypass Highway 4 to the Delta are proposed for State designation California scenic routes.

Contra Costa County’s scenic routes and policies are set forth in its General Plan, Transportation and Circulation Element. The State Scenic Routes Plan is the backbone of the County’s Scenic Routes program. Additional highway segments and roads complete the countywide scenic routes plan. Among the connecting highways shown on the County’s Scenic Routes Plan map is I-680 north from Highway 4 and I-680 from Highway 4 south to Highway 24. Waterfront Road and Marina Vista Avenue, among others, are shown as connecting roads on the County’s Scenic Routes Plan map. These connecting roads provide views of the baylands and Suisun Bay.

Inclusion on the County’s Scenic Routes Plan map provides direction to County staff to review new projects in a manner that maintains the scenic qualities of these roads.

Visual resources that uniquely contribute to the benefit of the public are scenic resources under CEQA. A scenic vista is defined as a viewing point that provides expansive views of a highly valued landscape available to the general public.

Scenic resources are defined as those landscape patterns and features that are visually or aesthetically pleasing and that, therefore, contribute positively and define a distinct community or region. Landscape patterns and features may include trees, rock outcrops, and historic buildings. Scenic areas, open spaces,

rural landscapes, vistas, country roads, and other factors interact to produce a net visual benefit upon individuals or communities.

The project site includes a portion of a minor hill, which is located east of three major hills along the east side of I-680. The three major hills include Vine Hill and two lesser hills. From north to south, the three hills along I-680 have peak elevations of 286 feet msl (Vine Hill), 182 feet msl, and approximately 184 feet msl.

In contrast, the peak elevation on the project site is approximately 89 feet along a north-south oriented oblong hillcrest. This long hillcrest peaks south of the project site at only 97 feet msl (NAVD88). The project site generally slopes from the hillcrest down toward the north, northwest and west. This means that the project site generally is located on a north- and west-facing slope.

The perimeter of the project site has variable elevation, from approximately 25 feet msl on the north side up to 89 feet msl on the south side. The adjoining corral complex, which is located outside the project site's southwestern corner, is situated at 47-50 feet msl.

Available Views

Views from I-680: Views of the project site from the public-right-of-way of I-680 generally are not available due to intervening hills and a sound wall. The I-680 pavement elevation is only 5-62 feet msl,⁴ views of the project site from I-680 are blocked by the intervening hills varying from 182 to 286 at their crests and by a sound wall. The sound wall extends from the I-680 overcrossing of Blum Road approximately 1,000 lineal feet northward. On the flyover off-ramp from I-680 to Pacheco Boulevard views of the project also are not available due to intervening Vine Hill.

Views from State Highway 4: Views of the project site from the public-right-of-way of State Highway 4 between Walnut Creek and Grayson Creek generally are available. The extent of viewing is limited to part of the southern edge of the project site. Visibility of most of the project site would be shielded by the intervening hillcrest at 87-97 feet msl. Much of the project site slopes down toward the north and northeast, which is away from viewing vantage points along this segment State Highway 4. The viewing window would be brief, estimated at 30 seconds at a travel speed of 60 miles per hour, and views of the project site would not be within the field of view of drivers.

Views would not be available from other segments of State Highway 4. From such other segments of State Highway 4, views would be blocked by intervening structures and hills.

Views from Blum Road: Views of the southern edge of the project site could be available from the public-right-of-way of Blum Road. The segment of Blum Road northward from Austen Way to Explorer Way is at 43-49 feet msl. A viewer from vantage points along this commercial-use segment of Blum Road would be able to see only the southwestern corner and southern edge of the project site, which would include the access driveway and entry gate. Panels would be avoided on the peak of the knoll at elevation above 90 feet msl. The project site generally slopes down away from viewing vantage points along this segment Blum Road. The project's design goal is to avoid Blum Road residential area views of the solar panel to preserve the site's rural image.

Views would not be available from other segments of Blum Road. From such other segments of Blum Road, views would be blocked by intervening structures.

⁴ The elevation of I-680 travel lanes varies, being approximately 5 feet near Waterfront Road, 63 feet near Arthur Road, and 51 feet near the overcrossing over Blum Road.

Distant Views. Views from the southern end of Palms Drive (0.6 miles northwest of the project site) would be available. Palms Drive ends with a cul-de-sac. The PG&E tower, existing trees east of the project's eastern limit, and north-facing slope of the project site are apparent from the Palms Drive cul-de-sac. In view of the fixed orientation and tilt of the proposed solar panels toward the southwest, light and glare would not be reflected to any observer on the Palms Drive right-of-way. The project site would represent a small portion of this viewshed.

KEYS TO VISUAL QUALITY

Vividness Memorability of landscape elements as they combine in striking and distinctive visual patterns.

Intactness The integrity of the visual pattern, or degree to which a landscape is free from visual encroachments.

Unity The degree to which the landscape elements join to form a coherent, harmonious visual pattern.

Solar Energy Facility Development Standards

Solar energy facility development standards were promulgated and adopted by Contra Costa County for those projects subject to review and permitting by the County. Even though the proposed project is not subject to permit, Central San has designed the proposed project to minimize the visibility of its proposed project as consistent with the following development standards.

88-30.604 Setbacks: A proposed commercial solar energy facility has front, rear, and side yard setbacks that are consistent with the applicable zoning district setbacks.

88-30.606 Height: A proposed commercial solar energy facility may not exceed 25 feet in height relative to local grade or 4 feet above roof surface.

88-30.608 Visibility: A proposed commercial solar energy facility that will be visible from adjoining public right-of-way or from other public space must be designed and installed to minimize visual impacts.

88-30.610 Illumination: A proposed commercial solar energy facility must not include any signal lights, night lighting, or other illumination except as necessary for facility operations.

Discussion

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

The proposed project is not located along a State Scenic Highway designated by the State of California. Scenic connecting highways designated in Contra Costa County's Scenic Routes Plan include I-680 north from Highway 4. Additional connecting corridors designated in Contra Costa County's Scenic Routes Plan include Waterfront Road and Marina Vista Avenue. These scenic connecting highways and corridors were designated by the County to preserve the scenic vistas of baylands and Suisun Bay.

The proposed project would not in any direct or indirect way adversely affect existing scenic vistas or visual landscape elements of the baylands or Suisun Bay. The proposed project is not proposed in those settings. Therefore, scenic vistas of the baylands and Suisun Bay would remain unchanged by the proposed project, and the proposed project would not have any effect on a scenic vista as defined under CEQA. (No impact)

b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

The proposed project would not be located in a visually sensitive publically-accessible scenic setting. The project site would be visible from a limited number of public rights-of-way, including segments of State Highway 4, Blum Road, and Palms Drive. Views from State Highway 4 generally would be especially limited in duration and would not generally be available to drivers. The proposed project would not damage a hill form, trees or a rock outcrop, and also would not alter in any way existing views of the baylands and Suisun Bay. (Less than significant effect)

c) Substantially degrade the existing visual character or quality of the site and its surroundings or conflict with zoning or other applicable regulations governing scenic quality?

The proposed project would be located on a minor hill form, on the north-facing slope of that hill form. The crest of this hill is at approximately 97 feet msl and the highest elevation of the project site is approximately 87 feet msl, sloping down toward the north, northwest, and west. Nearby hills along the east side of I-680 in the vicinity of the project site include hills having peak elevations of 182 to 286 feet msl. These hills and the visible features on them would remain intact (*i.e.*, free of alterations or additions of new features called “encroachments”).

The project site is part of a larger 48-acre parcel APN 159-140-042-7 that is zoned as Heavy-Industrial (H-I) and is leased to a rancher for cattle grazing. The neighborhood adjoining this larger parcel includes 1-story residential development on urban land zoned residential (R-7) and for designated for single-family residential (SH) land use and an RV storage park on urban land zoned heavy industrial (H-I). None of the proposed structures or solar panels would exceed the height of nearby existing land uses.

The proposed project would be visible but not visually intrusive in character. It would be built on a sheltered north-facing slope. Added built features generally would be less than approximately 6 feet in height, and would be visible from a limited number of vantage points. Owing to their low profile and location on the north-facing slope of a relatively sheltered site—substantially below the elevations of the adjacent hills—the proposed solar panels and other built features (*e.g.*, inverters, switchgear, transformer) would not detract from the vividness or unity of existing visual patterns. Vividness, unity, and intactness of existing views would remain as they exist today because the proposed project would not alter the main hill forms, trees, or overall visual patterns. Therefore, the proposed project would not have a significant effect on vividness, unity, or intactness of existing views of the site and its surroundings. (Less than significant effect)

d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

The proposed project would have limited nighttime security lighting. To illuminate the entry gate and Knox box, two (2) shoebox type luminaires mounted on 15-foot poles would be installed at the project site entrance. These lights would be aimed downward and would have full cutoff “baffles” or “visors” to avoid potential spill light and glare. There would be no lighting within the solar array or around the perimeter fence. Glare from the solar panels would be minimized through the proposed siting and aiming toward the southwest. Also, the proposed panels having anti-reflective (AR) coatings. (Less than significant impact)

<u>Topics:</u>	<u>Potentially Significant Impact</u>	<u>Less Than Significant with Mitigation Incorporation</u>	<u>Less Than Significant Impact</u>	<u>No Impact</u>	<u>Not Applicable</u>
III. BIOLOGICAL RESOURCES—					
Would the project:					
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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 Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Existing Conditions

The discussion below is summarized from the Biological Assessment⁵ prepared by Michael Marangio and Special Status Species Assessment⁶ co-authored by Mr. Gary Deghi with Huffman-Broadway Group, Inc., (HBG), and Dr. Mark Jennings with Rana Resources. The Biological Assessment and Special Status Species Assessment reports are supporting technical documents, which are not reproduced herein.

The biological assessment and subsequent supplemental special-status species assessment were performed to assess existing conditions, habitat and biological resources on a contiguous 19-acre area within the Lagiss parcel. This 19-acre area contains the project site. Pedestrian surveys were performed on January 21, 2020, and again on May 15, 2020.

Vegetation—In general, the project site has a cover of non-native grasslands consisting of typical grass species for grazing cattle and horses. The Lagiss parcel has been planted with introduced annual grasses to provide forage for grazing cattle. A couple other plants were observed in January 2020, including scattered invasive stinkweed (*Dittrichia graveolens*) and storksbill (*Erodium* sp.). To the east of the project site, but not on the project site, other observed vegetation includes California Buckeye (*Aesculus*

⁵ Marangio, Michael, 2020. *Biological Assessment for Future Solar Panel Array in District-owned Area 6*, prepared for Central Contra Costa Sanitary District, April 30, 2020, (25 pp.).

⁶ Huffman-Broadway Group, Inc., 2020. *Special Status Species Assessment for Central Contra Costa Sanitary District's [Proposed] Solar Array, Contra Costa County, California*, prepared M. Papineau, June 4, 2020, (10 pp.).

californica) and oaks (*Quercus* spp.), located in a band growing on an east-facing slope upslope from Conco Road.

Wildlife—The project site has suitable habitat for a number of wildlife species such as Coyote (*Canis latrans*) and Meadowlark (*Sturnella neglecta*). Wildlife species that were observed included flocks of Brewers Blackbird (*Euphagus cyanocephalus*), Red-shouldered Hawk (*Buteo jamaicensis*), American Crow (*Corvus brachyrhynchos*), California Ground Squirrel (*Otospermophilus beecheyi*), and Black-tailed Hare (*Lepus californica*).

Species presence is influenced by other adjoining or nearby habitat that is located off the project site. The adjoining band of mature trees provides habitat nesting, roosting, or perching. During the January 2020 field survey, bird species including Bushtit (*Psaltiparus minimus*) were observed in the band of Buckeye and Oak trees.

In the nearby ponded area located northwest and north of the project site, still within the Lagiss parcel, the biologist in January 2020 observed Canada Geese (*Branta canadensis*), several Great Egrets (*Casmerodius albus*), Killdeer (*Charadrius vociferus*), and Pacific treefrog (*Pseudacris regilla*). Palustrine wetlands, which may include flowing waters over part of the year on an intermittent basis, are mapped north of the project site.⁷ Surface water is present for short periods during the growing season. By May 2020, much of the ponded area had dried up

Farther north, across the BNSF railroad tracks is Pacheco Slough. Pacheco Slough is located off the Lagiss parcel at distance from the project site. Pedestrian survey of Pacheco Slough of Pacheco Creek was not within the scope of the initial Biological Assessment (Marangio, 2020).

Wetlands and Other Waters of the U.S.—The project site has no wetlands or other waters of the U.S., termed generally as “jurisdictional waters.” Two nearby wetlands include: 0.29 acre wetland partly on the north end of the Lagiss parcel and 1.96 acres of freshwater emergent wetland located south of Austen Way (extended).

During the May 2020 field survey conducted by Mr. Gary Deghi (HBG) with Dr. Mark Jennings, much of the seasonal pond previously observed in January 2020 had dried up. The ground in this area, which is located generally on the Lagiss parcel north of the project site, was observed to contain both brackish water plants and persistent emergent, although the source of seasonal ponding appears to be stormwater runoff.

The U.S. Fish and Wildlife Service (USFWS) Wetlands Mapper tool for the National Wetlands Inventory shows this area located adjacent to and north of the project site as “R4SBA,” where the “R” is the system notation for riverine wetlands. The system “R” means riverine, the subsystem “4” means intermittent, and the class “SB” means StreamBed. The water regime “A” means temporary flooded. Wetlands Mapper shows a channel-shaped wetland of 0.29 acre but seems to miss 1) the persistent emergent vegetation in part and nearby trees and 2) absence of a channel. Riverine systems are characterized by absence of such vegetation. Part of the observed wetland could be better classified as Palustrine. Palustrine wetlands may include flowing waters over part of the year on an intermittent basis. Surface water is present for short periods, but the water table lies well below the ground surface for most of the year.

According to USFWS, the palustrine ecosystem⁸ includes all non-tidal wetlands that are dominated by trees, shrubs, persistent emergents, emergent mosses or lichens, plus all such wetlands that occur in tidal

⁷ U.S. Fish and Wildlife Service (USFWS) Wetlands Mapper, a mapping tool for the National Wetlands Inventory. <https://www.fws.gov/wetlands/data/mapper.html>

⁸ USFWS, 2021. Classification of Wetlands and Deepwater Habitats of the United States: Palustrine System <https://www.fws.gov/wetlands/documents/classwet/palustri.htm>

areas where salinity due to ocean-derived salts is below 0.5 percent. Palustrine wetlands include freshwater wetlands and inland saline or alkaline wetlands protected from tidal influence by intervening uplands. The palustrine ecosystem also includes wetlands lacking the above-listed vegetation, but with all of the following four characteristics:

- 1) small area (less than 20 acres);
- 2) absence of active wave-formed or bedrock shoreline features;
- 3) shallow water depth (less than 6.5 feet at low water); and,
- 4) low water salinity due to ocean-derived salts (less than 0.5 percent).

HBG's field review on May 15, 2020, indicates that vegetation in this off-site wetland area on the Lagiss parcel includes several patches of pickleweed (*Salicornia subterminalis*), brass buttons (*Cotula coronopifolia*), spear saltbush (*Atriplex patula*) and alkali heath (*Frankenia salina*). These plant species normally occur in brackish marshes with high salinity. Portions of the wetland support persistent emergents such as reeds, yet soils in other shallower portions subject to seasonal ponding have such high salt content that they still support pickleweed. Hence, there is an apparent contradiction.

HBG and Dr. Jennings examined the off-site area, historical topographic maps, and aerial photographic images. Based upon this information, Dr. Jennings interprets that the current condition of the wetland next to the project site was altered by historic filling for the Burlington Northern Santa Fe Railroad (BNSF) bed. Before the BNSF railroad bed was filled and elevated, the low-lying area on the northern end of the Lagiss parcel was part of a larger brackish marsh connected to Pacheco Slough. The area was subject to annual flooding by the waters of Pacheco Creek and Suisun Bay.

The existing BNSF (formerly, ATSF) railroad was not shown on an old USGS topographic map in 1898 (Vine Hill 7.5-minute series) but was shown in 1901 (Carquinez 15-minutes series). After the railroad track was placed *circa* 1899-1900, subsequent improvements to the ATSF railroad were made over time. By 1940 (Vine Hill 7.5-minute series), the rail alignment shown north of the Lagiss parcel was straighter, which is a sign of track realignment through the area. Filling to elevate the track and ballast created a barrier that cut off Pacheco Slough from in the remainder of the floodplain south of the tracks. Extensive fill was imported to elevate the ATSF railroad bed and ballast to approximately 10 feet above msl. This disconnected the former tidal marsh and left a palustrine wetland, with patches of remnant brackish marsh vegetation still evident today (Jennings, 2020).

The importance of this history is that the historical condition was brackish marsh unsuitable for California tiger salamander. While freshwater could provide suitable habitat for the protected California tiger salamander, brackish water is incompatible with its lifecycle (Jennings, 2020).

Special Status Species—Michael Marangio conducted a search of California Natural Diversity Data Base (CNDDDB), California Native Plant Society (CNPS) list, and USFWS records for potential occurrence for special status animals and plants and natural communities within 5 miles of the project site. The CNDDDB indicates a total of 27 special-status animal species and 25 special-status plant species, recorded as present in the region surrounding the project site. The USFWS list for the Vine Hill and Walnut Creek 7.5-minute quadrangles indicates thirteen (13) special-status animal species and one (1) special-status plant species, recorded as present in the quadrangles. The National Marine Fisheries Service (NMFS) list was not researched, because there is no aquatic habitat on the project site.

Plants (see Figure 3)

Special-status plant species or natural communities are not known to occur on the project site, but special-status plant species do occur in the vicinity. The project site does not represent high quality habitat for special-status plants. Special status plant species known to occur generally in the vicinity require habitat conditions that are not found at the project site.

Seven (7) native special status grassland plants including Bent-flowered fiddleneck, Big tarplant, Congdon's tarplant, Fragrant Fritillary, Contra Costa Goldfields, Mt. Diablo fairy lantern, and saline clover historically were found in grasslands in the region. These would not be expected to be present on the project site today, in view of the degree of ground disturbance caused by grazing. Other plants including Bolander's water hemlock, Mason's lilaecopsis, Delta mudwort, Slender-leaved pondweed, and Suisun marsh aster are associated with aquatic habitats that are not present on the project site.

Birds (see Figure 4)

Local birds that are designated as special-status species include Tricolored Blackbird, Western Burrowing Owl, Saltmarsh common yellowthroat, and Song Sparrow. CNDDDB data indicate that Western burrowing owls have been observed 1 mile south, 1 mile north, and 2 miles west of the project site. The project site appears to be of high value for nesting western burrowing owls as evidenced by CNDDDB records, the presence of open grasslands, and observations of numerous ground squirrel burrows on the project site.

Burrowing owl (*Athene cunicularia*)

This small owl is a state Species of Special Concern and is currently listed by the USFWS as a National Bird of Conservation Concern. Like other raptors and birds in general, the western burrowing owl is protected under California Fish and Game Code 3503.5 and the federal Migratory Bird Treaty Act.

Burrowing owls (BUOW) typically are observed on the ground, at or near a burrow, or on elevated areas such as dirt mounds or fence posts that are used as perches. They use burrows that are dug by California ground squirrels (*Otospermophilus beecheyi*) for shelter and nesting. Nesting starts in early April and continues for 4 months or through July. Numerous ground squirrel burrows were observed scattered over some of the project site and additional surveyed area on January 31, 2020, and May 15, 2020. The May 2020 survey was during nesting season. However, evidence of nesting owls was not observed during the May 15, 2020.

CNDDDB data indicate that Western burrowing owls have been observed 1 mile south, 1 mile north, and 2 miles west of the project site. The Designated Area appears to be of high value for nesting western burrowing owls as evidenced by CNDDDB records, the presence of open grasslands, and observations of numerous potential owl nesting sites in ground squirrel burrows.

California ground squirrel burrows are especially concentrated on the southwest-facing slope of the Lagiss parcel. These provide suitable nesting and wintering sites for the burrowing owls. The non-native grasslands throughout much of the area constitute suitable foraging habitats for the species. Neither field reconnaissance found burrowing owl to be present on the project site or adjoining area; therefore, it is not likely that burrowing owl is currently present. However, burrowing owls could take up residence at any time.

California Ridgeway's Rail (*Rallus longirostris obsoletus*)

California Ridgeway's Rail forage in marsh vegetation in and along creeks and mudflat edges. The project site does not contain suitable marsh habitat for this species.

Black Rail (*Laterallis jamaicensis*)

Black Rail forage in marsh vegetation in and along creeks and mudflat edges. The project site does not contain suitable marsh habitat for this species.

Tricolored blackbird (*Agelaius tricolor*)

Tricolored blackbirds breed and nest in reeds in freshwater marshes. The project site does not contain suitable habitat.

Song Sparrow (*Melospiza melodia maxillaris*)

Its habitat includes cattails, tules and other sedges, generally near the edges of sloughs. The project site does not contain suitable habitat.

Saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*)

Saltmarsh common yellowthroat nest in willows and need habitat located at the margins of marshes. The project site does not contain suitable habitat.

Bird Nesting

Raptors and other native North American birds that are protected under the Federal Migratory Bird Treaty Act (16U.S.C 703-7110)⁹ may nest on or adjacent to the project site. Disturbing nests during the nesting season potentially could result in abandonment and mortality of young.

Reptiles & Amphibians (see [Figure 5](#))**California tiger salamander (*Ambystoma californiense*)**

The California tiger salamander (CTS) is listed as federal and state threatened. It is an amphibian that spends most of its time underground in burrows of ground squirrels and other small mammals. Adults are nocturnal, emerging from their underground retreats for only a few weeks each year. Following heavy winter rains (normally December-February) adults migrate to mate and lay their eggs in seasonal freshwater wetlands, slow moving streams, ponds (including stock ponds), and ephemeral vernal pools.

Dry land farming, which dates back to the 1890s on the Lagiss parcel, urban development, and construction of State Highway 4, preclude any potential CTS colonization movements in the vicinity of the project site. The final ruling in the Federal Register to list the CTS as a federally listed threatened species states as follows:

“...the California tiger salamander generally does not occur west of Interstate Highway 680, south of Interstate Highway 580, or north of State Highway 4 in Contra Costa or Alameda Counties.”

Western pond turtle (*Actinemys marmorata*)

Western pond turtle (WPT) is designated as both a federal and state species of special concern. Western Pond Turtle is a California native species of turtle. It is generally associated with fresh and brackish water aquatic habitats including rivers, ponds, and lakes, but it will leave water to search for food, locate water, or lay their eggs in the spring. Females create nests in sunny grassy areas adjacent to streams or ponds. In the vicinity, WPT are recorded as being sited several hundred feet north of the project site in the aquatic habitat of Pacheco Creek.

WPT is known to use upland habitats for estivation and nesting in areas of heavy duff,¹⁰ during the warm summer months and during wintertime when streams and rivers flood. Suitable upland habitat for estivation was not observed on the project site or adjoining land (Jennings, 2020).

WPT likely are present north of the BNSF railroad, in Pacheco Creek, where they would nest along the streambanks, but not on the project site. The BNSF railroad is a manmade barrier to

⁹ No matter how common or how rare, all native North American birds are protected under the Migratory Bird Treaty Act.

¹⁰ Duff is a decomposing organic material layer on top of mineral soil, which is decomposed to the point that there is no identifiable whole organic material (e.g., pine needles, grass, leaves, twigs, etc).

movements of WPTs, which would have to climb a 10-foot tall berm and cross over two rails to reach the south side (Jennings, 2020).

Alameda Whipsnake (*Masticophis lateralis*)

A number of observations have been noted on the CNDDDB about 8.8 miles to the southeast (CNDDDB 2020). Extensive grasslands and absence of shrub habitat on the project site and in the surrounding area are not suitable for the Alameda Whipsnake.

California red-legged Frog (*Rana draytonii*)

The California red-legged frog (CRLF) is listed by the USFWS as Threatened and is classified by the CDFW as State Threatened and Federally Endangered. It breeds primarily in ponds, but also breeds in slow-moving streams, or in deep pools in intermittent streams. None of the required breeding habitat is found on the project site. Observations of CRLF are not noted on the CNDDDB to a distance of 5 miles from the project site.

Mammals (see [Figure 6](#))

Special status mammalian species are not listed as being found near the project site.

Insects (see [Figure 7](#))

Special status insect species are not listed as being found near the project site.

Discussion

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.

A Special Status Species Assessment was conducted by a species expert for burrowing owl (BUOW), California tiger salamander (CTS), and Western pond turtle (WPT). For the two species having a remote possibility of occurring on the project site, this assessment determined that habitat within the project site is unsuitable for CTS and WPT. For BUOW, species presence was not apparent at the times of surveys in January and May 2020, but observed habitat is suitable and abundant especially on the southwest-facing slope of the Lagiss parcel.

The project site appears to be of high value for nesting burrowing owls as evidenced by CNDDDB records, the presence of open grasslands, and observations of numerous potential owl nesting sites in ground squirrel burrows. Burrowing owl can occupy a burrow for nesting or wintering. This means that burrowing owl could take up residence any time of the year. The best way to ascertain potential presence or absence of burrowing owl and the need for avoidance or mitigation, therefore, is by pre-construction survey, immediately before construction.

Mitigation measure III-1

BUOW avoidance surveys (also termed “pre-construction surveys”) shall be conducted no less than two (2) weeks prior to any ground disturbance. Multiple surveys may be necessary, based upon the schedule and work progress. BUOW avoidance surveys are recommended for ground mount installation, perimeter service road and access driveway construction, utility trench excavation, and equipment pads.

If installation of ground mounts for arrays are staggered over an elapsed time of one month or longer, it is recommended that separate surveys be performed for each array. Avoidance surveys shall be conducted by a qualified biologist following Burrowing Owl Survey Protocol methods. Based upon the pre-construction survey findings, if burrowing owls are found on or next to the project site, one of the following additional mitigation measures shall be implemented:

Mitigation measure III-2A

If burrowing owls are found to occupy an area of construction or an area proximate to the construction during September 1 to January 31 (non-breeding season):

In this event, occupied burrows and additional buffer zone shall be fenced per the CDFW Staff Report on Burrowing Owl Mitigation. The fenced area shall not be entered or disturbed. Work can proceed outside the fenced area.

If avoidance is not practical, passive relocation may be implemented in accordance with a Burrowing Owl Exclusion Plan¹¹ submitted to and approved by CDFW.

Mitigation measure III-2B

If burrowing owls are found during February 1 to August 31 (breeding season):

This event is not anticipated in view of the proposed project construction schedule, which is September 1 through January 31. However, necessary actions under this contingency are described below, in case an adjustment to the proposed construction schedule becomes necessary.

If burrowing owls are found, ground-disturbing activities will follow the Burrowing Owl Consortium's burrowing owl avoidance guidance.¹² Occupied burrows and additional buffer zone will be avoided, without disturbance during the entire nesting season.

Residual effect: Less than significant with mitigation measures III-1 and III-2A of 2B incorporated.

Mitigation monitoring and reporting

Verify compliance with required mitigation measures III-1, III-2A or III-2B and ensure their implementation by the System Operator. Conduct follow-up monitoring, and implement mid-course corrections, if necessary, to protect burrowing owls. Refer to CEQA Guidelines Section 15097 and the CEQA Guidelines for additional guidance on mitigation, monitoring and reporting. (Less than significant with mitigation incorporated)

¹¹ See CDFW's *Staff Report on Burrowing Owl Mitigation*, Appendix E, March 7, 2012.
<https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=83843&inline>

¹² See Burrowing Owl Consortium's *Burrowing Owl Survey Protocol and Mitigation Guidelines*, April 1993, pp. 7-9.
<https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=83842&inline>

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

Wetlands and other waters of the U.S. are regulated by state and federal agencies and would be considered sensitive natural communities as defined by CEQA. Such wetlands and other waters of the U.S. are not present on the project site. With implementation of the recommended mitigation measures, erosion and potential sedimentation of the wetland could be avoided. (Less than significant impact with mitigation incorporated)

(c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

The proposed project would erect solar PV panels and related equipment on an 8-acre uplands site without wetlands or vernal pools. Limited aggregate materials would be imported for construction of a permeable service road and access driveway from Blum Road. Drainage runoff volume and rate would remain nearly the same as existing. Potential impact to wetlands through direct removal, filling, or hydrological interruption, therefore, would not result from implementation of the proposed project. (No impact)

(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.

The proposed project would be located on the Lagiss parcel, whose existing use is for cattle grazing. The proposed project would add solar PV panels and equipment, a perimeter service road, and perimeter security fence on 8.2 acres within the 48-acre Lagiss parcel. This would not interfere with the movement of significant native and resident wildlife populations. Native wildlife nursery sites were not found to be present on the project site in January and May 2020, so none would be impacted by the project. (No impact)

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

There is an existing stand of native trees including California buckeye and oaks along the eastern edge of the Lagiss parcel. The proposed project adjoins this off-site stand of tree; however, the proposed project does not propose and would not otherwise cause removal of the trees or result in loss of trees due to compaction over the root zone. (No Impact)

(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 nearest adopted Habitat Conservation Plan/Natural Community Conservation Plan (HCP/NCCP) is the East Contra Costa County HCP/NCCP. The habitat inventory and conservation area within the influence of this plan is at substantial distance east of the project site. The inventory area does not continue west of Highway 242.

The Lower Walnut Creek Restoration Project has received final approval by BCDC. The proposed project would not interfere with conservation goals of the LWC Restoration Project and would not physically interfere with construction of that restoration project. (No impact)

<u>Topics:</u>	<u>Potentially Significant Impact</u>	<u>Less Than Significant with Mitigation Incorporated</u>	<u>Less Than Significant Impact</u>	<u>No Impact</u>	<u>Not Applicable</u>
IV. CULTURAL RESOURCES—					
Would the project:					
a) Cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines §15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Disturb any human remains, including those interred outside of dedicated cemeteries?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Overview

The term “cultural resources” is broad, including all of historic, pre-historic, and paleontological resources, and also burial sites. Below is a brief summary of each term and the resources encompassed by each:

Historic Resources: In California, historic resources typically are associated with the Spanish, Mexican, and American periods of California’s history and are generally less than 200 years old. Historic resources include sites, buildings, and other evidence associated with the recent past. To be considered a "historic resource," a place, property, or object must have three essential attributes: sufficient age, a relatively high degree of integrity, and “historical significance,” which means usually that it adds to our understanding or appreciation of an event, period, or style. For a building, bridge, or other structure, a landscape feature, or a place or district, integrity means that the structure, feature, place or district has been relatively unchanged.

Archaeological Resources: Archaeological resources include pre-historic sites of human activities and evidence (*e.g.*, midden, shards, tools, shells, bone fragments) left from those activities. Archaeological resources generally are associated with indigenous civilizations.

Paleontological Resources: Paleontology resources include plant and animal fossils.

Burial Sites: Burial sites are formal or informal locations where human remains, usually associated with indigenous cultures, are interred.

Existing Conditions

The project site is located near the historic margin between upland and tidal marsh of the San Francisco Bay. Much of the land from the BNSF (formerly, ATSF) railroad tracks north to Suisun Bay has been filled or otherwise disturbed for uses such as Acme Landfill and former IT Corporation liquid waste evaporation ponds.

A portion of the parcel APN 159-140-042-7, on which the project site is located, has been investigated previously in the context of an environmental impact report prepared for the proposed Santa Fe Pacific Partners, L.P. (SFPP), Petroleum Pipeline Replacement Project. SFPP, L.P., is an operating partner for Kinder Morgan Energy Partners, L.P. SFPP submitted an application for certification for the SFPP Petroleum Pipeline Replacement Project—Concord Station in Contra Costa County to Sacramento Station in Yolo County—to the California State Lands Commission (CSLC).¹³ The existing pipeline, which is located within Union Pacific Railroad (UPRR) right-of-way for most of its 60 miles, carries refined

¹³ California State Lands Commission EIR No. 711, State Clearinghouse No. 2002022010 (2003).

petroleum products (*i.e.*, gasoline, diesel fuel, and jet fuel) and has an existing capacity of 152,000 barrels per day. The existing 14-inch diameter pipeline would be replaced with a proposed 20-inch diameter pipeline of approximately 69 miles in length to increase capacity to 200,000 barrels per day. SFPP proposed to construct and operate a new 20-inch diameter pipeline from the existing SFPP Concord Station in Contra Costa County to the existing SFPP Sacramento Station in the City of West Sacramento, Yolo County, California.

An historic site was identified on Central San-owned land in APN 159-140-042-7, in the general vicinity of the existing SFPP pipeline. Therefore, Central San caused to be performed additional records search and survey level investigation of the project site and adjoining Central San-owned land. A historical scatter was mapped by Holman & Associates in the general area of the historical scatter previously mapped by WSA. These historical scatter sites have been consolidated under one identifying trinomial in the California historical resources information system (CHRIS). The project site was defined in a way that avoided identified historical resource scatters.

Paleontological resources include fossil remains, as well as fossil localities and formations that have produced fossil material. Such locations and specimens are important nonrenewable resources. Paleontology is the study of fossils (including, for example, plant fossils, vertebrate and invertebrate animal fossils, fossil tracks, pollens and spores) and interpretation of the ecologies of the past, evolution and change based on fossil records. There are no records of known paleontological resources on the project site or its vicinity.

Relevant and Applicable Regulations

California Environmental Quality Act (CEQA): Section 15064.5 of the California Environmental Quality Act (CEQA) Guidelines states that a project may have a significant impact on the environment if it would change the significance of a historical resource. The CEQA Guidelines define four ways that a property can qualify as a significant historical resource:

- The resource is listed in or determined eligible for listing in the California Register of Historical Resources, as determined by the State Historical Resources Commission.
- The resource is included in a local register of historical resources, as defined in Section 5020.1(k) of the Public Resources Code, or is identified as significant in a historical resource survey meeting the requirements of Section 5024.1(g) of the Public Resources Code, unless the preponderance of evidence demonstrates that it is not historically or culturally significant.
- The lead agency determines the resource to be significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California, as supported by substantial evidence in light of the whole record.
- The lead agency determines that the resource may be a historical resource as defined in Public Resources Code Sections 5020.1(j) or 5024.1 (CEQA Guidelines Section 15064.5) which means, in part, that it may be eligible for the California Register.

In addition, Public Resources Code Section 21083.2 and Section 15126.4 of the CEQA Guidelines specify that a lead agency is responsible for determining whether a project may have a significant effect on archaeological resources. If it can be demonstrated that a project will damage a unique archaeological resource, the lead agency may require reasonable efforts for the resources to be preserved in place or left in an undisturbed state. Preservation in place is the preferred approach to mitigation. The Public Resources Code also details required mitigation if unique archaeological resources are not preserved in place.

Section 15064.5 of the CEQA Guidelines specifies procedures to be used in the event of an unexpected discovery of Native American human remains on non-federal land. These codes and guidelines protect such remains from disturbance, vandalism, and inadvertent destruction. They establish procedures to be implemented if Native American skeletal remains are discovered during construction of a project. In such an event of discovery of Native American remains during construction, the Native American Heritage Commission (NAHC) has the authority to identify the most likely descendant.

California Health and Safety Code: Under California Health and Safety Code, Section 7050.5-7055, if human remains are discovered in any location other than a cemetery, excavation or disturbance of the site must be halted for examination by the County coroner. Disturbance is halted until the County coroner, of the county in which the human remains are discovered, has determined that the remains are not subject to the provisions of the Government Code Section 27491.¹⁴ The County coroner conveys recommendations concerning the treatment and disposition of the human remains to the person responsible for the excavation, or to his or her authorized representative, in the manner provided in Section 5097.98 of the Public Resources Code.

The coroner is charged with make his/her recommendations within two working days from the time the person responsible for the excavation, or his or her authorized representative, notified the coroner of the discovery of the human remains. If the coroner determines that the remains are not subject to his or her authority and if the coroner recognizes the human remains to be those of a Native American, or has reason to believe that they are those of a Native American, he/she shall contact the NAHC by telephone within 24 hours.

California Public Resources Code

In the context of discovery of Native American human remains, Section 5097.98 addresses requirements and methods for notification of descendants and disposition of the remains and associated grave goods.

- (a) Whenever the NAHC (the “Commission”) receives notification of a potential discovery of Native American human remains from a County coroner pursuant to subdivision (c) of Section 7050.5 of the Health and Safety Code, it shall immediately notify those persons it believes to be most likely descended from the deceased Native American. The descendants may, with the permission of the owner of the land, or his or her authorized representative, inspect the site of the discovery may recommend to the owner or the person responsible for the excavation work means for treating or disposing, with appropriate dignity, the human remains and any associated grave goods. The descendants shall complete their inspection and make their recommendation within 48 hours of their notification by the Commission. The recommendation may include the scientific removal and nondestructive analysis of human remains and items associated with Native American burials.
- (b) The landowner shall ensure that the immediate vicinity of the Native American remains is not damaged or disturbed by further development activity pending required conference. The landowner is responsible for conferring with the most likely descendants regarding their recommendations, taking into account the possibility of multiple human remains. The landowner shall discuss and confer with the descendants all reasonable options regarding the descendants’ preferences for treatment.

- (1) The descendants’ preferences for treatment may include the following:

¹⁴ Under California State Government Code 27491, the Medical Examiner-Coroner's Office shall investigate and determine the circumstances, manner and cause of death for all violent, sudden, unattended or unusual deaths. The Medical Examiner shall have the discretion to determine the extent and type of the examination.

- (A) The nondestructive removal and analysis of human remains and items associated with Native American human remains.
 - (B) Preservation of Native American human remains and associated items in place.
 - (C) Relinquishment of Native American human remains and associated items to the descendants for treatment.
 - (D) Other culturally appropriate treatment.
- (2) The parties may also mutually agree to extend discussions, taking into account the possibility that additional or multiple Native American human remains are located in the project area providing a basis for additional treatment measures.

Assembly Bill 52: Assembly Bill 52 (AB 52), effective July 1, 2015, formally established a new requirement under CEQA requiring lead agencies to offer Native American tribes with an interest in tribal cultural resources located within their respective jurisdictions the opportunity to consult on CEQA documents and potential impacts to tribal cultural resources.

Discussion

a) Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines §15064.5?

Recorded historical resource sites are located in the vicinity of the project site; however, a recorded historical resource is not located on the project site as defined. In the long-term, proposed security fencing will serve to discourage disturbance of off-site resources by project activities.

Mitigation measure IV-3

- To avoid potential inadvertent disturbance of off-site historical resources during construction, off-site vehicle and pedestrian travel will be prohibited except on the access road. This can be accomplished with a combination of worker notification/orientation during safety meetings, signage, and installation of either temporary fencing or the permanent security fence early in the schedule. Construction staging is prohibited in the protected resource zone.

Residual effect: Less than significant with mitigation incorporated.

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

Recorded pre-historic archaeological resource sites are not located on the project site or in the vicinity of the project site. Construction of the proposed solar project would involve shallow earthwork, including hole augering or screw augering for ground-mount or single pole steel supports, in soil that has been disturbed in the historic period by ranching uses and recently by cattle grazing. In view of the disturbed quality of the shallow soil and nature of proposed earthwork, change in the significance of potential unrecorded archaeological resources is not a potential effect of the project. (No impact)

c) Disturb any human remains, including those interred outside of formal cemeteries?

Contra Costa County routinely addresses the contingency of potential discovery of unrecorded buried human remains on all construction or grading sites, in accordance with requirements of California Health and Safety Code, Section 7050.5-7055, and Public Resources Code, Section 5097.98.

The following standard mitigation measure would be included as a required condition in plans and construction documents and would be required of the System Operator and contractor engaged to construct the project.

Mitigation Measure IV-4

- In the event of discovery of suspected archaeological resources or buried human remains, construction will be halted. The System Operator and contractor would consult with the County coroner, identified descendants (if any are identified by NAHC), and/or a qualified archaeologist, depending on the nature of the discovery.

Residual effect: Less than significant with mitigation incorporated.

<i>Topics:</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>	<i>Not Applicable</i>
V. TRIBAL CULTURAL RESOURCES—					
Would the project:					
a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:					
(i) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code Section 5020.1(k)?r	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
(ii) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Existing Conditions

A cultural resources study was performed, which included a records search and pedestrian survey for the project area and additional land. Records search performed by Holman & Associates (H&A) during April-July 2020 identified a historical resource scatter associated with the historic period, which is located outside the project site. This resource scatter is associated with pre-1900 household and ranching uses, which are not Native American cultural resources. The original scatter was entered into the State records by William Self Associates (WSA) at the time of environmental study for the SFPP Pipeline Replacement Project.

A pedestrian survey conducted by H&A covered the project site and additional land adjoining the project site. H&A’s year-2020 pedestrian survey encountered additional areas of off-site historical resource scatters, which likely are associated with the same historic-period cultural resources as identified by WSA. The additional historical resource scatters are not Native American. The additional resource scatters found by H&A have been consolidated with the original WSA resource scatter in the California Historical

Resources Information System database maintained by the Northwest Information Center (NWIC) of Sonoma State University.¹⁵

H&A's year-2020 pedestrian survey did not encounter archaeological deposits or artifacts and also did not encounter evidence of Native American cultural resources. Historical resource scatters are related to pre-1900 household and ranching uses and are located outside the project site. Cultural resources of any kind were not encountered by H&A on the project site itself.

To ascertain presence or absence of Native American concerns, Native American Consultation also was performed. H&A contacted the Native American Heritage Commission (NAHC) and requested record search of the Sacred Lands File (SLF). NAHC responded that the results of record search were negative, meaning specific Native American sites listed in the SLF were not found to be located on or near the project site.

Since absence of a listing on the SLF is not definitive for absence of cultural sites or other cultural resources of concern to the Native American tribes, a list of Native American tribes who may have knowledge of cultural resources in the area of the project site was provided by NAHC. These listed tribes included the following:

- Amah Mutsun Tribal Band of Mission San Juan Bautista (Costanoan)
- Guidiville Indian Rancheria (Pomo)
- Indian Canyon Mutsun Band of Costanoan (Costanoan)
- Muwekma Ohlone Indian Tribe of the SF Bay Area (Ohlone)
- North Valley Yokuts Tribe (Costanoan, Northern Valley Yokuts)
- The Ohlone Indian Tribe (Bay Miwok, Ohlone, Patwin, Plains Miwok, Miwok)
- Wilton Rancheria (Miwok)
- The Confederated Villages of Lisjan (Bay Miwok, Ohlone, Delta Yokut)

The NAHC reviewed its SLF for any evidence of cultural resources or traditional properties of potential concern that might be known on lands within or adjacent to the project site. NAHC responded that its review was negative and provided a contact list of ten Native American individuals/organizations who may know of cultural resources in this area or have specific concerns about the project. Each of these contacts was sent an attachment via email that included a letter describing the proposed project, a map of the area, and request for response with any concerns. Mr. Andrew Galvan responded that he would like to be briefed on the records search and survey results. On June 8, 2020, an email was sent to Mr. Galvan with a summary stating that neither the records search nor field survey had identified any Native American resources. He responded that he has no comments.

On the basis of these additional inquiries, Native American cultural resources including cultural sites or concerns about the project site were not identified by the tribal representatives.

Discussion

a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074?

- (i) A tribal cultural resource on the project site is not listed or eligible for listing in the California Register of Historical Resources, and also is not listed in a local register of historical resources. Native American consultation did not identify a cultural resource or site of concern to tribal representatives listed by NAHC. (No impact)

¹⁵ NWIC is one of nine (9) information centers affiliated with the State of California Office of Historic Preservation (OHP) in Sacramento, California.

- (ii) Central San staff considered the cultural resource assessment prepared by H&A and, based upon staff's understanding of that report, do not have reason to expect that the off-site historical resource scatter is a resource significant to a California Native American tribe. (No impact)

<u>Topics:</u>	<u>Potentially Significant Impact</u>	<u>Less Than Significant with Mitigation Incorporated</u>	<u>Less Than Significant Impact</u>	<u>No Impact</u>	<u>Not Applicable</u>
VI. TRANSPORTATION—Would the project:					
a) Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Would the project conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Result in inadequate emergency access?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Existing Conditions

SB 743 and Changes to CEQA Guidelines: In 2013, the California legislature enacted SB 743, which required, among other things, that the Governor's Office of Planning and Research (OPR) adopt new guidelines for assessing transportation impacts and that when enacted, traffic congestion would no longer be considered in assessing a significant impact under CEQA. The purpose was to better align transportation impacts analysis under CEQA with the state's goals of reducing greenhouse gas emissions and traffic-related air pollution and promoting multimodal transportation networks and a diversity of land uses.

SB 743 authorized OPR to decide whether the new vehicle miles traveled (VMT) -based approach would apply only to "transit priority areas" or to all areas in the state. A transit priority area is an area within one-half mile of a major transit stop.¹⁶ OPR opted to require the new VMT-based analysis in all areas of California, not just in transit priority areas. The effective date when VMT-based assessment must begin in July 1, 2020.

The 2019 revisions to CEQA Guidelines, §15072(e) and §15086(a)(5), require the lead agency to "consult with public transit agencies with facilities within one-half mile of the proposed project" regardless of whether the project could affect those facilities and regardless of whether the agency is preparing a Negative Declaration or EIR. Consultation for projects located within one half-mile of a transit facility is suggested because Section 15064.3 (b)(1) provides that "generally, projects within *one-half mile* of either an existing major transit stop or a stop along an existing high-quality transit corridor should be presumed to cause a less than significant impact."

Complete Streets Act of 2007: State of California legislation known as the Complete Streets Act of 2007 (AB 1358) mandates that pedestrian, bicyclist, and transit facilities be moved to a front row in circulation planning and project design. The law, in effect since January 2011, requires cities to plan

¹⁶ Pub. Res. Code § 21064.3 defines a major transit stop as a "site containing an existing rail transit station, a ferry terminal served by bus or rail transit service, or the intersection of two or more major bus routes having a headway of 15 minutes, or less, during the morning and afternoon peak commute periods."

for complete streets when updating their General Plan. Early impetus to the Complete Streets Act of 2007 included the California Blueprint for Bicycling and Walking. The California Blueprint for Bicycling and Walking, which was prepared pursuant to the Supplemental Report of the Budget Act of 2001, set the goal of a 50 percent increase in bicycling and walking trips in California by 2010, and states that to achieve this goal, bicycling and walking must be considered in land use and community planning, and in all phases of transportation planning and project design.

Discussion

a) Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

The proposed project is a solar energy project, which would have no effect upon programs, plans, ordinances or policies addressing traffic circulation. The project site is not identified by *Contra Costa Countywide Bicycle & Pedestrian Plan* as a priority pedestrian area. The project site is not currently shown as being part of any Circulation Plan or the *Contra Costa Countywide Bicycle and Pedestrian Plan* (CBPP). Blum Road has soft shoulders without sidewalks near the project site.

One nearby plan was identified, which is known locally as the Lower Walnut Creek (LWC) Restoration Project. CEQA documentation for this project recently has been finalized and certified by the Contra Costa Flood Control and Water Conservation District (FCWCD). FCWCD filed Permit Application No. with the San Francisco Bay Conservation and Development Commission (BCDC), which approved the application on November 19, 2020. Restoration is expected to begin in 2021 with subsequent public access construction in 2023 or 2024.

LWC Restoration Project Improvement Plans (95 Percent Version) show proposed work on a 441-acres restoration area. This area is segmented as the Pacheco Reach and North Reach, Middle Reach, South Reach of LWC. Berms and levees are proposed,—but none in Pacheco Reach,¹⁷—which can accommodate trails, paths, walkways, or roads for public access. Public access accommodations could be permitted in the future as separate projects of the John Muir Land Trust (JMLT) and East Bay Regional Park District (EBRPD). Based upon the location of planned berms and levees, future public trails or other public access would not have any connection to Central San’s solar PV project site.

For temporary construction access to the South Reach of LWC, Drawing No. G003, which is titled “Access Overview,” and Drawing No. G004, which is titled “Access & Staging Details,” show planned routes. The southern segment of Blum Road, Imhoff Drive, and Conco Road will be used for access to the South Reach.¹⁸ The segment of Blum Road north of Imhoff Drive is not planned for construction access to FCWCD’s project.

Design and implementation of the LWC Restoration Project will be consistent with future construction of public access as subsequent projects even though near-term LWC Restoration Plans do not themselves include public access or trails. The LWC Restoration Project will grade space to accommodate the future trails and public access areas as contemplated in plans being developed by the JMLT (North Reach) and EBRPD (South Reach). The EBRPD and the Contra Costa County FCWCD share a vision to extend the Iron Horse Trail three miles north along LWC to a future staging area near Waterfront Road at the EBRPD’s Pacheco Marsh property.¹⁹ Central San’s project site is located substantial distance west of Walnut Creek and south of South Reach. The proposed solar panel array, therefore, would not affect the

¹⁷ Planned work in the Pacheco Reach is characterized as vegetation management, to remove invasive species and plant with native species.

¹⁸ In the LWC Restoration Project Improvement Plans, Conco Road and an unnamed temporary northeast-southwest access way are incorrectly labelled as Waterbird Way

¹⁹ Pacheco Marsh is another name applied to the North Reach. <https://www.contracosta.ca.gov/5791/Recreation-Opportunities>

right-of-way for the contemplated Iron Horse Trail extension shown in available planning documents.²⁰
(No impact)

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

CEQA Guidelines Section 15064.3 (b) calls for considerations other than vehicle delay in evaluating whether a project could have a significant effect. The main measure is a project's effect on added vehicle miles of travel. For the proposed solar energy project, there would be no significant long-term addition of vehicle travel after construction and no long-term impact upon transit ridership. The proposed project would add travel on roads and highways only for a short-term construction period of approximately 4 months. Semi-quantitative analysis shows that this temporary effect would be comparable to the vehicle miles traveled (VMT) generated by five households added to the project site for 4 months.

Central San considered appropriate methodologies to assess vehicle miles of travel added by the proposed project. Since trip generation studies for solar panel array construction or operation could not be found in the literature reviewed, Central San relied upon estimates of numbers of construction workers, delivery and water trucks, which were based on preliminary engineering and the construction schedule. Assumptions about trip length and the number of daily trips are presented in Tables 1 and 2.

Elapsed time for construction, safety inspections, commissioning, and performance testing would be approximately 5 months or 105 work days, from September 2021 through January 2022, with performance testing afterwards. The construction process and general timing are described as follows:

Site construction work – September-October 2021. Includes such as grading for the perimeter access driveway, security fence installation, and trenching for underground conduits.

Mechanical installation – October-November 2021. Includes pile driving, installation of racks/purlins, installation of PV modules (also known as solar panels), forming and pouring of equipment pads, and alignment of PV modules.

Electrical, switchgear, and transformer installation – October 2021-January 2022. Includes module/rack bonding, DC string wiring, installation and termination of panelboards and string inverters, system tie-in, and testing.

Quality inspections & commissioning – October 2021-January 2022. Includes progress inspections, and final Quality Control Audit and commissioning in January 2022.

Based upon the equipment and manpower estimates, the construction-phase could add on average approximately 37 trip ends per day. On a day of peak construction activity, the daily number of trip ends could increase to 74 trip ends per day. These estimates allow for the compressed 4-month elapsed time schedule. Daily trip ends are expressed per workday.

²⁰ San Francisco Bay Restoration Authority, 2019. Staff Recommendation Lower Walnut Creek Restoration Project, Project No. RA-013, Exhibit 1: Project Location and Site Map, December 06, 2019, (16 pp.).
http://sfbayrestore.org/sites/default/files/2020-01/item_07_lower_walnut_creek.pdf

Table 1
Existing Average Trip Lengths

Kind of Trip	Average Trip Length (miles)	
	Contra Costa County	SFBA
Home-based travel	18.0	15.3
Work-based travel	27.2	22.7

Sources: MTC; Fehr & Peers, January 2019.

Table 2
Construction-Phase Vehicle Miles of Travel
September 2021 through January 2022 followed by performance testing to be scheduled

Work Description	Duration	Unit	Trucks	Daily trips	Trip length (mi)	VMT
SITE WORK - 4 months						
Surveyor crews	1	W	2	4	30	600
Access driveway	2	W	4	8	30	2,400
Grubbing/earthwork & trenching	2	W	4	8	30	2,400
Security fence	2	W	4	8	30	2,400
Water trucks	3	W	8	16	30	7,200
Deliveries	4	W	5	10	60	12,000
MECHANICAL INSTALLATION - 1.7 months						
Ground-mounts (<i>i.e.</i> , piles)	4	W	8	16	30	9,600
Solar panel erection	4	W	8	16	30	9,600
Water trucks	4	W	2	4	30	2,400
Deliveries	4	W	5	10	60	12,000
ELECTRICAL INSTALLATION -3 months						
Wiring, panelboards, inverters, testing	10	W	7	14	30	21,000
Deliveries	10	W	2	4	30	6000
SWITCHGEAR & TRANSFORMER - 2 months						
Underground conduit	4	D	4	8	30	960
Install pads & mounting	2	D	3	6	30	360
Install switchgear & transformers	10	D	4	8	30	2,400
Utility inspections	2	D	2	4	30	240
TESTING & QUALITY INSPECTIONS 12 days						
Initial	1	W	2	4	30	600
Progress #1	1	D	2	4	30	120
Progress #2	1	D	2	4	30	120
Progress #3	1	D	2	4	30	120
Progress #4	1	D	2	4	30	120
Progress #5	1	D	4	8	30	240
MANAGEMENT - 4 months						
Superintendent & Project Manager	85	D	2	4	30	10,200
COMMISSIONING						
Pre-commissioning meeting	1	D	5	10	20	200
CCCSD punch list walk	1	D	7	14	20	280
Punch list adjustments/fixes	5	D	4	8	30	1,200
System start-up	1	D	3	6	30	180
Commissioning	5	D	3	6	30	900
Performance testing	7	D	2	4	30	840

SUMMARY

Total number of trip-ends	3,136	
Average daily number of trip-ends	37	
Total VMT for project development		106,680
Average VMT per day		1,160

Construction of the proposed project could result in approximately 1,160 vehicle miles of travel each workday during the 4-months of construction, for a total of nearly 110,000 vehicle miles during the 4-month construction period. After their construction, operating solar panels are not substantial generators of traffic. Limited travel would be associated with periodic inspection and maintenance.

Thresholds of significant effect for VMT were researched; however, Central San found no published or adopted thresholds among CCTA, Contra Costa County, and local city jurisdictions of Martinez and Concord.

Forecast numbers of trips and vehicle miles of travel are less than the thresholds of significant effect considered to be reasonable and appropriate by Central San, so this analysis applied 10,000 miles per day (500 trips per day) as a threshold of significant effect. This VMT threshold is approximately the same as the daily VMT that could be expected from residents living at five (5) added single-family houses. (Less than significant)

c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Proposed project improvements would be located entirely off the public rights-of-way and would not include alteration of any highway or surface street. Travel added by the proposed project operations would not cause hazards from any kinds of oversized vehicles or other special service vehicles.

Separate access is planned for the LWC Restoration Project. As stated in the EIR for the proposed LWC Restoration Project, access to the southern reach would use Conco Road. Therefore, vehicles from both the LWC Restoration Project and this Central San solar project would not be added to Blum Road north of Imhoff Drive.

The number of daily trips added to Blum Road during construction of the proposed solar project would be comparable to the number of trips that would be added by five new households on the project site for four months. The proposed project, therefore, is not expected to increase traffic hazard. (No impact)

d) Result in inadequate emergency access?

The proposed project includes provisions for an on-site perimeter service road. The project site can be accessed from Blum Road via connected surface streets. Blum Road can be accessed from the north & south *via* Pacheco Boulevard and from the east *via* Imhoff Drive. Travel distance from Contra Costa County Office of the Sheriff Muir Station (1980 Muir Road) is 1.7–2 miles and the travel time is approximately 4–5 minutes. Travel distance from the nearest fire station (CCCFPD's Station #9 on Center Avenue in Pacheco) is 1.7 miles and the travel time is approximately 5 minutes.

The proposed project would not have any on-site resident caretaker, or permanent or part-time onsite employees. Central San does not contemplate or propose public access or public excursions (*e.g.*, for regular tours). The above-described access would be commensurate with the proposed project's need for such access. The proposed project, therefore, not have an adverse effect resulting from inadequate access or response travel times. (No impact)

<u>Topics:</u>	<u>Potentially Significant Impact</u>	<u>Less Than Significant with Mitigation Incorporated</u>	<u>Less Than Significant Impact</u>	<u>No Impact</u>	<u>Not Applicable</u>
VII. NOISE—Would the project result in:					
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the project vicinity in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Generation of excessive ground-borne vibration or ground-borne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) For a project located in 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Existing Conditions: Ambient Noise Levels

Table 3 presents available short-term noise measurements, one (ST-6) by the City of Martinez and two others (N-E-M2 and N-E-3) by Caltrans. Measurements performed at N-E-M2 and N-E-3 represent traffic noise generally prevailing within 400 feet of I-680. The lower L_{dn} noise level of 55 dBA measured at ST-6 is more representative of existing conditions on the project site. Measured and modeled noise levels are presented in the City of Martinez *2035 General Plan Update* and also in Caltrans *Interstate 680/State Route 4 Interchange Improvement Project EA/IS*.

Table 3
Measured Community Noise Levels (dBA)

Noise Measurement Location	L_{max}	L₁	L₁₀	L₅₀	L₉₀	L_{eq}	L_{dn}
ST-6: Cul-de-sac of Blum View Drive, about 300 feet from the near lane of I-680. (2/19/2014, 2:00-2:30 p.m.)	61	59	55	51	50	52	55
N-E-M2: 25 Rutherford Lane, side yard of single-family house, (2002)	---	---	69	---	---	66	68
N-E-3: 5A Rutherford Lane, front yard of house, (July 2002)	---	---	69	---	---	66	68
Notes: dBA decibels L _{dn} day-night weighted average 24-hour noise level. L _{eq} energy equivalent noise level L ₁ noise level exceeded 1 percent of the time L ₁₀ noise level exceeded 10 percent of the time L _{max} maximum noise level during a measurement							
Sources: 1. Contra Costa County, 2017. <i>General Plan 2035</i> , Chapter 9: Noise and Air Element, (48 pp.). 2. Caltrans, 2008. <i>Interstate 680/State Route-4 Interchange Improvement Project Final Environmental Assessment with FONSI and Initial Study with Negative Declaration (EA/IS)</i> , State Clearinghouse Number 2006082017, November 26, 2008. (454 pp.).							

NOISE TERMS

Sound - Pressure variation in the air perceptible by the human ear.

Noise – Unwanted sound.

Frequency – We can hear sound from about 20 Hz, the lowest note on a large pipe organ, to 20,000 Hz, the high shrill of a dog whistle. Human speech ranges from 300 to 4,000 Hz.

Decibel scale – amplitude of sound pressure ranging from the threshold of perception (0 decibels, dB) to amplitudes above the threshold of pain (130 dB).

A-weighting – An adjustment to the decibel scale that accounts for human response to sound. A-weighting essentially discounts sounds below 300 Hz and above 4,000 Hz, as human hearing is less able to perceive those “outer” frequencies.

Relative loudness – decibel scale corresponds closely to the human perception of relative loudness, each increment of 10 dB being perceived as a doubling of loudness.

Threshold – The minimum sound level detectable to a human observer is 0 dB if the observer has no hearing loss. A person can have up to 25 dB hearing level and still have "normal" hearing.

Hertz (Hz) – a unit of frequency, equal to one cycle per second, used to describe the pitch of a pure-tone sound.

Community noise – the all-encompassing sound level associated with an outdoor environment.

Energy-equivalent sound level (L_{eq}) – A metric which expresses the community noise level as the average, steady-state, A-weighted, sound level that contains the same total energy as the time-varying sound over a given period (*e.g.*, L_{eq} 1-hour).

Day-night average sound level (L_{dn}) – Another metric which expresses the weighted average community noise level over 24 hours, with a +10 dBA penalty for sound occurring during nighttime (10:00 p.m. to 7:00 a.m.) hours.

Noise-sensitive land use - Some land uses are considered relatively more sensitive to community noise. The Buchanan Field Airport Noise Control Program recognizes residential areas that have had issues with excessive aircraft noise in the past.

Sound attenuation – Lessening of sound levels over distance. Sound from stationary point source such as a horn attenuates at a rate of at least –6 dBA per doubling of distance from the sound source. In addition to geometric spreading loss, lessening of sound levels over distance depends on atmospheric conditions, hard or soft ground surface, and presence of intervening barriers. Sound from a road or highway adjoined by a soft-ground surface attenuates at a rate of approximately –5 dBA per doubling of distance, but less over hard surfaces such as pavement.

The project site is located within the boundary of the Airport Influence Area for Buchanan Field Airport. In addition to traffic noise from I-680 and Highway 4, existing sources of community noise in the project vicinity include train noise from the Burlington Northern Santa Fe (BNSF) railroad and aircraft noise from Buchanan Field Airport.

Depending on location and airport activity, noise levels within the project site are dominated by the influences of traffic on I-680 or aircraft flying out of Buchanan Field Airport. The project site's northern limit is located approximately 300 feet from the nearest BNSF track at the closest approach. This distance varies generally from 300 to 410 feet from the nearest track to the northern limit of the project site. The project site's western limit is located approximately 2,000 feet from the centerline of I-680.

Both the City of Martinez and Caltrans have measured community noise levels near Blum Road. Of course, the focus of Caltrans work was mainly the land nearest I-680. Existing levels reported by Caltrans were near 66 L_{eq} and 68 L_{dn} (dBA). The City reported levels of 55 L_{eq} and 58 L_{dn} (dBA). Community

noise levels reported by the City of Martinez are more in line with existing ambient levels expected on the project site. The existing L_{dn} noise level on the project site is 55–56 dBA and the daytime L_{eq} is 54–55 dBA.

Figure 14 illustrates the future noise setting based upon contours developed for the I-680/State Route 4 highway traffic and Buchanan Field Airport operations. Contours represent future L_{dn} noise levels based upon projections of future traffic volumes and aircraft operations. The majority of the project site is shown as being located in a relatively quiet zone of community noise in a range lower than 55–60 L_{dn} , just for airport operations. In combination with I-680 traffic, a future L_{dn} noise level 56–57 dBA is a reasonable projection for the project site.

Future noise levels in the 20- to 25-year timeframes of the projections are not expected to be more than approximately +1 dBA above existing levels. In Figure 14, along the eastern side of the project site, the future airport noise contour shows 55 L_{dn} . With projected future highway traffic and airport operations, a similar L_{dn} noise level of 56–57 dBA is expected to prevail on the project site in the foreseeable future.

Based upon past noise complaints, noise-sensitive communities affected by aircraft flyover noise have been identified by Contra Costa County. These noise-sensitive communities include, among others, the area located generally around Austin Way, Alan Way, Benita Way, Clipper Lane and Arkinglander Lane, which is south of the project site. This community has benefitted from the Airport Noise Program's restrictions placed on aircraft flight paths. On departures from runway 14L/14R, turning before reaching the BNSF railroad tracks has been prohibited. Air traffic minimum elevation has been increased to 1,000 feet from 800 feet, since 1987. Additional operational changes also have been implemented to reduce aircraft noise.

Relevant and Applicable Policies and Regulations

California Code of Regulations

California's Model Community Noise Ordinance (Construction Noise)

The State of California's Model Community Noise Ordinance (Office of Noise Control 1977) contains noise level limits of 75 dBA for mobile construction equipment and 60 dBA for stationary construction equipment at single-family residential areas.

Contra Costa County Ordinance Code

Title 7 – Building Regulations, Section 716-8.1004

Pursuant to Title 7 of the Contra Costa County Ordinance Code, grader operations are limited to weekdays between the hours of 7:30 a.m. and 5:30 p.m. This is required for all grading activities located within 500 feet of residential and commercial occupancies. Exceptions are allowed through conditions of approval for a project.

The Contra Costa County General Plan

Noise Element

An objective of the General Plan Noise Element is to provide guidelines to achieve noise/land use compatibility. Relevant policies from this element are listed below.

Policy 11-8: Construction activities should be concentrated during the hours of the day that are not noise-sensitive for adjacent land uses and should be commissioned to occur during normal work hours to provide relative quiet during the more sensitive evening and early morning periods.

Policy 11-11: Noise impacts upon the natural environment, including impacts on wildlife, shall be evaluated and considered in review of development projects.

Noise Thresholds of Significant Effect

With regard to operations noise, this analysis applies 60 L_{dn} (dBA) as the noise level threshold of significant effect. The following impacts could warrant mitigation to reduce operations noise:

1. An increase in operational L_{dn} noise level of +5 dBA, or more, even while maintaining a maximum L_{dn} noise level of 60 dBA.
2. An increase of L_{dn} noise level of +3 dBA resulting in an L_{dn} noise level 60 dBA, or higher.

With regard to construction noise, this analysis applies the following thresholds of significant effect:

3. Limit noise-generating construction activities to the hours of 7 a.m. to 5 p.m.
4. Limit mobile construction equipment noise levels to 75 dBA at the property line.
5. Limit stationary construction equipment noise levels to 60 dBA at the property line.

Through appropriate evaluations of potential construction and operations noise levels in comparison to the above-listed thresholds of significant effect, mitigation measures can be applied where warranted so that proposed projects can conform to the objectives of noise policies identified in Contra Costa County's General Plan Noise Element.

Potential Effects of Vibration

Onset and Structure Damage

Three classes of damage are possible from elevated vibration levels. Initial damage, termed "onset damage," is purely cosmetic and limited to hairline cracks in stucco or plaster. In California's San Francisco Bay Area, a seismically active region, stucco surfacing is common and hairline cracks are common. Even without construction vibration, stucco building skins are prone to develop cosmetic cracks. Other damage classes are minor and major.

Human Response to Vibration

The magnitudes of vibration considered "acceptable" to most people are barely above thresholds of perception and only are perceived as disturbing if indoors (*e.g.*, inside a residence). Ground-borne vibration is almost never annoying to people who are outdoors. Although the minute motion of the ground may be perceived, perception of ground-borne vibration outdoors does not provoke an adverse human response. Adverse effects are associated exclusively with the microscopic shaking of occupied buildings.

Vibration translated from soil or rock to foundations, floors, and walls may cause perceptible vibration, rattling of items such as windows or dishes on shelves, or a "rumble" noise. Rumble noise is the noise that radiates from the minute motion of a wall, or other structural surface or component, which acts like a "drum head." The resulting noise may be termed "ground-borne noise." However, it would be better described as "re-radiated noise induced by ground-borne vibration," because noise does not propagate through soil. Airborne noise that accompanies building vibration is perceptible only indoors and is a problem only when the vibration source has dominant frequencies in the range 60 to 200 Hz, or when there is a special pathway (*e.g.*, a sewer pipe, tunnel) between the vibration source and receiving structure.

Construction Sources of Vibration

The highest vibration-producing equipment for development of the proposed of project could be compaction equipment (*e.g.*, a padfoot or "sheepsfoot" roller, vibratory padfoot roller, static steel-wheel roller or vibratory steel wheel roller) used for constructing the perimeter service road. Compaction equipment at 25 feet generates a peak particle velocity (PPV) of at least 0.21 inches per second (in/sec), according to an FTA publication (FTA, 2006). However, vibratory rollers may generate even more vibration.

VIBRATION TERMS

Vibration – An oscillatory motion of the ground, building component (e.g., window, wall, floor), or other surface.

Ground-borne noise – Noise whose source is ground-borne vibration. Vibration can travel through the ground and can induce shaking of a wall, window, or other building element, or other structure (e.g., a box beam overcross structure or elevated rail structure). A shaking wall sometimes makes noise called “rumble.”

Frequency (f) – Like airborne noises, vibrations have magnitudes and frequency signatures. The number of oscillations per second expressed in Hertz (Hz).

Hertz (Hz) – a unit of frequency, equal to one cycle per second, used to describe a vibration. Like sound, a vibration can have one or several characteristic frequencies.

Peak particle velocity (PPV) – The magnitude of a vibration can be expressed as maximum instantaneous positive or negative velocity of the vibration signal in absolute value, expressed in inches/sec, millimeters/sec, or meters/sec.

RMS vibration velocity (v_{rms}) – A special time-average of the vibration velocity over a specified period, expressed in inches/sec, millimeters/sec, or meters/sec. “RMS” stands for “root mean square.”

Crest factor – The ratio of PPV to RMS vibration velocity. Crest factors among environmental vibrations are commonly taken as 4:1 or 4.5:1.

Vibration velocity level (L_v) – RMS vibration velocity expressed in decibels (VdB) relative to a specified reference level. In the U.S., the reference level is 1 micro-inch per second (written as 1E-06 in/sec or 0.000001 in/sec).

$$L_v = 20 \times \log_{10} \left(\frac{V}{V_{ref}} \right)$$

Estimated Vibration Dose Value (eVDV) – A special average exposure to intermittent or variable vibration events over a specified elapsed period. For example, the elapsed period may be the work period during which heavy equipment such as a vibratory roller is in use. The down time for a particular piece of equipment, the time that equipment is not in use or is idle, is not included in the average.

Vibration attenuation – Lessening of vibration levels over distance. Vibration decreases with increased distance from a source owing to propagation loss, or “spreading” loss, and damping caused by the soil or other intervening materials between a source and receiver.

Construction Sources of Vibration – (Continued)

Inspection of the data for construction equipment indicates that vibratory rollers are the highest vibration-producing equipment. Four vibratory rollers considered here (*i.e.*, those manufactured by BOMAG, CAT, Hamm, and Sakai) produce PPV in the range 0.228–0.565 in/sec. Bomag and Sakai vibratory rollers produce RMS vibration velocity in the range of 0.103–0.141 in/sec at 14–18 Hz at a distance of 25 feet. CAT and Hamm vibratory compactors produce RMS vibration velocity in the range of 0.055–0.087 in/sec in frequency modes 16.8, 35.9, and 48.6 Hz for CAT and 7.2, 18.7, 45.5, and 64.3 Hz for Hamm. The CAT vibratory compactor produces a vibration level similar to the vibratory roller in the FTA reference, as each produces a PPV of 0.21 in/sec (general FTA) or 0.228 in/sec (CAT).

Service road bed cross-section and compaction specifications are unknown at this time. For a conservative analysis, to evaluate maximum potential vibration effects, it was assumed that a vibratory roller would be used for constructing the proposed perimeter service road.

Hauling and earth movement would not be critical for the proposed project. Concrete trucks and other loaded trucks transporting base rock or other materials produce vibration while on route. Trucks at idle do not produce substantial vibration. Hauling in loaded haul trucks is reported to generate a PPV of 0.011 in/sec at 25 feet. In comparison to the vibratory rollers listed in Table 5, this is 1/50th to 1/20th the vibration.

At 25 feet, a scraper is reported to generate a PPV of 0.022 in/sec, and a small dozer a PPV of 0.003 in/sec. In comparison to the vibratory rollers, the scraper vibration level is 1/25th to 1/10th the vibration. Small dozer vibration level 1/76th to 1/188th that of a vibratory roller.

Potential vibration impacts from loaded haul trucks, concrete trucks, scrapers, small dozers, and vibratory rollers were evaluated. Loaded haul trucks, concrete trucks, scrapers, small dozers were determined not be critical and their vibration effects less-than-significant. Forming and pouring concrete pads and installing ground mounts also are not among the key vibration-producing construction activities.

Vibration from rolling trucks, scrapers, dozers, vibratory rollers and other construction equipment attenuates over distance. Attenuation results from propagation loss and damping by soil over distance.

Vibration Thresholds of Significant Effect

With regard to construction vibration, this analysis applies several criteria to evaluate potential impacts. Effects at or above the following thresholds could warrant mitigation to reduce construction vibration:

1. **Annoyance from barely palpable vibration:** At any nearby house, construction vibration having a PPV of 0.03 inches per second (78 VdB) at the house, continuously or over an extended period.
2. **Onset cosmetic building damage:** At any nearby house, PPV of 0.2 inches per second (or, maximum Lv of 94 VdB) at the house, for low frequency vibration 1–10 Hz, or 0.2–0.6 in/sec (94–104 VdB) at the house, for vibration in the frequency range 10–50 Hz.
3. **Annoyance:** At any nearby house, for intermittent or time-varying vibration, an estimated Vibration Dose Value (eVDV) of 0.40. Adverse public response is possible in the eVDV range 0.4–0.8 but is unlikely if eVDV is lower than 0.4.

Discussion

a) *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?*

Permanent recurring noise

The proposed project consists of a solar panel array with 5,460 solar panels (termed “modules”). Solar panels themselves have no moving parts and are silent. Proposed string inverters have external cooling fans and are rated at 65 dBA at a distance of 3 feet (1 meter). Each cluster of five (5) inverters would generate a composite noise level of 72 dBA at a distance of 3 feet (1 meter) or 35 dBA at the nearest property line.

The solar panels and panel frame assemblies on ground mounts would not generate noise. The proposed project would not have mechanized equipment. Tracking motors are not proposed. Limited vehicle traffic would be associated with periodic inspection and maintenance, which would not generate substantial noise. The key permanent noise sources associated with the project are the step-up transformer and cooling fans on the inverters.

Inverters

Proposed string inverters have external cooling fans and are rated at 65 dBA at a distance of 3 feet (1 meter). Each cluster of five (5) inverters would generate a composite noise level of 72 dBA, at a distance of 3 feet (1 meter).

At the property line, inverter noise would drop off to approximately 35 dBA, which would not be perceptible from the existing ambient noise and would not add significantly to existing ambient noise level. Due to the nature of noise and the decibel scale, 35 dBA at the property line would not add even +0.1 dBA to the ambient noise level.

Distances from the inverters to the nearest property line are approximately 330 feet, 440 feet, and 790 feet (100 m, 135 m, and 240 m). Due to the separation distance from the inverters, cumulative inverter noise from all fifteen inverters would attenuate to less than 35 dBA combined at the nearest property line. This noise level would not be audible above background levels or distinguishable from other noise prevailing in the community.

Operations of the proposed solar project would add noise near the proposed inverter clusters but would not change existing noise levels in the project vicinity, at the property line of the Central San-owned land or outward from that property line into the adjoining residential community.

Step-Up Transformer

The sound power level of transformers varies by manufacturer. The approximate sound power level (L_{WA}) of the proposed 2,000 kVA step-up transformer may be estimated according to the following equation, with a margin of safety of +12 dBA added:

$$L_{WA} = 43.6 + 18 \log_{10}(S_r) + 12 \text{ dBA}^{21}$$

where:

- L_{WA} is the estimated A-weighted sound power level of the transformer at rated current and rated frequency.
- S_r is the rated power in million volt-amps (MVA).

²¹ According to IEEE Standard C57.12.00-2015 Information Annex C.

For a 2,000 kVA (2 MVA) transformer, the sound power level is up to 61 dBA. The sound pressure level then is up to 53 dBA at 1 meter from the transformer. Like the inverters, transformer noise would attenuate to an imperceptible level less than 20 dbA at the nearest property line. This noise level would not be audible above background levels or distinguishable from other noise prevailing in the community. (Less than significant)

Distances from the inverters to the nearest property line are approximately 330 feet, 440 feet, and 790 feet (100 m, 135 m, and 240 m). Due to the separation distance from the inverters, cumulative inverter noise from all fifteen inverters would attenuate to less than 35 dBA combined at the nearest property line. This noise level would not be audible above background levels or distinguishable from other noise prevailing in the community.

On a chronic or recurring daily basis, therefore, the proposed project could not expose people to excessive noise or levels determined to exceed noise and land use compatibility guidelines of Contra Costa County and thresholds of significant effect. (Less than significant effect)

Temporary construction noise

Project construction would necessitate limited earthwork, trips by employee pick-up trucks, haul trucks, concrete trucks and pump, use of a forklift and small crane, and use of a vibratory compaction roller for construction of the perimeter service road. Post hole drilling for the security fence and screw augering for construction of the ground mounts would be performed. There would be no pile driving, hoe-pack, hydraulic hammering, jackhammering, or other impulsive noise-generating construction equipment or process.

Table 4 shows that maximum hourly L_{eq} construction-related noise levels would be 82 dBA to 85 dBA at a distance of 50 feet from the active equipment. Haul trucks could generate 88 dBA at a distance of 50 feet, but this noise level would be an L_{max} ,—as opposed to an average for an hour (L_{eq} 1-hour),—and would not persist as the trucks would move along a road or away from the project perimeter.

Table 4
Construction Equipment Noise

Equipment	Maximum Noise Level (dBA at 15 m or 50 feet)
Grader	85
Bulldozers	85
Roller	85
Compactor	82
Concrete Mixer	85
Concrete Pump	82
Heavy Haul Trucks	88
Other delivery or pick-up	84
Backhoe	80
Loader	80
Mobile crane	83
Generator	82
Air compressor	80
Impact wrench	85
Other pneumatic tools	85

Source: Federal Transit Administration, 2018.

Construction-generated noise levels from stationary equipment or mobile non-road equipment working in place drop off at a rate of at least –6 dBA per doubling of distance between the source and receiver. Over soft terrain, noise attenuation can be as much as –9 dBA per doubling of distance from the source to receiver. Therefore, it is conservative to apply –6 dBA per doubling of distance from the source.

The distance from the nearest perimeter of the project site to the nearest residential property line at the intersection of Blum Road and Explorer Way is at least 600 feet (182 m). At the residences along Austen Way, the distance from the nearest perimeter of the project site to the nearest residential property line is 1,050 feet (320 m). Depending on receiver location, noise attenuation would be –22 dBA (at the corner of Blum Road and Explorer Way) or –26 dBA (along Austen Way). L_{eq} noise levels from the loudest on-road equipment expected to be used for construction of the proposed project would not exceed approximately 63 dBA (corner of Blum Road and Explorer Way) or 59 dBA (Austen Way).

Projected L_{eq} noise levels during construction would not exceed the thresholds of significant effect. For construction in the extreme southwestern corner of the project site, it is possible that temporary construction noise could be up to 60 dBA at residences closest to the corner of Blum Road and Explorer Way. At the nearest residences, however, noise from mobile non-road construction equipment would not exceed 75 dBA, which is the applicable threshold of significant effect for mobile non-road construction equipment. Portable generator noise at the nearest residences would not exceed 60 dBA, which is the applicable threshold of significant effect for stationary construction equipment.

Mobile non road construction equipment could produce noise up to 63 dBA at the nearest residence, which is well below the 75 dBA threshold of significant effect for mobile non-road construction equipment noise. The potential effect of construction-generated noise, therefore, is expected to be less-than-significant. (Less-than-significant)

b) Result in generation of excessive ground-borne vibration or ground-borne noise levels²²?

As shown in Table 5, heavy non-road equipment and loaded trucks generate vibration. Worst-case vibration from activities like blasting and pile driving can result in disturbance, cosmetic building damage or even structural damage. The proposed project would not entail blasting, pile driving, or hydraulic hammering.

Vibration from on-site, mobile, non-road equipment

For construction of the perimeter service road, it was assumed that non-road equipment could potentially include a vibratory roller for compacting the ground, imported base rock or asphalt. Vibration from a vibratory roller represents the worst-case among the kinds of equipment expected for construction of the proposed project. This particular construction activity was evaluated in terms of peak particle velocity (PPV) and estimated Vibration Dose Value (eVDV) to evaluate potential for impact upon houses located closest to the project site.

The distance from the nearest perimeter of the project site to the nearest residential property line at the intersection of Blum Road and Explorer Way is at least 600 feet (182 m). At the residences along Austen Way, the distance from the nearest perimeter of the project site to the nearest residential property line is 1,050 feet (320 m). Maximum vibration impact from vibratory rollers listed in Table 5 was evaluated and was found to be less-than significant.

²² “Groundborne noise,” although in common planning or engineering usage, is a misnomer. As the term implies, it would mean literally noise propagating through or emanating from the ground. What is meant is structure-borne noise induced by ground-borne vibration. At frequencies in the range 30–200 Hz, ground-borne vibration may excite bending resonances in a building (e.g., in the floors and walls), which then can radiate a rumbling noise directly into its rooms.

Table 5**Vibration Levels at 25 Feet from Construction Equipment**

Activity	Equipment	PPV at 25 feet (in/sec)	RMS Velocity at 25 ft (mm/sec)	Source
Hauling & Loading	Haul truck	0.011	0.07	(2)
	Concrete truck (delivery)	0.027	0.17	(4)
	Loading trucks	0.076	0.48	(1)
Range		0.011-0.076	0.07-0.48	---
Earthwork	Excavator	0.035	0.22	(3)
	Scraper	0.022	0.14	(2)
	Small bulldozer	0.003	0.02	(1)
Range		0.003-0.035	0.02-0.22	---
Compacting	Hamm Vibratory Compactor	0.348	2.2	(2)
	CAT Vibratory Compactor	0.228	1.4	(2)
	Sakai Vibratory Roller	0.565	3.6	(2)
	BOMAG Vibratory Roller	0.413	2.6	(2)
	General Vibratory Roller	0.21	1.3	(1)
	Sheepsfoot compactor	0.217	1.4	(3)
Range		0.21-0.565	1.3-3.6	---
Notes:				
Dominant frequencies, where reported, are: CAT Vibratory Compactor (16.8, 35.9, 48.6 Hz); scraper (46.8 Hz); haul truck (28.3, 47.1 Hz); Sakai Vibratory Roller (18 Hz); BOMAG Vibratory Roller (14 Hz); Hamm vibratory compactor (7.2 Hz).				
Sources:				
1 The primary reference is FTA, 2006 as updated in 2018.				
2 Ken W. King and Matthew J. DeMarco evaluated susceptibility of rock pinnacles and natural bridges in Arizona. Data were reported in chart form, in mm/sec normalized to 15 m.				
3 Hal Amick in 1999 evaluated vibration propagation dependent on soil type and vibration frequency at a semiconductor manufacturing facility in Silicon Valley. Data were reported graphically at various distances from 15 m to 212 m.				
4 Wilson, Ihrig & Associates, Inc., January 2004. <i>Truck Vibration Monitoring Results, Penitencia Water Treatment Plant Construction.</i>				

In particular, an evaluation found that at 600 feet distance from service road construction, the nearest house could be exposed to a maximum PPV of 0.004 in/sec, maximum L_v of 59 VdB at 7.2 Hz, and estimated Vibration Dose Value (eVDV) of 0.010. These values are many times lower than applicable thresholds of significant effect. Thresholds of significant effect include the following:

- PPV of 0.03 in/sec for avoidance of annoyance caused by continuous exposures
- Maximum L_v of 94 VdB in the range 1-10 Hz for avoidance of cosmetic building damage, and
- eVDV of 0.40 for avoidance of annoyance caused by intermittent or variable exposures.

Critical separation distances at which compaction equipment vibration effects potentially could be significant also were estimated. Critical separation distances were assessed and were determined to be:

- 55 feet for continuous exposures;
- 55-70 feet at 1-10 Hz for “onset” or “cosmetic” building damage; and,
- 90 feet (at closest approach) for intermittent or variable exposures to vibration from moving compaction equipment.

In view of the 600-foot minimum separation distance between the project site and nearest residential receivers, therefore, construction within the project site could not expose people or buildings to excessive ground-borne vibration or ground-borne noise. (Less-than-significant impact)

Vibration from off-site haul trucks on Blum Road

Automobiles, pick-up trucks, and small delivery trucks generate vibration amplitudes that are one-fifth to one-tenth the amplitude of vibration amplitudes generated by haul trucks or other heavy trucks. Accordingly, ground vibration generated by worker traffic would not add to vibration generated by haul trucks along Blum Road. Material hauling was evaluated since it is the critical source of potential off-site vibration effects.

Rolling trucks can generate vibrations due to expansion joints, other discontinuities, or movement of pavement in structural disrepair. Truck traffic vibrations range in frequencies from 10–30 Hz, and tend to center around 15 Hz. It is common to measure lower frequencies down to 1–3 Hz. Due to their suspension systems, city buses may generate low frequencies around 3 Hz (Caltrans, 2020).

At a distance of 25 feet from the near travel lane of Blum Road, peak particle velocities (PPV) for haul trucks could be 0.011-0.023 in/sec (FTA, 2006; Caltrans 2020). Vibration events would be discontinuous. But even if continuous, this range is lower than the threshold criterion for avoidance of annoyance, which is 0.03 in/sec PPV. The Lv at 25 feet from Blum Road could be 69-75 VdB, a range which is well under the threshold criterion of 94 VdB for avoidance of cosmetic building damage. (Less than significant effect)

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 area to excessive noise levels?

The project site is located within the airport planning or influence area of Buchanan Field Airport (see [Figure 14](#)). As shown in [Figure 14](#), the project site is located outside of the noise impact zone of the airport. People working to build or maintain the proposed solar project would not be exposed to excessive noise levels. (No impact)

<u>Topics:</u>	<u>Potentially Significant Impact</u>	<u>Less Than Significant with Mitigation Incorporated</u>	<u>Less Than Significant Impact</u>	<u>No Impact</u>	<u>Not Applicable</u>
VIII. AIR QUALITY —Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:					
a) Conflict with or obstruct implementation of the applicable air quality plan?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Expose sensitive receptors to substantial air pollutant concentrations?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Existing Conditions

Statewide Setting

The Global Warming Solutions Act of 2006 (AB 32) calls for the reduction of climate change-causing greenhouse gas (GHG) emissions in California to 1990 levels by 2020. Use of alternative non-fossil fuel energy is a cornerstone to the state’s goals. The California Air Resources Board (California ARB) adopted regulations to help meet this target, including a Renewables Portfolio Standard (RPS), which requires the state’s utility companies to procure 33 percent of their energy mix from renewable sources. In April 2009, California ARB also adopted the Low Carbon Fuel Standard (LCFS), which requires a 10 percent reduction in GHGs from transportation fuels by 2020. A key element of this regulation will be the use of clean alternative non-fossil fuel sources.

Regional & Local Setting: The San Francisco Bay Area’s (SFBA’s) need for emissions reductions through alternative non-fossil fuel energy aligns with California’s implementation of the AB 32. Control measures in the 2017 Clean Air Plan (CAP) are intended to reduce GHG emissions and improve air quality in impacted communities.

As listed in Table 7, the SFBA a non-attainment area for federal ozone and PM_{2.5} air quality standards. It is a marginal non-attainment area for the federal standard for ambient, ground-level ozone concentrations averaged over 8-hours.²³ The SFBA was designated as a marginal non-attainment area for the federal 8-hour ozone standard in 2012, with an 8-hour ozone design value of 0.072 ppmv, which is just over the 0.070 ppmv ozone standard. The current 8-hour ozone design value as of May 22, 2020, is 0.073 ppmv for the three years (2017-2019) of air quality data.²⁴

The SFBA is designated as a moderate non-attainment area for the federal standard for ambient PM_{2.5} fine particulate matter. This federal standard (2006) is for fine particulate concentrations averaged over

²³ U.S. EPA, 2016. Federal Register, Vol. 81, No. 86, Determinations of Attainment by the Attainment Date, Extensions of the Attainment Date, and Reclassification of Several Areas for the 2008 Ozone National Ambient Air Quality Standards, May 4, 2016. <https://www.govinfo.gov/content/pkg/FR-2016-05-04/pdf/2016-09729.pdf>

²⁴ U.S. EPA, 2020. 8-Hour Ozone (2008) Designated Area Design Values, current as of August 31, 2020. <https://www3.epa.gov/airquality/greenbook/hdrc.html>

Table 7
San Francisco Bay Area Attainment Status
 October 2020

Criteria Pollutant	Federal Attainment Status
Ozone (O ₃), 8-hour (1997)	Non-attainment (marginal) ^{1,2}
Ozone (O ₃), 8-hour (2008)	Non-attainment (marginal) ³
Nitrogen Dioxide (NO ₂)	Attainment-Unclassified
Carbon Monoxide (CO), 8-hour	Attainment—Maintenance
Particulate Matter (PM ₁₀)	Attainment—Unclassified
Particulate Matter (PM _{2.5}), 24-hour (2006)	Non-Attainment (moderate) ^{4,5}
<p>Notes: NAAQS National Ambient Air Quality Standard promulgated under the federal Clean Air Act.</p> <p>¹ Previous 1-hour ozone NAAQS non-attainment areas are no longer subject to the revoked 1-hour NAAQS as of June 15, 2005.</p> <p>² Effective June 2004 the San Francisco Bay Area (SFBA) was designated as a marginal non-attainment area for the 8-hour 1997 ozone NAAQS.</p> <p>³ In 2008, U.S. EPA revised the 8-hour ozone standard to 0.075 parts per million (ppm) from 0.080 ppm. Non-attainment designations for the 8-hour 2008 ozone NAAQS were postponed. The SFBA’s design values of 0.081 (2006-2008) and 0.078 ppm (2007-2009) did not meet the 2008 ozone NAAQS. Effective April 2012, U.S. EPA designated most of the SFBA as marginal non-attainment of the standard.</p> <p>⁴ On December 14, 2009, U.S. EPA designated the SFBA as non-attainment for the 24-hour 2006 PM_{2.5} NAAQS based upon violations of the standard over the three years 2006-2008.</p> <p>⁵ In final rule-making signed on December 18, 2012, U.S. EPA determined that the SFBA non-attainment area for PM_{2.5} had attained the 2006 federal PM_{2.5} NAAQS based on the ambient air quality data for 2009-2011. The attainment determination became effective on February 8, 2013; however, the non-attainment area designation was not changed. Subsequent PM_{2.5} monitoring shows that the SFBA no longer meets the 24-hour PM_{2.5} standard. The current PM_{2.5} design value as of May 8, 2020, is 48 µg/m³ for the three years (2017-2019) of air quality data, which is well above 35 µg/m³.</p>	

24-hours.²⁵ Near the time of original non-attainment designation in December 2009, the 24-hour PM_{2.5} design value was 36 µg/m³ (2006-2008) or 35 µg/m³ (2009-2011), which is near the standard. In 2012, U.S. EPA determined that the SFBA non-attainment area for PM_{2.5} had attained the 24-hour standard for PM_{2.5}.²⁶ However, the non-attainment area designation was not changed. Subsequent PM_{2.5} monitoring shows that the area exceeds the federal 24-hour PM_{2.5} standard. The current 24-hour PM_{2.5} design value is 48 µg/m³ (2017-2019), which is well above 35 µg/m³.²⁷

The SFBA also is designated as an attainment area for the most recently added federal annual standard for ambient PM_{2.5}. This most recent federal standard (2012) is for fine particulate concentrations averaged over a year and is 12 micrograms per cubic meter (µg/m³). The design value is the annual mean PM_{2.5} concentration, averaged over three consecutive years. In 2015, soon after adoption of the federal annual

²⁵ US EPA, 2013. Final rule-making (EPA-R09-OAR-2012-0782; FRL-9766-7): Determination of Attainment for the San Francisco Bay Area for the 2006 Fine Particle Standard, Federal Register, Vol. 78, No. 6, January 9, 2013, pp. 1760-1762. <http://www.gpo.gov/fdsys/pkg/FR-2013-01-09/pdf/FR-2013-01-09.pdf>

²⁶ *Ibid.*, 2013.

²⁷ U.S. EPA, 2020. PM-2.5 (2006) Designated Area Design Values, as of August 31, 2020. <https://www3.epa.gov/airquality/greenbook/rdtc.html>

PM_{2.5} standard, the annual PM_{2.5} design value (7.70 µg/m³), which was consistent with national ambient air quality standard. The current annual PM_{2.5} design value is 10.8 µg/m³ for the three years (2017-2019), which is still less than the federal annual PM_{2.5} standard (12 µg/m³).²⁸

The BAAQMD published and adopted the 2017 Clean Air Plan (CAP) on April 19, 2017, six years after adopting the previous 2010 CAP on September 15, 2010. The 2017 CAP sets forth regulations and rules necessary to meet or maintain the applicable air quality standards. Control measures in the 2017 CAP are intended to improve air quality in impacted communities and reduce GHG emissions.

Control Measure SS36 (Regulation 6, Rule 6) is an example of a rule to eliminate PM trackout at bulk material sites and construction sites. Regulation 6, Rule 6 was adopted by the BAAQMD on August 1, 2018.

Under Regulation 6, Rule 6, the following procedures would be required to comply with provisions of the regulation.

- The owner/operator of any Large Construction Site or Large Disturbed Surface Site shall not cause or allow trackout of soil at any active exit from the project site onto an adjacent paved public roadway or its paved shoulder that exceeds cumulative 25 linear feet and creates fugitive dust visible emissions. Owner/operator shall clean up soil tracked off the project site within 4 hours of discovery. Owner/operator shall not cause or allow more than 1 quart of tracked-out soil to remain on the adjacent paved public roadway or its paved shoulder at the end of any workday.
- The owner/operator of any Large Construction Site or Large Disturbed Surface Site shall not cause or allow a fugitive dust visible emission during cleanup of any tracked-out soil that exceeds 20 percent opacity

The 2017 CAP, and its predecessor, also set emission budgets to reduce NO_x and ROG in order to attain the ozone standards. Other mobile sources including construction mobile sources contribute to the SFBA's NO_x and ROG daily emission burden—49 of 259 tons ROG per day and 122 of 298 tons NO_x per day, in 2015. On-road motor vehicles in 2015 contributed relatively more—60 of 259 tons ROG per day and 128 of 298 tons NO_x per day. The gap between on-road mobile sources and off-road sources of ROG and NO_x has narrowed as more stringent on-road and non-road vehicle and equipment exhaust emission controls have been enacted and continue to take effect (BAAQMD, 2017).

In the SFBA, as part of the regional Community Air Risk Evaluation (CARE), seven priority communities²⁹ have been identified based upon emissions of air toxics, on exposure of youth and seniors, and low income. As shown in Figure 8, the project site and Central San's WWTP are located at the western edge of the Concord priority community area. Priority community areas are defined as locations within a cumulative impact zone, where a combination of toxic air contaminants (TACs), fine particulate matter, and ozone are expected to have disproportionate potential for adverse health impact in the community.

²⁸ U.S. Environmental Protection Agency (U.S. EPA), 2020. Design Values 2019 Interactive Map, 2956-A Treat Boulevard, Concord, CA, web page visited December 2020. *Note: Design values for the particular Concord air monitoring station may be slightly different from design values for the designated air district.*
<https://epa.maps.arcgis.com/apps/MapSeries/index.html?appid=bc6f3a961ea14013afb2e0d0e450b0d1>

²⁹ In the CARE program, a priority community is an area, designated by the BAAQMD, where combined exposures to toxic air contaminants, PM_{2.5}, and ozone may be considerable, and where people who may be particularly vulnerable may bear disproportionately the potential adverse health effects of air pollution.

Discussion

a) Conflict with or obstruct implementation of the applicable air quality plan?

The System Operator and Contractor through contract documents would be required to comply with Regulation 6, Rule 6, which prohibits trackout of soil onto adjacent roads such as Blum Road. Under Rule 6 the proposed project construction site is would be classifiable as a Large Construction Site and could also be classified as a Large Disturbed Surface Site. This means that the Contractor will have to exercise a high level of diligence to contain soil on tire tread and equipment on the project site and avoid tracking of this soil onto the public right-of-way. Under Rule 6, the System Operator and/or Contractor shall not cause or allow more than 1 quart of tracked-out soil to remain on the adjacent paved public roadway or its paved shoulder at the end of any workday

The proposed project is a renewable energy project. The proposed project with basic mitigation and anti-trackout measures incorporated during the construction phase would conform to the CAP, and control measures adopted as operative parts of the CAP. The proposed project with Table 8 basic mitigation measures and other provisions for control of soil trackout would not conflict with or obstruct implementation of the CAP.

Mitigation measure VIII-5

- The System Operator and Contractor during construction would implement basic mitigation measures recommended by the BAAQMD and listed here in [Table 8](#). With implementation of the basic mitigation measures and compliance with applicable Regulation 6, Rule 6, of the BAAQMD, the proposed project would not conflict with the CAP.

Residual effect: Less than significant with mitigation incorporated.

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?

Construction of the proposed project would generate emissions of criteria air pollutants, including PM_{2.5} and two precursors to ozone, namely, nitrogen oxides (NO_x) and reactive organic gases (ROGs). Table 9 presents approximate daily and total emissions for the construction. As shown in Table 9, emissions of criteria air pollutants and ozone precursor for construction of the proposed project would be less than thresholds of significant effect recommended by the BAAQMD.

Operations including maintenance, such as panel washing, would generate *de minimis* emissions. Construction-phase emissions would be one-time or non-recurring and would not exceed regional thresholds of significant effect recommended by the BAAQMD, as shown in Table 9.

On a recurring basis, the proposed project would generate very minor emissions. Solar PV system components, including solar PV modules, inverters, panelboards, step-up transformer, and switchgear, would not generate any air pollution. Emissions would result from periodic inspection and maintenance of the panels, such as panel washing, for example. Recurring emissions of PM_{2.5}, NO_x, and ROG for periodic inspection and maintenance would not exceed the regional thresholds of significant effect recommended by the BAAQMD.

The proposed project is in a family of renewable energy projects that provide a net decrease in air pollutant emissions compared to the No Project alternative. The No Project alternative can also be captioned as the “business-as-usual” scenario, in which Central San would continue to purchase electrical power from PG&E’s grid. Sources of PG&E grid power include a blend of hydroelectric, other renewable sources, nuclear, and natural gas-fired power plants. Therefore, continued purchase of electrical power from PG&E’s grid would entail incremental emissions of PM_{2.5} and NO_x, which could be avoided by the proposed project.

Table 8

Basic Mitigation Measures for Construction Projects

The following measures are considered by the BAAQMD to be basic mitigation measures required for all projects:

1. All exposed surfaces (e.g., parking areas, staging areas, soil stockpiles, graded areas, and unpaved access driveways) shall be watered two times per day.
2. All haul trucks transporting soil, sand, or other loose material off-site shall be covered.
3. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers at least once per day. The use of dry power sweeping is prohibited.
4. All vehicle speeds on unpaved roads shall be limited to 15 mph.
5. All roadways, driveways, and sidewalks to be paved shall be completed as soon as possible. Building pads shall be laid as soon as possible after grading unless seeding or soil binders are used.
6. Idling times shall be minimized either by shutting equipment off when not in use or reducing the maximum idling time to 5 minutes (as required by the California airborne toxics control measure Title 13, Section 2485 of California Code of Regulations [CCR]). Clear signage shall be provided for construction workers at all access points.
7. All construction equipment shall be maintained and properly tuned in accordance with manufacturer’s specifications. All equipment shall be checked by a certified visible emissions evaluator.
8. Post a publicly visible sign with the telephone number and person to contact at the lead agency regarding dust complaints. This person shall respond and take corrective action within 48 hours. The BAAQMD’s phone number shall also be visible to ensure compliance with applicable regulations.

Source: BAAQMD, 2017. California Environmental Quality Act Air Quality Guidelines, adapted from Table 8-2.

Table 9

Construction and Avoided Emissions

Conditions & Comparisons	Controls	Criteria Air Pollutant, Ozone Precursor, & GHG Emissions					
		CO	PM10	ROG	NOx	PM2.5	CO2e
Construction daily (lbs/day)	Unmitigated	13	9.5 ⁽³⁾	2	18	1.4 ⁽⁴⁾	2,600
Construction daily (lbs/day)	Mitigated	13	4.8	2	18	1.4	2,600
BAAQMD threshold (lbs/day)		-- ⁽¹⁾	82	54	54	54	-- ⁽¹⁾
Are emissions below threshold?					yes	yes	NA
Comparison between Construction-Phase Emissions and Avoided Emissions							
Construction total (tons or MT)—mitigated		0.7	0.25	0.1	0.9	0.07	125 MT
Avoided annual (tons or MT CO _{2e})		-- ⁽²⁾	-- ⁽²⁾	-- ⁽²⁾	0.45	0.07	1,300 MT
Will avoided emissions fully offset construction emissions? If “yes,” over how many years or months?					Yes, 2 yrs.	Yes, 1 yr.	Yes, 2 mo.
Notes:							
(1) The BAAQMD has not recommended a threshold.							
(2) Avoided emissions were estimated using AVERT methodology. The AVERT model does not include emission factors for estimating PM ₁₀ or ROG emissions.							
(3) Of the 9.5 lbs/day PM ₁₀ , 1.32 lbs/day is exhaust and the remainder is non-exhaust fugitive.							
(4) Of the 1.4 lbs/day PM _{2.5} , 0.88 lbs/day is exhaust and the remainder is non-exhaust fugitive.							
(5) Days here mean work days.							

Avoided emissions would offset construction emissions of criteria air pollutants in 2 years or less. According to estimates using the avoided emissions and generation tool (AVERT), the proposed project could avoid 0.45 tons/year (tpy) of NO_x and 0.07 tpy of PM_{2.5} in its first year or early years of operation. As Table 9 shows, this would offset construction emissions of NO_x in two years and PM_{2.5} in one year. (Less than significant impact)

c) Expose sensitive receptors to substantial air pollutant concentrations?

On-Site Sensitive Receptors—The project site is located on the northwestern edge of the BAAQMD-designated Concord Priority Community. A priority community is an area where combined exposures toxic air contaminant (TACs), PM_{2.5}, and ozone may be considerable, and where people who may be particularly vulnerable may bear disproportionately the potential adverse health effects of air pollution.

The proposed project is not a place where people would live, play, or convalesce, or otherwise would spend substantial time on a regular recurring basis. Maintenance workers would visit infrequently, and who would not spend substantial time each year on the project site. The proposed project and its visitors would not meet the definition of a sensitive receiver (also termed “receptor”) suggested by BAAQMD. The definition suggested by BAAQMD follows:

If a project is likely to be a place where people live, play, or convalesce, it should be considered a receptor. It should also be considered a receptor if sensitive individuals are likely to spend a significant amount of time there. Sensitive individuals refer to those segments of the population most susceptible to poor air quality: children, the elderly, and those with pre-existing serious health problems affected by air quality. Examples of receptors include residences, schools and school yards, parks and play grounds, daycare centers, nursing homes, and medical facilities. Residences can include houses, apartments, and senior living complexes. Medical facilities can include hospitals, convalescent homes, and health clinics. Playgrounds could be play areas associated with parks or community centers.³⁰

The proposed project would not attract pedestrians, or others from the general public, on excursions through the area. The entire project site would be fenced with security fencing. Duration of excursions onto the project site by maintenance workers would be short and/or would occur each year at infrequent intervals.

The proposed project would not have fixed (also termed “stationary”) on-site sources of air pollutants. The project site is located at substantial distance from the nearest off-site mobile and stationary sources of TACs (see Figure 8). Figure 8 shows that there are no existing permitted stationary sources of TACs or PM_{2.5} and no highway source of TACs or PM_{2.5} within 1,000 feet of the project site. Exposures to air pollutant concentrations on the project site, therefore, would be less-than-significant because 1) the proposed project would not attract or employ sensitive receivers and 2) the project site would not have particular exposures to any proposed on-site source(s) or nearby sources of PM_{2.5} or TACs.

Off-Site Sensitive Receptors—The proposed project also would not expose off-site receptors to substantial air pollutant concentrations. The Concord Priority Community currently has combined exposures to TACs, PM_{2.5} and ozone. However, the proposed project would not add to long-term exposures because it would not add any on-site stationary source of TACs or PM_{2.5}.

In the short-term, construction emissions of PM and DPM could add temporarily to local air pollutant sources. In view of the short-term 4-5-month nature of the proposed construction and estimated

³⁰ BAAQMD, 2017. *California Environmental Quality Act Air Quality Guidelines*, Chapter 5: Local Community Risk and Hazard Impacts, updated May 2017, (224 pp.), pp. 5-1 through 5-16.
http://www.baaqmd.gov/~media/Files/Planning%20and%20Research/CEQA/BAAQMD%20CEQA%20Guidelines_Final_May%202012.ashx?la=en

construction-phase emissions, potential for impact to off-site receptors is assessed to be less-than-significant with implementation of the list of basic mitigation measures in Table 8. (Less-than-significant with mitigation incorporated)

d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

Operation

Operation of the proposed project would not have routine sources of potential odor (*e.g.*, painting maintenance operations) or TACs. Panel washing to remove built up dust and pollen or dirty film on the protective glass, is necessary to maintain efficiency and power output. Dusty panels may produce only 70 to 80 percent of their rated output.

Panel washing would entail use of a small-sized, rubber tracked or rubber wheeled, mini loader. A diesel fueled-loader, especially one meeting U.S. EPA Tier 4 emission standards, is a minor source of diesel particulate matter (DPM), which is a recognized TAC.

The expected rated horsepower of a diesel mini-loader, such as the Kubota M59 or MultiHog CX-75, is approximately 59–75 hp. Washing 5,460 panels would take less than one day, and would use approximately 1,500–1,800 gallons of water. A 640-gallon or smaller water tank would be totd by the mini-loader, which could be refilled from a water truck. In view of the 600-foot minimum separation distance between the project site and nearest residential receivers, low-rated horsepower of the equipment, and frequency of washing 2 or 3 times annually, operations of the project would not create objectionable odors or significant emissions of TACs. (Less-than significant effect)

Panel washing videos

Robotic:

<https://www.youtube.com/watch?v=3b2bnYbkxq0>

Conventional:

<https://youtu.be/3TcfPbJVnww>

<https://www.youtube.com/watch?v=l8zYGGDnnDQ>

<https://www.youtube.com/watch?v=cDZPYseY2pg>

<https://www.youtube.com/watch?v=yPYvIKTnDX4>

Construction

Diesel fueled-haul trucks and mobile construction equipment emit diesel particulate matter (DPM), which is recognized as a TAC. In view of the 600-foot minimum separation distance between the project site and nearest residential receivers, construction of the proposed project could not expose people to significant concentrations of DPM. (Less-than significant effect)

<u>Topics:</u>	<u>Potentially Significant Impact</u>	<u>Less Than Significant with Mitigation Incorporated</u>	<u>Less Than Significant Impact</u>	<u>No Impact</u>	<u>Not Applicable</u>
IX. GREENHOUSE GAS EMISSIONS—					
Would the project:					
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Existing Conditions

Statewide Policies

Over the past two decades, the State of California has implemented policies to reduce GHG emissions from electricity generation. Table 9 summarizes key policies enacted during 2003-2013.

Table 9
California Legislative Actions to Reduce GHG Emission from Electricity Generation

Policy	Year Enacted	Description
Renewable Portfolio Standard	2003	Requires LSEs to generate a minimum percent of retail electricity from qualifying renewable sources. Percentages increase over time to 60 percent in 2030 from 20 percent in 2010.
California Solar Initiative	2007	Provided \$2.7 billion over a ten-year period for financial incentives to reduce the cost of installing distributed solar, such as rooftop solar PV.
Net Energy Metering (NEM)	1996	Encourages customers to install distributed solar generation by paying them a retail electricity rate for the electricity generated.
Emissions Performance Standard (SB 1368) ^a	2007	Effectively prohibits LSEs from signing or extending long-term contracts with coal power plants.
Cap-and-trade	2013	Requires electricity generators and importers to obtain an allowance or offset to cover each ton of GHG emitted. Program includes other emitters outside of the electricity sector, and entities can buy and sell allowances.
Notes:		
LSEs = load serving entities PV = photovoltaic GHG = greenhouse gas		
^a SB 1368 (Perata, 2006).		
Source: California, State of, Legislative Analyst's Office, 2020. <i>Assessing California's Climate Policies—Electricity Generation</i> , January 6, 2020, (32 pp.).		
https://lao.ca.gov/reports/2020/4131/climate-policies-electricity-010320.pdf		

In addition to the statewide GHG goals across multiple sectors, California in recent years established GHG goals that are specific to the electricity sector. The Clean Energy and Pollution Reduction Act of 2015 (SB 350, de León, 2015) set a goal of 50 percent renewables by 2030, up from 33 percent renewables by 2020. SB 350 also requires the California ARB to establish 2030 GHG targets for the electricity sector set in annual range of 30 MMT CO_{2e} to 53 MMT CO_{2e}. SB 100 (de León, 2017) accelerated the electricity sector percentage renewables to 60 percent from 50 percent by 2030 and established a statewide policy of 100 percent zero carbon electricity by 2045.

Local Policies

Contra Costa County's Climate Action Plan include Measure RE 2, which calls for wastewater processors to install cogeneration infrastructure on wastewater treatment facilities. Central San currently has cogeneration for steam and power; however, it needs additional electricity on-site for WWTP operations and off-site for remote pumping stations. Measure RE2 also calls for alternative non-fossil energy (*i.e.*, renewable energy) wherever feasible at public and semi-public buildings and land throughout unincorporated Contra Costa County.

Contra Costa County Ordinance No. 2020-07 (Solar Energy Facilities Ordinance) provides development standards applicable to "commercial" solar energy installations in unincorporated Contra Costa County. A "commercial" solar energy installation is defined (Article 88-30.206b) as one that provides more electrical power than is consumed on the parcel on which it is located.

To facilitate development of solar energy generating facilities, on February 25, 2020, the County Board of Supervisors adopted Ordinance No. 2020-07 (Solar Energy Facilities) and text amendments to *Contra Costa County 2005-2020 General Plan*. General Plan Policy 8-52 was modified by the County Board of Supervisors to read as follows:

- 8-52. Solar energy facilities may be established in areas designated Commercial, Light Industry, Heavy Industry, Agricultural Lands, and Public and Semi-Public on the Land Use Element Map, in accordance with the Solar Energy Facilities Ordinance.

This means that prospective development of solar energy facilities on designated areas in unincorporated Contra Costa County have been facilitated. Such projects generally could be allowed by the county, without administrative or entitlement hurdles such as, general plan amendments, re-zoning or use permits.

Pacific Gas & Electric (PG&E)

PG&E is the electrical service provider to Central San. A relatively high 75 percent of PG&E's electrical power is derived from non-GHG emitting or zero-carbon sources but not entirely from zero-carbon sources. Renewables other than large hydroelectric, large hydroelectric, and nuclear energy account for the 75 percent. Natural gas-fired plants accounts for remaining 25 percent. These shares are a composite for PG&E-owned energy facilities and purchased power both in-state and out-of-state.

PG&E has already attained California's mandate for 33 percent of retail electric deliveries from eligible renewable sources by year 2020. This was achieved three years ahead of schedule.

In early 2018, PG&E received approval to close Diablo Canyon nuclear power plant in 2025, and it plans to replace that nuclear power plant with renewable sources of energy. Later in 2018, the California Public Utilities Commission (CPUC) approved rapid procurement for four (4) PG&E energy storage projects to replace its three (3) active natural gas (NG)-fired power plants, all located in PG&E's service area.³¹ One of the three PG&E-owned NG-fired plants is the Gateway Generating Station, which is located in the San Francisco Bay Area (SFBA) in Antioch.

It remains unclear if the NG-fired power plants will be decommissioned soon. The PG&E-owned NG-fired plants and additional peaker plants in the SFBA, which are owned by others, remain in service today. In San José, the 605 MW Metcalf Energy Center is an NG-fired peaker plant owned by Calpine. It likely will be decommissioned when the Hummingbird Energy Storage becomes operational. Currently, though, the Metcalf Energy Center is considered by CPUC to be a reliability-must-run (RMR) plant.

³¹ PG&E operates three natural gas-fired plants including Colusa Generating Station (657 MW: 3,000 GWh/yr net) in Maxwell, CA; Gateway Generating Station (580 MW: 2,900 GWh/yr net) in Antioch, CA; and, Humboldt Bay Generating Station (163 MW: 400 GWh/yr net) in Humboldt County, CA.

If not all three, at least one of the three PG&E-owned NG-fired power plants, Humboldt Bay Generating Station, likely will remain in service in the foreseeable future. Humboldt Bay Generating Station was recently converted to a dual fuel plant capable of using natural gas or ultra-low sulfur diesel. Power distribution from the Humboldt Bay Generating Station also was modified. As of June 2020, the plant can be operated to provide electrical power to an “energy island” of twenty Humboldt County communities, at times of public safety power shutdowns outside of Humboldt County.

Some of PG&E’s proposed energy storage projects are located within the SFBA. Battery energy storage systems (BESS) in the SFBA may eventually supplant NG-fired peaker plants such as the 605 MW Metcalf Energy Center NG-fired plant in South San José and the 580 MW Gateway Generating Station in Antioch. The timing appears to be proximate within the next 1-5 years. The effect will be to reduce local GHG emission related to the SFBA’s electrical power consumption. Table 10 lists some of these BESS projects.

Thresholds of Significant Effect

For project operations, the BAAQMD recommends a GHG emission threshold of significant effect which is 1,100 MT CO₂e/year, on a recurring annual basis. For project construction, the BAAQMD has not recommended a GHG emission threshold of significant effect.

In place of such a threshold, Approach 1 is to annualize the sum of construction, operation and maintenance GHG emission and compare the annualized rate to 1,100 MT CO₂e/year. For the proposed project, which would not generate any CO₂e for operations, this means the same as annualizing the sum of construction and maintenance GHG emission and comparing the annualized rate to 1,100 MT CO₂e/year. Approach 2 (optional) is to estimate GHG emission for the construction, estimate GHG emission avoided by the proposed project, and compare these in a manner of cost *versus* benefit comparison.

Discussion

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

The proposed project would not generate net incremental emission of GHGs. Allowing for the one-time emission of GHGs for construction and minor recurring emission of GHGs for operations and maintenance, the proposed project would cause a net reduction in Central San’s carbon footprint compared to the business-as-usual scenario in which Central San continues to purchase electrical power from the grid. PG&E grid power still includes some electrical power generated at its three fossil-fuel fired power plants.

Approach 1

GHG emission for construction of the proposed project, recurring GHG emission for its maintenance, and GHG emission for removal and final restoration can be annualized for a 25-year project lifetime. Annualized GHG emission would not approach or exceed 1,100 MT CO₂e/year, which is the threshold of significant effect.

Table 10

Planned Battery Energy Storage Systems (BESS) in the SFBA

Project Name	City	Storage Technology	Operational	Size (MW)
Moss Landing Energy Storage--Vistra	Moss Landing	Lithium ion	December 2020 (Phase I)	300 1,200 MWh/day
Moss Landing Energy Storage--Vistra	Moss Landing	Lithium ion	August 2021 (Phase II)	100 400 MWh/dav
Moss Landing BESS – Tesla	Moss Landing	Lithium ion	2 nd quarter 2021	182.5 730 MWh/dav
Hummingbird Energy Storage --esVolta L.P.	San Jose	Lithium ion	Projected December 2020	75 300 MWh/dav
mNOC AERS Energy Storage	Morgan Hill	Lithium ion	No information	10 40 MWh/dav
Total proposed				667.5 2,670 MWh/day
SOURCES: esVolta L.P. https://www.esvolta.com/hummingbird PG&E. https://www.pgecorp.com/corp_responsibility/reports/2020/assets/PGE_CRSR_2020.pdf				

Approach 2

Net avoidance of GHG emission would accrue within the first full year of project operations. Construction GHG emission is estimated at 125 MT CO_{2e}, which is non-recurring, a total for the construction. In comparison, proposed project operations could displace up to 1,298 MT CO_{2e}/year.

The proposed project’s potential to avoid some GHG emissions is relative to Central San’s continued power purchase from the grid. The magnitude of potential avoidance was estimated conservatively based upon US. EPA’s AVERT method and adjustments tailored to Contra Costa County and PG&E’s service area:

Tailored assumptions:

- On-demand grid power is from NG-fired power plants such as Gateway Generating station in Antioch, California;
- Gateway Generating Station’s average GHG emission rate is 840 lbs CO_{2e}/MWh, which is within a narrow range of 839–854 lbs CO_{2e}/MWh during 2016-2019³²; and,
- The proposed project would generate on average approximately 3,400 MWh/year, being the mid-point of 3,200–3,600 MWh/year, which is a range expected to be typical of 2 MW distributed solar PV projects in the area.

³² CEC, 2020. *Annual Generation–Plant Unit*, for years 2016–2019, web site visited December 2020.

Estimated avoidance of GHG emission in Approach 2 best considered as a near-term benefit of the proposed project in its early years of operation. The long-term is uncertain, because the future of NG-fired power plants in the SFBA and in PG&E’s service area is uncertain.

Over time, BESS could displace PG&E-owned NG-fired power generating stations and non-PG&E NG-fired peaker plants owned by others. That is, each year over its lifetime, zero-carbon energy generated by the proposed project could avoid decreasing amounts of GHGs associated with purchased power from PG&E’s grid. However, in the near-term, even if PG&E retired one of its NG-fired power plants, the proposed project could avoid GHG emission in its early years of operations. (No impact)

b) Conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

The proposed project would not conflict with statewide plans, programs, or goals including goals of the Clean Energy and Pollution Reduction Act of 2015 and SB 100 (de León, 2017). The proposed project is consistent local *Contra Costa County 2005-2020 General Plan* Policy 8-52 to facilitate development of solar energy generating facilities. Such facilities are encouraged at the state and local level for the expressed purpose of reducing emission of GHGs compared to the business-as-usual scenario, in which electrical power is purchased from the grid. (No impact)

Topics:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Not Applicable
X. POPULATION AND HOUSING—					
Would the project:					
a) 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)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Existing Conditions

The project site formerly was located in Contra Costa County Census Tract 3200.02, Block 1007. Due to boundary changes or refinements, the project site now is located in Tract 3200.04, Block Group 1, Block 1013. This tract includes additional territory toward the west in Martinez and has a larger resident population.

The project site is located near existing single-family housing along Blum Road and its side streets. The nearby residences along Blum Road and its side streets are located in Tract 3200.04, Block Group 1, Blocks 1014 through 1018. The resident population in Blocks 1013–1018 was 467 persons in 2010, and the resident population in Tract 3200.04 was 6,216 persons in 2010. Most of this reported population in Tract 3200.04 is located in the western portion of Tract 3200.04 (Bay Area Census, 2021).

Discussion

a) 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 proposed project would not induce unplanned population growth directly or indirectly. The proposed perimeter service road would be a private road without through connection to roads other than Blum Road. Proposed energy would not exceed demand for operation of existing facilities by Central San. (No impact)

b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

Persons would not be displaced as a consequence of developing the solar energy resource. Housing units would not be taken for construction of the proposed project. (No impact)

Topics:	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact	Not Applicable
XI. RECREATION					
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facilities would occur or be accelerated?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Existing Conditions

Waterbird Regional Preserve is a 192-acre regional park located in Contra Costa County, approximately one mile northwest of the project site. Waterbird Regional Preserve is part of the East Bay Regional Park District. The Martinez Gun Club (900 Waterbird Way) is located 0.75 mile north-northwest of the project site. Martinez Gun Club is privately operated, open to the public. Sports fields are located near the intersections of Imhoff Drive/Solano Way and Imhoff Drive/Laura Alice Way, approximately one mile east-southeast of the project site. These fields are used for soccer, softball and baseball.

The Walnut Creek corridor is located 0.33 mile northeast of the project site. A future extension of Iron Horse Trail is planned generally within the creek corridor alignment, as shown in available planning documents.

One additional plan was identified, which is known locally as the Lower Walnut Creek (LWC) Restoration Project. Based upon review of the LWC Restoration Project Improvement Plans, trails, paths, walkways, or roads are not planned that would have any connection to the project site. CEQA documentation for this project recently has been finalized and the project has been approved by the Contra Costa Flood Control and Water Conservation District.

a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facilities would occur or be accelerated?

The nearest parks and other recreational facilities are located 0.75 mile or farther northwest, north-northwest, or east-southeast of the project site. These include EBRPD’s Waterbird Regional Preserve and the Martinez Gun Club (900 Waterbird Way). The Walnut Creek corridor is located approximately 0.33 mile northeast of the project site. Central San’s proposed solar panel array, therefore, would not affect the right-of-way for the future Iron Horse Trail extension.

The project site is located within a Central San-owned parcel known as the Lagiss parcel. There is no connection between the Lagiss parcel and existing or foreseeable trails, neighborhood parks, or regional parks, including any of the planned facilities within the LWC Restoration Project. The proposed project would have security fencing; therefore, it is not expected to attract walkers, joggers, or skateboarders and is not otherwise expected to create an attractive nuisance.

The project site does not adjoin any parks or other recreational facilities. In view of its location, security fencing, and nature of the proposed solar PV facility improvements, the proposed project is not expected to increase the use of existing neighborhood and regional parks or other recreational facilities. (No impact)

b) Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?

The proposed project would be fenced and secured, and it would not include recreational facilities. The proposed project also would not induce housing development or substantial permanent employment, which otherwise could potentially require construction or expansion of recreational facilities to serve residents or employees. Therefore, the proposed project would not have the stated effects related to construction or expansion of recreational facilities. (No impact)

<u>Topics:</u>	<u>Potentially Significant Impact</u>	<u>Less Than Significant with Mitigation Incorporated</u>	<u>Less Than Significant Impact</u>	<u>No Impact</u>	<u>Not Applicable</u>
XII. UTILITIES AND SERVICE SYSTEMS—					
Would the project:					
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment, or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Have sufficient water supply available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Existing Conditions

Statewide Water Conservation, Waste Diversion & Recycling

Adopted state policies require substantial future reductions in urban water use, expressed in daily per capita goals. The Water Conservation Act of 2009 (SBx7-7, Steinberg, 2009), which was passed in

November 2009, mandates statewide 10 percent reduction in daily per capita urban water use by 2015 and 20 percent reduction in daily per capita urban water use by the year 2020. The 2005 water use baseline of 198 gallons per capita daily (gpcd) was accompanied by a –33 percent reduction to 133 gpcd by 2015. The target goal of 158 gpcd by 2020, which may have been met, remains to be audited.

AB 341 (Chesbro, 2011) declares that it is statewide goal to source-reduce, recycle, or compost not less than 75 percent of solid waste generated in California by the year 2020. In setting this goal for recycling, composting, or source reduction of solid waste, the California Legislature and Governor Brown called upon the California Department of Resources Recycling and Recovery (CalRecycle) to take a comprehensive approach to decrease California’s reliance on landfills. The purpose is to reduce GHG emission and stimulate development of a suitable recycling industry in California.

As California progresses to cleaner energy and transportation, CalRecycle is preparing for end-of-life (EOL) management of solar PV panels, electric vehicle (EV) batteries, battery energy storage systems (BESS), and related equipment. In January 2019, CalRecycle and the CPUC signed a Memorandum of Understanding to develop approaches to the collection and recycling of these devices. CalRecycle and CPUC,—with support from the CEC, DTSC, California ARB, and the Governor’s Office of Business and Economic Development,—are preparing an interagency white paper on EOL Management of PV Panels and EV Batteries and BESS. The white paper is scheduled to be released in 2021.³³

Contra Costa County

The 2019 California Green Building Standards Code (CalGreen), as amended in Contra Costa County Code, requires that at least 65 percent by weight of work site debris be recycled, reused, or otherwise diverted from landfill disposal. This requirement applies to demolition projects and most new construction.

Contra Costa County Water Agency

The Contra Costa County Water Agency advises the Contra Costa County Board of Supervisors on water policy in the County and the Sacramento-San Joaquin Delta. Contra Costa County has adopted the Delta Water Platform to advance policies 1) that could balance the area’s need for drinking water and environmental health of the eco-system and 2) that could reverse past harm to the Sacramento-San Joaquin Delta eco-system. Re-establishing healthy fish populations in the Delta also could mean relaxing current restrictions on water diversions made necessary to protect endangered fish species such as Delta smelt.

Contra Costa Water District

The project site is located in the western end of Contra Costa Water District’s (CCWD’s) service area. CCWD’s service area covers central and eastern Contra Costa County and has a service area population of nearly 500,000 persons. CCWD’s water source is the Sacramento-San Joaquin Delta. Sacramento-San Joaquin Delta water is diverted from four intakes: the Rock Slough Intake near Oakley, the Old River Intake near Discovery Bay, the Middle River Intake on Victoria Canal and the Mallard Slough Intake in Bay Point. Depending on the intake and customer location, water diverted into the Contra Costa Canal is conveyed to one of three treatment plants and four reservoirs.

Central San

Existing sanitary sewer collection and treatment systems operated by Central San are described in the *Comprehensive Wastewater Master Plan* (Central San, 2017). Most wastewater is treated to a secondary level, disinfected by ultraviolet light, and then discharged into Suisun Bay. Since the 1970s, however, Central San has provided further treatment of some wastewater that is reused at the plant or recycled off plant. Approximately 550 million gallons per year are treated to a tertiary standard through supplemental dual-media sand filtration and sodium hypochlorite disinfection. This tertiary treated water is reused for plant operations or distributed as recycled water for landscape irrigation, golf course irrigation, and industrial process uses. Of the 550 million gallons of treated water reused each year, approximately 365

³³ CalRecycle, 2020. Web page visited January 2021. <https://www.calrecycle.ca.gov/reducewaste/energystorage>

million gallons is used on-site for plant processes and landscape and over 180 million gallons is used by customers.

In addition to its “purple” recycled water distribution pipes, in 2016 Central San completed construction of an automated commercial recycled water fill station.³⁴ Water would be needed for the proposed project’s dust control during the construction phase. Later, during the operations phase, water would be needed for panel washing. This water could be provided from the automated commercial recycled water fill station.

Recycling this water means that less water is diverted from the Delta environment. During drought years, when water for landscape irrigation is less available because of water rationing, recycled water is an especially valuable resource.

Pacific Gas & Electric Company (PG&E)

Electricity could be purchased from PG&E the grid on a continuing basis continue to meet some of Central San’s on-site demand for electrical power and off-site demand for electrical power at its remote pumping stations. Central San currently purchases electricity and natural gas from PG&E. Natural gas (NG) is used in Central San’s NG-fired cogeneration turbine.

Discussion

a) Require or result in the relocation or construction of new or expanded water, or wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities?

The proposed project is a low-impact development. Landscaping or other highly water-dependent uses are not proposed. Restrooms or wastewater-generating features are not proposed. There are no utility services on the project site; therefore, none would require relocation or reconstruction.

Approximately 300 feet of underground electrical conduit would be constructed for power tie-in to the grid. The underground electrical conduit would daylight at a service drop located off-site west of the project site. The main difference with this service drop is that electrical power from the proposed project would be conveyed back to the distribution network.

The project site is drained by overland flow. With the proposed addition of 5,460 solar panels, the canopied surface area would be approximately 107,500 square feet (or, 2.5 acres). However, the ground beneath the panels would remain permeable as the panels would be elevated on ground mounts.

Mitigation measure XII-6

- Drainage outlets and retention basins around the perimeter service road have been designed so as not to alter the overall existing drainage pattern or volume of runoff, concentrate runoff at unengineered collection points, or accelerate erosion. These features will be constructed as shown in the SWCP.

Residual effect: Less than significant effect with mitigation incorporated.

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

The proposed project is a low-impact development with very low water demand. Two or three times per year, panel washing would be performed. The annual waster use for panel washing is in the estimated

³⁴ Central San, 2017. *FY 2016-17 Optimizations, Innovations, and Achievements*, June 30, 2017, (53 pp.).

range 4,500 gallon-5,400 gallons, based upon washing three times per year. This water could be provided from Central San's automated commercial recycled water fill station. (No impact)

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?

The proposed project is a low-impact development. The project site does not have sanitary sewer service and extension of such service is not proposed. Restrooms, decorative fountains or other high water-use features are not proposed. The proposed project, therefore, would not generate wastewater. (No impact)

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?

The proposed project would not generate solid waste during its operation. The proposed project would not add housing or commercial space. Therefore, the proposed project would not generate domestic solid waste or induce activities that could generate additional solid waste during its estimated 30 years of operation.

After its operation, at the end-of-life (EOL) stage, dismantling and disposal would generate wastes for disposal or recycling of the various materials and components of the solar PV system. This potentially could result in landfill disposal of the panels.

Mitigation measure XII-7

- Recycling requirements will be incorporated into the System Operator's contract and construction/demolition documents to assure that EOL recycling of components and materials (e.g., glass, aluminum) is performed in a responsible sustainable way.

Residual effect: Less than significant with mitigation incorporated.

e) Comply with federal, state, and local statutes and regulations related to solid waste? Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

During construction, waste inert materials (e.g., rock, concrete chunks), organics (e.g., weed mat, wood forming boards), and limited waste soil could be generated. Additionally, packing materials including corrugated cardboard and plastic are expected. The contractor will prepare a recycling and diversion plan showing that at least 65 percent of these materials would be reused, salvaged and recycled, or otherwise diverted from landfill disposal. (Less-than-significant impact with Mitigation measure XIV-7 incorporated)

<u>Topics:</u>	<u>Potentially Significant Impact</u>	<u>Less Than Significant with Mitigation Incorporation</u>	<u>Less Than Significant Impact</u>	<u>No Impact</u>	<u>Not Applicable</u>
XIII. PUBLIC SERVICES— Would the project:					
a) Result in substantial adverse physical impacts associated with the provision of, 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 public services including:					
Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Fire protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Other public services or facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Existing Conditions

The proposed project would use approximately 8.2 acres for solar PV electrical power generation in place of the existing cattle grazing use of the land. The project site is part of a larger Central San-owned 48-acre. Most of the 48-acre parcel is leased to a rancher for cattle grazing. Located in unincorporated Contra Costa County, the project site may receive public service from County offices and various special districts, including the following:

- Contra Costa County Sheriff’s Office
- Contra Costa County Fire Protection District
- Martinez Unified School District
- East Bay Regional Park District
- Contra Costa County Public Library
- Contra Costa County Flood Control and Water Conservation District

Development which adds to local visitation, employment, or resident population generally adds to demand for public services. Existing public services and their provides are described further below:

Police Protection Services—Police protection in unincorporated areas of Contra Costa County is provided by the Contra Costa County Sheriff’s Office. The police station nearest the project site is Muir Station, which is located 1980 Muir Road, approximately 1.3 miles southwest of the project site. The travel distance is 1.7–2 miles and the travel time is approximately 4–5 minutes.

Muir Station serves the unincorporated areas of Lafayette, Concord, Pleasant Hill and Martinez along I-680 corridor; the communities of Clyde and Pacheco; and additional unincorporated areas along State Route 4 from Cummings Skyway to Bay Point.

Fire Protection Services—Fire safety and emergency response services are provided by the Contra Costa County Fire Protection District (CCCFPD). The jurisdiction of CCCFPD covers 304 square miles, including nine incorporated cities and unincorporated communities such as Pacheco.

The Engineering Unit of the CCCFPD’s Fire Prevention Bureau is responsible for plan review, inspection of new construction, and fire and life safety testing, to ensure compliance with the California Fire and Building Codes, Fire District Ordinance and Standards, and applicable NFPA

standards. The Exterior Hazard Control Unit inspects properties for compliance with weed abatement standards. The CCCFPD has published a Minimum Standards Bulletin for weed abatement. The Exterior Hazard Control Unit's primary objective is to limit the potential sources of fuel for fire through abatement of combustible rubbish and vegetation.

CCCFPD's Station #9, which is located at 209 Center Avenue in Martinez, is the station closest to the project site. Access to the project site from Station #9 is by way of Center Avenue, Pacheco Boulevard, Imhoff Drive, and Blum Road. The travel distance is 1.7 miles and the travel time is approximately 5 minutes.

Schools—The project site does not adjoin any schools, pre-schools, or day care centers. The nearest school is Las Juntas Elementary School, which is located at 4105 Pacheco Boulevard, approximately 0.9 mile west of the project site. Las Juntas Elementary School is part of the Martinez Unified School District. Phase 1 campus improvements at Las Juntas Elementary School currently are under construction, with schedule completion of Phases 1-4 by August 2022.

Parks—The nearest existing parks and other recreational facilities are located 0.75 mile or farther northwest, north-northwest, or east-southeast of the project site. These include EBRPD's Waterbird Regional Preserve, the Martinez Gun Club (900 Waterbird Way), and the Tesoro Sports Complex. The project site does not adjoin any parks or other recreational facilities.

Future extension of the Iron Horse Trail is being contemplated along the Walnut Creek riparian corridor. According to the *Final Initial Study/MND for the LWC Restoration Project*, "An extension of the Iron Horse Trail along Lower Walnut Creek could connect to a trail network on Pacheco Marsh and provide shoreline access." Walnut Creek at its closest approach is located approximately 0.33 mile northeast of the project site. The proposed project is not located on the creek corridor alignment contemplated for future extension of Iron Horse Trail.

Future LWC marsh restoration improvements, which are located generally north of the project site, are planned for construction by the Contra Costa County Flood Control and Water Conservation District (FCWCD) in the timeframe May 2021-2024. The project title of FCWCD's project is the Lower Walnut Creek (LWC) Restoration Project. Restoration activities and in-water work on the 441-acre LWC Restoration Project tentatively are expected to begin in May 2021 (BCDC). FCWCD filed Application Number 2019.005.00 with the San Francisco Bay Conservation and Development Commission (BCDC) on October 22, 2020. BCDC approved the permit on November 19, 2020.

FCWCD partnered with the John Muir Land Trust (JMLT) and the East Bay Regional Park District (EBRPD) to design proposed berms and levees to accommodate future public access and amenities. FCWCD would construct the proposed restoration project, would continue to maintain and monitor the project, and would convey North Reach land to JMLT. JMLT then would construct and maintain public access trails and amenities. Along the South Reach, FCWCD and EBRPD may partner to provide public access. Future public access and amenities that may be built by JMLT and EBRPD are not parts of the approved BCDC permit for the LWC Restoration Project. These projects would require separate reviews and permits from BCDC.

The South Reach and Pacheco Reach of the LWC Restoration Project are located closest to Central San's solar PV project site. The Pacheco Reach would have no berm or levee construction and no public access. The South Reach of LWC is located between the BNSF railroad crossing of Walnut Creek and the confluence of Pacheco Creek with Walnut Creek. South Reach is located approximately 0.44 mile north-northeast of Central San's solar PV project site. The Middle Reach of LWC extends from the confluence of Pacheco Creek with Walnut Creek north to Waterfront Road.

North of Waterfront Road, the North Reach (also known as Pacheco Marsh) is an additional part of the LWC Restoration Project.

Public Libraries—The Contra Costa Public Library system is a consortium of community libraries in Contra Costa County, which serve the general population of both the incorporated cities and unincorporated county areas. The libraries are funded by a combination of property tax revenues and contributions from the cities. The Contra Costa County Board of Supervisors has decision-making authority over the Contra Costa Public Library system, its funding, staffing, acquisitions, and facilities. The supervisors are informed by an advisory group known as the Contra Costa County Library Commission. Nearby branches include Martinez and Concord.

Flood Control and Water Conservation—Flood protection is provided by Contra Costa County FCWCD. FCWCD's jurisdiction includes the territory within the incorporated cities and unincorporated areas of Contra Costa County. Stormwater drainage facilities in the unincorporated areas of Contra Costa County are owned and maintained by FCWCD. As a dependent special district, FCWD is governed by the Contra Costa County Board of Supervisors and receives a portion of countywide property taxes to fund much of its work.

FCWCD is lead agency for the Lower Walnut Creek (LWC) Restoration Project. Approved marsh restoration improvements in the 441-acre LWC Restoration Project area will be located generally north of Central San's solar PV the project site. In addition to environmental benefits to native plants, fish and wildlife, the LWC Restoration Project will provide sustainable and appropriate degrees of flood protection for lands along LWC and Pacheco Creek, with added adaptability to foreseeable future sea level rise and sedimentation.

a) Result in substantial adverse physical impacts associated with the provision of, 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 public services including:

Potential Effect of the Proposed Project on Police Protection Service: The proposed project would include a security fence around its entire perimeter. The project site is located within a larger Central San-owned parcel; therefore, it would not be accessible directly from Blum Road without trespassing through an additional outer gate to the 48-acre Lagiss parcel. Provisions for security monitoring of the project site would be made part of the contract document with the System Operator.

Demand for additional Sheriff's Office administration and patrol services and new, relocated, or altered offices or stations would not be imposed by the proposed project. The proposed project, therefore, would not necessitate construction of new, relocated, or altered offices or stations, and impacts from such construction would not result. (No impact)

Potential Effect of the Proposed Project on Fire Protection Services: The project site is located in a local responsibility area (LRA), outside of fire severity zones mapped as moderate, high, or very high. Travel distance (1.7 miles) and travel time (5 minutes) to Station #9 is adequate for the proposed project.

CCCFPD's Exterior Hazard Control Unit currently inspects properties like the Central San-owned 48-acre Lagiss parcel for compliance with weed abatement standards. The project site currently has low fuel load owing to 1) current maintenance practices, which include seasonal discing and mowing around the perimeter of the Lagiss parcel and 2) existing use of the Lagiss parcel for cattle grazing.

Provisions for module system monitoring and vegetation management within the smaller project site would be made part of the contract document with the System Operator.

Demand for additional fire protection services and new, relocated, or altered fire stations would not be imposed by the proposed project. The proposed project, therefore, would not necessitate construction of new, relocated, or altered fire stations, and impacts from such construction would not result. (No impact)

Potential Effect of the Proposed Project on School Services: The proposed project would add solar PV modules on land located 0.9 mile east of Las Juntas School. The proposed project would not interfere with, or cause to be altered, any phase of the campus improvements under construction at Las Juntas Elementary School.

Construction of the proposed project would attract a temporary work force for approximately five months. Operations by the System Operator would require monitoring, limited periodic maintenance, and vegetation management. The proposed project would not induce new housing development or population growth. Demand for additional public school services and new, relocated, or altered public schools would not be imposed by the proposed project. The proposed project, therefore, would not necessitate construction of new, relocated, or altered public schools, and impacts from such construction would not result. (No impact)

Potential Effect of the Proposed Project on Parks:

Construction of the proposed project would attract a temporary work force for approximately five months. Operations by the System Operator would require monitoring, limited periodic maintenance, and vegetation management. The proposed project would not induce new housing development or population growth. Demand for additional park services and new, relocated, or altered parks or other recreational facilities would not be imposed by the proposed project. The proposed project, therefore, would not necessitate construction of new, relocated, or altered parks or other recreational facilities, and impacts from such construction would not result. (No impact)

Potential Effect of the Proposed Project on Public Library Services: The proposed project would attract a temporary work force for approximately five months. Operations by the System Operator would require monitoring, limited periodic maintenance, and vegetation management. The proposed project would not induce new housing development or population growth. Demand for additional library services and new, relocated, or altered libraries would not be imposed by the proposed project. The proposed project, therefore, would not necessitate construction of new, relocated, or altered libraries, and impacts from such construction would not result. (No impact)

Potential Effect of the Proposed Project on Flood Control Services: The proposed project would add solar PV modules on land located 0.44 mile south-southwest of the South Reach of the LWC Restoration Project. Construction of the restoration project will have entirely separate access, which would not be shared for access to Central San's solar PV project site. North, Middle and Pacheco Reaches will be accessed from Waterfront Road and Waterbird Way. South Reach will be accessed from Conco Road. Central San's solar PV project site would be accessed from Blum Road. The proposed project would not interfere with, or cause to be altered, any phase of the LWC restoration improvements.

The proposed solar PV project would implement short-term mitigation measures described in its Storm Water Pollution Prevention Plan (SWPPP) and long-term controls described in its Storm Water Control Plan (SWCP). Long-term controls are described in Mitigation measures XII-6 and XV-9.

However, the proposed project would not cause any additional need for flood control services or new facilities, construction of which could cause significant environmental impacts. (No impact)

<u>Topics:</u>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>	<i>Not Applicable</i>
XIV. GEOLOGY AND SOILS—					
Would the project:					
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:					
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zone Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? (Refer to Division of Mines and Geology Special Publication 42.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ii) Strong seismic ground shaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
iii) Seismic-related ground failure, including liquefaction?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iv) Landslides?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Be located on 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code, creating substantial direct or indirect risks to life or property?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Directly or indirectly destroy a unique paleontological resource or site or a unique geologic feature?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Existing Conditions

Figure 9, Figure 10, and Figure 11 illustrate the geologic setting of the project site, geologic classification of its near-surface soils, its location in relation to the nearest active earthquake fault, and its susceptibility to liquefaction and lateral spreading.

Bedrock Geologic map (Figure 9) emphasizes local bedrock conditions, as opposed to surficial soil. Figure 9 illustrates that the project site has sandstone, siltstone, and shale. Sandstone, siltstone, and shale is mapped by USGS with the alphabetical symbols Kuh and Kus.

Soil Near-surface soil on the project site is classified mainly as Alo clay (AaE). Alo clay is commonly found on hillslopes. Its parent material is residuum weathered from sandstone and shale. It typically is shallow—only 6 to 30 inches over the underlying bedrock. It has high runoff potential, being in USDA

Hydrologic Soil Group D with Group A having lowest runoff potential and Group D having highest. Water is not transmitted freely through Group D soils due to high clay content and shallow depth of restrictive bedrock.

Earthquake Fault and Risk of Ground Rupture The earthquake fault zone map (Figure 10) shows that the project site is located at least 1,800 feet southwest of the Concord fault zone. Earthquake fault zones were formerly known as earthquake hazard special studies zones, because location within such a zone has certain investigative and real estate disclosure requirements. Location outside the zone means that investigative studies and disclosures are not mandated. Location outside the zone also means that risk of ground rupture is very low, while earthshaking remains a considerable risk.

Liquefaction Susceptibility The liquefaction susceptibility map (Figure 11) shows that the project site has very low susceptibility to liquefaction. The project site's low susceptibility to liquefaction results from its mapped bedrock conditions.

Generally, liquefaction happens when unconsolidated (or, "loosely packed") sandy or silty materials are saturated with water and shaken enough to lose bearing-strength. Liquefied soils behave almost like a liquid and lose bearing strength. The project site has a relatively thin layer of clayey loam over sandstone and shale.

Lateral spreading is movement of soil sideways toward an open face such as a creek bank, excavation, trench, channel, or body of water, which may be a response to earthquake-induced ground shaking or prolonged heavy rain. Lateral spreading may occur in flat-lying areas, which distinguishes lateral spreading from a landslide or debris flow in sloped areas. In lateral spreading, weakened soil or fill displaces laterally toward an open face.

Discussion

a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

- i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? (Refer to Division of Mines and Geology Special Publication 42.)*
- ii) Strong seismic ground shaking?*
- iii) Seismic-related ground failure, including liquefaction or lateral spreading?*
- iv) Landslides?*

Of the four listed risks (*i.e.*, ground rupture, ground shaking, liquefaction or lateral spreading, and landslide), only ground shaking is a credible risk for the project site and vicinity. Chances of ground rupture, liquefaction, and landslide are unlikely on the project site. While the proposed project facilities could be exposed to potential damage caused by groundshaking, they would be constructed in a manner to withstand seismic forces. (Less-than-significant)

b) Result in substantial soil erosion or the loss of topsoil?

The proposed project would require limited earthwork, but would entail earth disturbance for installation of ground mounts and construction of a perimeter service road. Best Management Practices (BMPs) for erosion control will be included in the proposed project's construction documents and in a separate Storm Water Pollution Prevention Plan (SWPPP). (Less-than-significant with Mitigation measure XV-10 incorporated)

c) Be located on 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?

Figure 9 illustrates the mapped geologic units on the project site include sandstone, siltstone, and shale. Figure 11 shows that the entire project site is mapped as having very low susceptibility to liquefaction. Erected structures including ground mounts and racking systems will conform to manufacturer specifications and Building Code requirements. (Less-than-significant)

d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code, creating substantial direct or indirect risks to life or property?

Expansive soil is any soil with an expansion index greater than twenty (20), as determined by expansion index testing in accordance with ASTM D 4829 (2019 California Building Code, Section 1803.3.5.3).³⁵ Only relatively small equipment pads are proposed (e.g., for the stepdown transformer). In view of the fact that slab foundations for occupied or unoccupied buildings, walkways or other paved areas are not proposed, potential expansiveness of local soils may be a secondary factor in the design.

Proposed ground mounts likely would be earth screws. Earth screws, or alternative ground mount systems, would be designed based upon load-bearing values for supporting soils near the surface or at the depth of the earth screws or alternative system.

Mitigation measure XIV-8

- A preliminary soils survey or geotechnical investigation shall be conducted before final project design to ascertain soil and bedrock conditions across the site, so that appropriate load-bearing values and depths are used in the design. California Building Code Sections 1806 and 1807.4 address load-bearing values and embedded post or poles. Final design of the proposed project shall incorporate recommendations of the preliminary soils report or geotechnical investigation.

Residual effect: Less-than-significant with mitigation incorporated.

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?

A septic system or alternative wastewater treatment system is not proposed. (Not applicable)

f) Directly or indirectly destroy a unique paleontological resource or site or a unique geologic feature?

There are no records of known paleontological resources or unique geologic features on the project site or its vicinity. (No impact)

<u>Topics:</u>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>	<i>Not Applicable</i>
XV. HYDROLOGY AND WATER QUALITY—					
Would the project:					
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

³⁵ 2019 California Building Code, Title 24, Part 2, Chapter 18: Soils and Foundations. <https://up.codes/viewer/california/ibc-2018/chapter/18/soils-and-foundations#18>

<i>Topics:</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>	<i>Not Applicable</i>
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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 that would:					
i. result in substantial erosion or siltation on- or off-site?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ii. substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iv. impede or redirect flood flows?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Existing Conditions

The following information is intended to describe existing conditions in and around the project site.

Drainage Areas—The project site is located in Drainage Area 90 (DA 90) as defined by the Contra Costa County Flood Control and Water Conservation District (FCWCD). DA 90 contains part of the middle reach of Pacheco Creek, and DA57 contains the remainder of creek’s middle and upper reaches. DA 125 contains the downstream reach of Pacheco Creek near the confluence with Walnut Creek and contains the streambed of Walnut Creek from State Route 4 to Suisun Bay. DA90 contains 0.9 square miles, DA 125 contains 2.6 square miles, and DA 57 contains 2.4 miles.

Stormwater runoff on the Lagiss parcel moves by sheet flow, also known as overland flow. On the project site, much of the existing stormwater runoff moves overland toward the north, where it is retained in a topographic low area which seasonally ponds.

Nearest Surface Waters—The Walnut Creek watershed drains approximately 146 square miles, which is nearly 20 percent of the land area of contra Costa County. The watershed extends from Danville north Suisun Bay, east to Mount Diablo and west to the Briones Hills and Las Trampas Ridge. To alleviate recurring flood problems, in 1965 the lower 22 miles of Walnut Creek were channelized.

Pacheco Creek today is a minor tributary, approximately 3.4 miles long, which drains approximately 2 square miles in DA 57, DA 90, and DA 125. Pacheco Creek’s confluence with Walnut Creek is located approximately 1.1 miles north-northeast of the project site.

Walnut Creek flows at an average rate of approximately 80 cubic feet per second (cfs) through its lower reach but conveys approximately 26,000 cfs during a 100-year flood event. Development with impervious surfaces cover approximately 30 percent of the 146-square mile watershed.

Flooding—Levees along the west bank of Walnut Creek and along Pacheco Creek are owned and maintained by FCWCD. The elevation of these levees varies. Hydraulic modeling performed by FCWCD indicates that its existing levees overtop during 1-in-40 year annual chance of flooding event.

FEMA flood map panel 06013C00089H, effective March 21, 2017, illustrates that the project site is located in Zone X of minimal flooding. [Figure 12](#) illustrates a portion of the flood map with the 100-year floodplain shown with light-blue shading. Due to the lower elevation of the northernmost end of the Lagiss parcel, the 100-year floodplain encroaches onto the Lagiss parcel. Flooding is caused by storm events and also may be caused by tidal waters. High tide waters or “storm surge” in Suisun Bay can propagate upstream along the Walnut Creek Channel. Fluvial flooding occurs due to high flows and overtopping of the Walnut Creek and Pacheco Creek channels.

Sea Level Rise—Future sea level rise and flooding are addressed in *Initial Study/MND for the Lower Walnut Creek Restoration Project*. Evaluation was performed to assess the effect of the LWC Restoration on future flood levels in the area of influence of the restoration project. Hydraulic modeling performed for the LWC Restoration project estimated future conditions with and without +2 feet of sea level rise.

Future 100-Year Flooding Conditions, without sea level rise: Parts of the LWC Restoration project area could experience increased flood elevations less than +0.2 feet above the existing elevations. This incremental water level would be contained within the existing channels and would not inundate any land not currently within the 100-year floodplain.

Future 10-Year King Tide Flooding Conditions, with +2 feet of sea level rise: During 10-year King tide flooding with +2 feet of sea level rise, the LWC Restoration project would not result in any flooding above existing water surface elevations. The LWC Restoration project would include tidal channels that drain through a newly constructed tidal channel into Suisun Marsh, which would off-load the volume conveyed in Walnut Creek.

Adapting-to-Rising Tides (ART) Bay Shoreline Flood Explorer is an interactive demonstration tool that maps changes in areas inundation across various degrees of sea level rise, with and without storm surge. [Figure 13](#) illustrates an overlay an ART map for 10-year King tide flooding with +2 feet of sea level rise. The map also shows in purple-hatched fill, adjacent low-lying areas, which normally would be protected from inundation, but which could experience some flooding (*e.g.*, if downstream drainage facilities become blocked).

Sea Level Rise, without flood conditions: Even without a tidal or fluvial flood event, sea level rise is expected in the LWC Restoration project area. The planned restoration will create lowland grass transition zones, which will convert after restoration to tidal wetlands. The lowland grasslands are designed to accommodate up to 5 feet of sea level rise as tidal wetlands become permanent in-water habitat. Modeling showed that LWC Restoration project would have a less-than-significant effect on peak water surface elevations for the scenario having up to 5 feet of sea level rise.

San Francisco Estuary Institute’s (SFEI’s) Environmental Informatics team developed the ART Bay Shoreline Flood Explorer (the “ART Program”) for the San Francisco BCDC. Sea level rise values represent surface water levels above today’s Mean Higher-High Water (MHHW). Sea level rise by +24 inches means 24 inches over MHHW. Sea level rise of +24 inches in

combination with a 10-year storm surge means +52 inches (+4.33 feet) over MHHW. These scenarios and additional scenarios are displayed as areas of inundation or potential inundation.

Non-Stormwater Discharges—The project site does not currently generate non-stormwater discharge to a surface water. The nearest surface water is Pacheco Creek. During a dry-season reconnaissance in 2020, wet soil conditions and ponded water were observed on the north end of the Lagiss parcel, but not on the project site.

Tsunami Risk—Tsunami risks for the SFBA have been mapped by Cal/OES.³⁶ The project site is not at risk for tsunamis. In addition, the site is not located in a seiche zone.

Regulatory Framework

The basic objective of the regulatory framework is to limit discharges of sediment and other pollutants conveyed in stormwater runoff to receiving waters. Contra Costa Clean Water Program and the County Watershed Program (CWP) work together to ensure compliance with the Municipal Regional National Pollutant Discharge Elimination System (NPDES) Permit. The County Watershed Program is a program within the Flood Control Division of the County's Public Works Department.

The Clean Water Program is a collaboration between the County (represented by the County Watershed Program), the 19 incorporated cities and towns in the County, and the County Flood Control and Water Conservation District ("Co-Permittees"). The Clean Water Program has independent staff who interact with regulatory and elected officials, and provide guidance to the Co-Permittees. Within the unincorporated areas of the County, CWP is responsible for ensuring compliance with the Municipal Regional NPDES permit.

A Stormwater Pollution Prevention Plan (SWPPP) describes how a project will prevent short-term pollution during construction. A SWPPP describes how erosion will be prevented, how sediment will be controlled, and how other construction-related pollutants (*e.g.*, concrete dust, oil and hydraulic fluid) will be prevented. SWPPPs are required under the California Construction General Permit for projects disturbing at least 1 acre of soil. Construction projects that will disturb soil of more than 1 acre may be required to file a Notice of Intent (NOI) for inclusion in the General Construction NPDES Permit.

A Stormwater Control Plan (SWCP) describes permanent stormwater management facilities or controls (*e.g.*, bioretention areas, biofiltration strips) that will be incorporated into development projects. These controls are intended to treat stormwater runoff and control runoff rates and volumes after the construction. SWCPs are applicable to regulated projects that must implement permanent stormwater controls to comply with Condition C.3 requirements of the Municipal Regional NPDES Permit.

Construction General Permit (CGP)—Construction which involves disturbance of more than one acre of land is subject to the requirements of the NPDES Construction General Permit (CGP). SWRCB adopted Order 2009-0009-DWQ, as amended by Order 2010-0014-DWQ and Order 2012-0006-DWQ). Regulated construction activities must conform to requirements outlined in the CGP, including the implementation of Storm Water Pollution Prevention Plans (SWPPP), among other requirements. Section II.B.1 of the CGP defines covered construction activities as: "Any construction or demolition activity, including, but not limited to, clearing, grading, grubbing, or excavation, or any other activity that results in a land disturbance of equal to or greater than one acre." Before the start of construction, the Contractor would be required to file electronically Permit Registration Documents including a Notice of Intent (NOI), SWPPP, and additional applicable documents. The NOI filed with the SWRCB is an application for coverage and statement that the contractor will prepare a SWPPP and

³⁶ Cal/OES, 2021. My Hazards, online interactive mapping resource. <https://myhazards.caloes.ca.gov/>

will comply with other requirements under the CGP. Implementation of the SWPPP is intended to prevent discharge of sediment or other pollutants from the construction site to receiving waters.

Municipal Regional Permit (MRP)—Contra Costa County and the FCWCD are members of the Contra Costa Clean Water Program, which includes Permittees covered under Municipal Regional NPDES Permit No. CAS612008. In 2015, the San Francisco Bay RWQCB adopted Order No. R2-2015-0049/NPDES No. CAS612008, as amended later by Order No. R2-2019-0004 in 2019. Amendment by Order No. R2-2019-0004 added the East County Permittees, which otherwise remain in the jurisdiction of the Central Valley RWQCB under a different municipal stormwater permit.³⁷

The MRP sets a comprehensive framework to reduce the discharge of pollutants in storm water to the "Maximum Extent Practicable" (MEP) and protect water quality. The MRP is comprised of the following provisions:

- C.2: Municipal Operations
- C.3: New Development and Redevelopment
- C.4: Industrial and Commercial Site Controls
- C.5: Illicit Discharge Detection and Elimination
- C.6: Construction Site Control
- C.7: Public Information and Outreach
- C.8: Water Quality Monitoring
- C.9: Pesticides Toxicity Control
- C.10: Trash Load Reduction
- C.11: Mercury Controls
- C.12: Polychlorinated Biphenyls (PCBs) Controls
- C.13: Copper Controls
- C.14: Bacteria Controls
- C.15: Exempted and Conditionally Exempted Discharges
- C.16: Discharges to Areas of Special Biological Significance
- C.16.5: Cities of Antioch, Brentwood, and Oakley, and Unincorporated Contra Costa County and Contra Costa County Flood Control and Water Conservation District into NPDES Permit No. CAS612008

Storm channels are manmade features that convey stormwater runoff and protect urban areas from flooding, but tend also to catch sediment in runoff and related urban pollutants. Many, not all, of these pollutants originate from motor vehicle traffic including copper and other heavy metals from brake wear, zinc from tire wear, and trace metals and organic chemicals from motor oil and exhaust.

The proposed project would add approximately 58,000 square feet of road surface including 15,222 square feet of asphalt paved road surface. Steeper segments of the perimeter service road would have asphalt pavement over Class II base rock, to fulfill all-weather drivability requirements of the Contra Costa County Fire Protection District. The proposed project would not add more than approximately 100-200 square feet of equipment pads. The proposed project would be regulated under the MRP as it would add over 10,000 square feet of impervious surface area.

Ground-mounted solar panels, although roof-like, do not actually subtract from the ground surface. The ground under an array of panels will still function as permeable surface for overland runoff coming from upslope. The surfaces of the panels themselves, therefore, are not counted as impermeable cover, for the purpose of assessing whether the proposed project would be regulated under the MRP. The relevant impermeable surfaces are the proposed segments of asphalt-paved

³⁷ Contra Costa County watersheds are under the jurisdictions of two Regional Water Quality Control Boards, the San Francisco Bay RWQCB and the Central Valley RWQCB.

service road. In total, these segments comprise 15,222 square feet of added impermeable surface area. Retention basins shown on civil engineering drawings for the proposed project have been located on or just outside the project site. These are shallow basins sized to retain increment runoff added by the paved segments of service road.

Discussion

a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

As shown in [Figure 13](#), the proposed project would drain mainly to the north, northwest, and west. Lesser drainage area (approximately 20 percent of the project site) would be drained toward the east, southeast, and southwest. The proposed project does not include grading that would alter this existing pattern within the project site.

Much of the project site (approximately 70 percent) currently drains to a low-lying area on the north end Lagiss parcel that is seasonally ponded. This effectively would provide retention and mitigation of sediment load in runoff from 70 percent of the project site.

Soils on the project site are erosive and are classified in Hydrologic Group D. Stormwater runoff from the project site could be expected to carry a sediment load, especially after disturbance for the construction. Rills and gullies could form that concentrate runoff and increase erosion relative to the existing setting. At the perimeter, introduction of permeable bedding materials used for construction of the perimeter service road potentially could impede overland flow (due to siltation and clogging soil pore spaces) and potentially could concentrate stormwater overland flows at low points formed by the added materials. This is not expected to degrade surface or groundwater quality but could present on-site maintenance issues.

A SWPPP for the construction would be designed and implemented to control erosion during the construction. The SWPPP will include provisions for straw wattle to capture sediment, and provisions for restoration of groundcover as soon as possible after ground disturbing activity.

The proposed project also is a regulated project under the MRP. A SWCP for the long-term, 25-30 year project life has been prepared, as required, with on-site drainage controls designed to enable retention of incremental stormwater runoff added by the asphalt-paved segments of the proposed service road. Implementation of design features included in the plan could avoid potential nuisance conditions caused by ponding or gullying and avoid potential need for recurring repairs to the service road.

Mitigation measure XV-9

- Implement on-site features shown in the SWCP, such as retention basins, geotextile fabric, raised 6-inch asphalt berms and rip rap to enable stormwater runoff to move more easily off the project site without causing erosion or additional incremental runoff from impermeable surfaces.

Residual effect: Less than significant with mitigation incorporated.

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

The proposed project would add negligible impermeable surface area for several small-sized concrete pads for electrical panels and a transformer. The access driveway and perimeter service road would be constructed using pervious base rock and asphalt pavement on segments having steeper grades. The proposed project would use minor quantities of water for each panel washing event and would not use well water for this. The runoff pattern and volume on the project site and larger Lagiss parcel would remain nearly the same as existing. The proposed project, therefore, could not deplete groundwater through

extraction or lower the groundwater table by substantially interfering with groundwater recharge. (Less-than-significant effect)

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 that would:*

- (i) result in substantial erosion or siltation on-site or off-site;
- (ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;
- (iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or,
- (iv) impede or redirect flood flows?

The proposed project would use ground mounts and racking to minimize the need for grading. Ground mounts can accommodate solar panel arrays that follow the existing topographic contour of the project site.

With provisions for outlets or trench drains at key points along the interior perimeter service road, the proposed project would not substantially alter existing drainage patterns.

- (i) Alo clay and Millsholm loam on the project site are erosive unless close-growing plant cover is maintained. The surface soil is classified in Hydrologic Group D, meaning it has high runoff potential. Grading for perimeter service road, non-road equipment travel, and worker trampling during construction could potentially expose sparsely vegetated soils to accelerated erosion by runoff, if the soil is not properly protected.

Sedimentation risk was estimated using the following equation:

$$\text{Sedimentation Risk} = \text{LS} \times \text{R} \times \text{K}$$

where LS is the length-slope factor, R is the rainfall erosivity factor, and K is the soil erodibility factor.

Values for LS and K were obtained from the online Water Quality Planning Tool developed by Caltrans. A value for R was obtained two ways: 1) manual method from U.S. EPA guidance³⁸ and 2) online calculator developed by U.S. EPA.³⁹

The Caltrans Water Quality Planning Tool, U.S. EPA guidance, and/or the U.S. EPA's online Rainfall Erosivity Factor Calculator indicate the following ranges of values near the project site:

- for LS, a value in the range 0.92 to 1.83;
- for R, a value in the range 24 to 41; and,
- for K, a value in the range 0.24 to 0.37.

The value for R depends upon construction schedule and other variables. For both methods of calculation, the construction schedule included elapsed time until the expected date of final

³⁸ U.S. EPA, 2012. *Stormwater Phase II Final Rule: Construction Erosion Erosivity Waiver*, EPA 833-F-00-014, revised March 2012, (12 pp.).

³⁹ U.S. EPA, 2021. Rainfall Erosivity Factor Calculator for Small Construction Sites, online tool. <https://lew.epa.gov/>

stabilization.⁴⁰ The end date used for the construction period was extended to April 15, 2022, to account for a period of re-establishing ground cover after the construction period September 2021-January 2022. The rainfall erosivity factor (R) was estimated to be 24 (manual method) or 41 (online calculator). Even if soil stabilization could be achieved by February 1, 2022, the Rainfall Erosivity Factor Calculator indicates a rainfall erosivity factor (R) of 28.

To provide a conservative estimate of sedimentation risk, factors were selected at the upper end of the above-listed ranges. Sedimentation risk for the proposed project could be up to 28, which is in the range of medium risk. Ranges are 0 to 14 (low sedimentation risk); 15 to 75 (medium sedimentation risk); and, 76+ (high sedimentation risk).⁴¹

Risk to a receiving water is classified as Risk Level 1 (low), Risk Level 2 (average) Risk Level 3 (high) depending on sedimentation risk and whether a project drains to a sediment-sensitive water body. Risk Level posed to a receiving water is classified as follows:

- Risk Level 1: sedimentation risk is low and the receiving water is not impaired;
- Risk Level 3: sedimentation risk is high and the receiving water is impaired;
- Risk Level 2: all other combinations of sedimentation risk and receiving water impairment

Based on the preliminary information, the proposed project would most likely be classified as Risk Level 2. This is subject to refinement during project final design. Risk Level 2 projects require a SWPPP, implementation of best management practices (BMPs), and effluent sampling at discharge points. Samples would need to meet the numeric action levels for pH and turbidity. If discharge samples exceed the levels set forth in the CGP, exceedance reporting and BMP modifications could potentially be required. (Less than significant with mitigation incorporated)

- (ii) The proposed project would include an access driveway and perimeter service road constructed using compacted base rock fill and, only on steeper segments, asphalt pavement. Concrete flatwork would add very minor impermeable surface area--only for small-sized equipment pads such as the pad for the proposed step-up transformer. Except for the access driveway and perimeter service road, the proposed project would retain nearly all of the existing bare soil and vegetated ground cover. Proposed solar panel arrays form a canopy that would deflect incident rainfall. The ground beneath the canopy would remain permeable, as ground mounts such as earth screws do not need concrete foundations or ballast.

Minor incremental runoff would be added by addition of impervious surfaces including part of the perimeter service road and several small concrete pads in Sub-drainage Area A or B. Sub-drainage Areas A and B drain overland to a topographic low area on the north end of the Lagiss parcel where runoff would be retained (see [Figure 13](#)).

The proposed project would not substantially increase the rate or volume of stormwater runoff volume. Nearly 80 percent of the runoff from the project site would flow north, northwest or west, and would be retained on the Lagiss parcel. Therefore, flooding would not result on-site or off-site. (Less-than-significant effect)

- (iii) Runoff from the project site generally would continue as sheet flow following pre-project patterns. Approximately 80 percent of runoff from the project site currently flows north,

⁴⁰ Final or permanent stabilization means to restore to 70 percent of the pre-construction cover.

⁴¹ Maximum estimated Sediment Risk = $1.83 \times 41 \times 0.37 = 28$ (rounded).

northwest, or west and is retained in a topographic low area at the north end of the Lagiss parcel. The pattern and volume of runoff would not be altered by the proposed project. Therefore, the proposed project would not impact available capacity at existing or planned stormwater drainage systems. (No impact)

- (iv) The project site is located on a minor hill. The lowest elevation of the project site lays at approximately 25 feet NAVD88. Overlay of the project site's boundary on FEMA 100-year floodplain and ART Program maps shows that the project site will remain outside the zone of 100-year flooding, even with allowance for +2 feet of sea level rise and 10-year King tide. Therefore, the proposed project could not impede or redirect flood flows. (No impact)

Mitigation measure XV-10

- Implement the Stormwater Pollution Prevention Plan (SWPPP) with best management practices to be implemented by the System Operator and contractor, such as seeding, mulching, installation of silt fence and straw wattle.

Mitigation measure XV-11

- Engineer ground mounts and the perimeter service road so as not to alter the overall drainage pattern of the site. Along the perimeter service road, if runoff would be allowed to concentrate or collect, provide for appropriate outlets (*e.g.*, with trench drains and/or energy dissipaters).

Mitigation measure XV-12

- Prepare the access driveway, perimeter service road, and security fence first during construction to minimize off-road travel, rainy season soil disturbance, and related erosion.

Mitigation measure XV-13

- Revegetate ground cover as soon as possible after finishing racking and installation of panels.

Residual effect: Less than significant with Mitigation measures XV-10 through XV-13 incorporated.

Mitigation monitoring and reporting

Verify compliance with required Mitigation measures XV-10 through XV-13 and ensure their implementation by the System Operator. Conduct follow-up monitoring to assess effectiveness of the System Operator's implementation of these measures. Refer to CEQA Guidelines Section 15097 and the CEQA Guidelines for additional guidance on mitigation, monitoring and reporting.

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

Overlay of the project site and Lagiss parcel boundaries over the ART Program interactive maps show that Central San's proposed solar PV project would remain outside the zone of potential flooding for a variety of sea level rise and storm surge scenarios. A hatched area shown on ART Program maps (see [Figure 13](#)) represents low-lying land that could potentially be flooded. This hatched area on the ART Program maps extends south nearly to the northern limit of the project site but does not encroach onto the project site.

Even with storm surge and sea level rise of substantially more than +2 feet, this hatched area does not encroach farther south into the project site. The maximum elevation contour above which potential inundation is not indicated by the ART Program is approximately 10 feet (NAVD88), which is approximately equivalent to +4.1 feet above MHHW.^{42]}

⁴² NOAA, 2021. Tides & Currents. <https://tidesandcurrents.noaa.gov/datums.html?id=9415102>

Based upon available mapping of risk prone areas by Cal/OES, the project site is not at risk for tsunamis and also is not located in a seiche zone. (No impact)

e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

The proposed project of a distributed solar PV project, which is expected to have low impact on surface water and groundwater resources, their quality or quantity. No amount of groundwater recharge would be lost by implementing the proposed project. (No impact)

<u>Topics:</u>	<u>Potentially Significant Impact</u>	<u>Less Than Significant with Mitigation Incorporated</u>	<u>Less Than Significant Impact</u>	<u>No Impact</u>	<u>Not Applicable</u>
XVI. HAZARDS AND HAZARDOUS MATERIALS—					
Would the project:					
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g) Expose people or structures, either directly or indirectly to a significant risk of loss, injury or death involving wildland fires?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Existing Conditions

Petroleum Fuels & Hazardous Materials during Construction

Solar PV modules would be factory coated. Racking would be specified with high-strength, structural, MIG-welded aluminum components and corrosion resistant hardware (e.g., stainless steel or zinc plated fasteners). Ground mounts or ground screws would be hot-dip galvanized on inside and outside. Therefore, painting during construction would not be necessary.

Aerosol cans and tubes (e.g., silicone, anti-corrosion sealants, or other sealants) may be used for installation or weather sealing of enclosures. Hazardous or flammable liquids such as paints, solvents

including halogenated solvents, and poly aromatic hydrocarbons (PAHs) would not be needed, and are not proposed, for construction of the proposed project.

Construction of the proposed project also would entail periodic re-fueling of non-road equipment. Non-road construction equipment is expected to be diesel-powered. Re-fueling would be accommodated with a remote fuel delivery service, without installation of temporary or permanent underground or above-ground fuel storage tanks on the project site. In addition to diesel fuel, non-road diesel-powered equipment also could require service with grease and hydraulic fluid during the course of construction.

If any on-site portable generators are used, these would be the small, truck-mounted variety. Large-sized, self-standing diesel-powered portable generators and pumps (*e.g.*, for groundwater dewatering) would not be needed, and are not proposed, for construction of the proposed project.

Petroleum Fuels & Hazardous Materials during Operation

Weed control and panel washing would be provided by contractors who would provide their services infrequently each year during the dry season. Conventional methods of weed control and panel washing at solar PV projects is mechanical, using low horsepower, motorized, diesel-powered equipment. Refueling potentially could be needed during the work. If so, re-fueling would be accommodated with a remote fuel delivery service, without installation of temporary or permanent underground or above-ground fuel storage tanks on the project site.

Other approaches to vegetation management include use of ground covers, weed control mats or sheeting, herbivorous grazers such as sheep, and herbicides (*e.g.*, pre-emergent, systemic, or post-emergent contact herbicides). If herbicides become necessary and are used on the project site, these would be applied by a qualified licensed contractor. Herbicide use would comply with all applicable regulations and manufacturer instructions.

Operation of the proposed solar PV project also would not require, and does not propose, on-site storage or handling of hazardous materials or hazardous waste. Herbicides, pesticides, polychlorinated biphenyls, solvent, paints, and other hazardous materials would not be stored on the project site.

Solar PV modules would be factory coated. The design specifications and fabrication of the ground mount and racking will feature hot-dipped galvanized ground screws or mounts and aluminum racking. Maintenance painting, therefore, would not be necessary.

Non-Petroleum Hazardous Materials

Polychlorinated Biphenyls: The 2,000 kVA step-up transformer would contain environmentally benign mineral oil. The transformer pad will be designed to provide secondary containment to contain an accidental spill of mineral oil insulating fluid. Polychlorinated biphenyl (PCB)-containing insulating oil would not be used.

Herbicides: Use of herbicides for vegetation management, if any are used, would require contractors. In Contra Costa County, contractors that perform agricultural pest control for hire must possess the proper license from the Structural Pest Control Board or the California Department of Pesticide Regulation and must be registered with the Contra Costa County Department of Agriculture. Agricultural pest control is broadly defined and includes agricultural fields, residential yards, commercial landscaping, rights-of-way, and vegetated areas like golf courses, parks, and cemeteries. Under state and federal law, a pesticide is any substance intended to control, destroy, or repel a pest. "Pest" means any organism, insect, animal, or weed that causes damage or economic loss, or transmits or produces disease.

In solar PV projects, herbicides where used are spot applied. Spot application means application to specific strips, at the bases and posts of fences, around ground mounts. Aerial application and other broadcast spray application are not practiced.

Best Practices for Weed Control

Best practices for weed control at solar PV projects currently are being explored by the industry. Some installations have used weed control mats or sheeting. Others use mowing. One additional practice that has been successful at solar PV projects involves grazing by herbivores such as sheep and even emus. Cattle and goats may damage the panels or racking; therefore, for vegetation management at solar PV installations, these grazing animals should be avoided.

According to the National Renewable Energy Laboratory (NREL, 2018), informal interviews conducted by NREL with more than 30 members of the PV industry indicated significant problems with panels mounted too close to the ground to allow access under the panels by the arm of a mower. Ground clearance constraints could impose special needs for application of herbicides or labor-intensive vegetation management. To avoid these constraints and related special needs, ground mounts and racking would be specified and designed for the proposed project to provide adequate ground clearance.

Construction Safety

The federal Occupational Safety and Health Administration (OSHA) administers the Occupational Safety and Health Act, which requires special training of handlers of hazardous materials and notification to employees who work in the vicinity of hazardous materials. On the project site, construction safety would be within the jurisdiction of Cal/OSHA. Cal/OSHA administers state worker safety requirements contained generally in Title 8 of the California Code of Regulations. Among these is a worker Illness and Injury Prevention Program (IIPP). Cal/OSHA performs workplace and job site inspections to correct unsafe conditions. In addition, Cal/OSHA enforces regulations to protect workers and the general public. Cal/OSHA requires that construction managers post warnings signs, exclude the public from construction zones, and obtain permits for work considered to present a significant risk of injury, such as worker entry into excavations greater than five feet deep, which may be confined spaces.⁴³

Fire & Life Safety

Fire safety and response services are provided by the Contra Costa County Fire Protection District. The Engineering Unit of the CCCFPD's Fire Prevention Bureau is responsible for plan review, inspection of new construction, and fire and life safety testing, to ensure compliance with the California Fire and Building Codes, Fire District Ordinance and Standards, and applicable NFPA standards. The Exterior Hazard Control Unit inspects properties for compliance with weed abatement standards. The CCCFPD has published a Minimum Standards Bulletin for weed abatement. The Exterior Hazard Control Unit's primary objective is to limit the potential sources of fuel for fire through abatement of combustible rubbish and vegetation.

CCCFPD's Station #9, which is located at 209 Center Avenue in Martinez, is the station closest to the project site. Access to the project site from Station #9 is by way of Center Avenue, Pacheco Boulevard, Imhoff Drive, and Blum Road. The travel distance is 1.7 miles and the travel time is approximately 5 minutes.

The proposed access driveway and perimeter service road has been engineered in consultation with the Engineering Unit of the Contra Costa County Fire Protection District. Grading and materials will provide an all-weather drivable surface. Portions of the service road will be constructed of pervious materials and other portions on steeper grades will be asphalt-paved to meet Engineering Unit requirements.

School Sites

⁴³ Cal/OSHA, 2011. *Pocket Guide for the Construction Industry*, CCR Title 8, July 7, 2011, (93 pp.).
http://www.dir.ca.gov/dosh/dosh_publications/ConstGuideOnline.pdf

The nearest school is Las Juntas Elementary School (4105 Pacheco Boulevard), which is located approximately 0.9 mile west of the project site.

Airports

Buchanan Field Airport is located approximately 1 mile southeast of the project site. The *Contra Costa County Airport Land Use Compatibility Plan* defines Buchanan Filed Airport Policies for four airport safety zones. The project site is located within the Airport Influence Area, but outside the four safety zones. [Figure 15](#) illustrates the four safety zones and the project site's location in relation to these zones.

Discussion

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

The proposed project would entail non-routine use of diesel fuel, grease, and hydraulic fluid used in non-road motorized equipment. The proposed project would not entail routine use or transport of hazardous materials or hazardous waste.

Periodic mowing for weed control and panel washing would use low horsepower, diesel-powered, non-road equipment. Refueling potentially could be needed during the work. If so, re-fueling would be accommodated with a remote fuel delivery service, without installation of temporary or permanent underground or above-ground fuel storage tanks.

Application of herbicides also many be performed for weed control. If so, herbicide application would be performed by contractors licensed to perform the service. Fuel, herbicides, and other chemicals would be not be stored on the project site. (No impact)

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?

Hazardous materials contained in the solar PV modules themselves may include very small quantities of heavy metals such as arsenic, cadmium, gallium, lead and tellurium. In PV modules, these materials are sandwiched between protective glass and plastic (ethylene vinyl acetate) encapsulating the front and back of the module, all in an aluminum frame. Metals are bound in silicon substrates or solder, and are not present in a finely divided or powdered state. Research in Japan has found no detectable cadmium leaching from cracked cadmium-tellurium panels even when exposed to aqueous acidic conditions (Cleveland, 2017).

Solar PV modules do not contain gases or liquids. Catastrophic damage to a solar PV module, as could potentially be caused by accidental collision or severe earthshaking, would not release heavy metals or any other hazardous substance.

PV cells in a solar PV module can overheat and fail under adverse conditions and even under normal operations. The main causes: 1) shading/soiling of some (not all) PV cells, 2) mechanical damage to cells or soldered connections, and 3) internal module failure. There are various ways each of these causes can happen, too many to enumerate. Shading or soiling can result from trees, poles, vegetation overgrowth, or bird droppings on the protective glass. Numerous modules having failing or broken cells can result from mechanical stress caused by extreme winds, for example. Internal module failure can result from manufacturing defect or installation (*e.g.*, handling, fixturing/clamping, or racking). Mechanical stresses can cause cracks and microcracks inside the modules, which may not initially cause performance losses or hot spots, but which may grow more severe over time. Commissioning included in Central San's proposed solar project is intended to check for potential defects and take appropriate corrective actions. After commissioning, the System Operator will implement an O& M Plan and monitoring of the installation.

A shadowed or faulty cell causes resistance to current flow. Current from functioning cells crossing the bad cell(s) dissipates as heat. Hot spots show up as light-colored specs on infrared images. Fire risk from PV cell hot spots is low and even extremely low with monitoring. Proposed monitoring of the system by the System Operator will flag conditions that are out of specification. This will ensure timely repairs.

Catastrophic damage to the step-up transformer, as could potentially be caused by accidental collision or severe earthshaking, would not release a hazardous substance. The step down transformer will contain a mineral oil cooling fluid that is non-hazardous. (No impact)

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

The nearest school is Las Juntas Elementary School (4105 Pacheco Boulevard), which is located approximately 0.9 mile west of the project site. Use or handling of hazardous or acutely hazardous materials or toxic gases are not elements of the proposed project or its construction. During construction, re-fueling would be performed a remote fuel delivery service, without installation of temporary or permanent underground or above-ground fuel storage tanks. (No impact)

d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

The project site is not listed on a hazardous materials or petroleum products release site listed on the State Water Resources Control Board's (SWRQCB's) GeoTracker database or on the California Department of Toxics Substances Control's (DTSC's) EnviroStor database. The project site is entirely contained within the Central San-owned Lagiss parcel. Land uses on parcels adjoining the Lagiss parcel include single-family houses, RV storage yard, BNSF railroad, and Central San-owned wet weather basins.

The nearest EnviroStor-listed sites are the former IT Corporation Baker Site, former IT Corporation Vine Hill Complex, and Acme Landfill. The BNSF railroad and Pacheco Slough intervene between the Lagiss parcel and these three (3) listed sites. The listed sites are separated from the project site. At its closest approach, the project site is located approximately 750 feet from Acme Landfill's South Parcel, 765 feet from Baker Site (Pond E), and 4,600 feet from Vine Hill Complex. Part of former Baker Site (Ponds B and C) now is managed as a solid waste consolidation area, which is located approximately 2,400 feet north of the project site. Separated from the project site by the BNSF and Pacheco Slough, these waste sites are isolated from the proposed project and will have no effect upon it.

The project site is not listed or contemplated for listing on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, including the Cortese List⁴⁴, GeoTracker, or EnviroStor. (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 project site is located within the Buchanan Field Airport Area of Influence. The project site is located outside of Airport Safety Zones 1–4. Existing and near-future airport noise levels have been mapped as approximately 55 Ldn (dBA) at the eastern edge of the project site (see [Figure 14](#)). Implementation of the proposed project, therefore, would not result in a hazard for construction workers or maintenance crews. (No impact)

⁴⁴ Cortese is the last name of former California State Assemblyman Dominic L. Cortese—not an acronym.
<https://calepa.ca.gov/sitecleanup/corteselist/section-65962-5a/>

f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

The Emergency Operations Plan is the official, adopted emergency response and recovery plan of Contra Costa County (Contra Costa County, 2015). The County Administrator is the administrator of emergency services, and is in charge of the county’s emergency operations center. The administrator of emergency services is supported by the Contra Costa County Sheriff’s Office of Emergency Services.

The Emergency Operations Plan applies to emergencies in unincorporated areas that require planned, coordinated responses. The Emergency Operations Plan also applies to regional emergencies, to the extent that such emergencies may require substantial resources and multi-agency coordination.

The proposed project would include solar PV panels, string inverters, panels, a step-up transformer, and switchgear. It would not include any facilities disruptive of microwave or other communications. It would not cause or worsen power outages and would not impede access to residences along Blum Road. The proposed project, therefore, is not expected to impair implementation of or physically interfere with the County’s Emergency Operations Plan. (No impact)

g) Expose people or structures, either directly or indirectly to a significant risk of loss, injury or death involving wildland fires?

Fuel load on the project site would be maintained near the existing load through vegetation management. The proposed project would be buffered by substantial land within the 48-acre Lagiss parcel. Habitable or other occupied structures are not proposed. (No impact)

<u>Topics:</u>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>	<i>Not Applicable</i>
XVII. ENERGY RESOURCES—Would the project:					
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Existing Conditions

Statewide Trends

California’s sources of electrical energy have undergone substantive change since 2009, accompanied by a reduction of GHG emission from the electrical power-sector. The most substantial change statewide has been the increase in share of electrical power derived from renewable sources including wind, geothermal, utility scale solar, and distributed solar.

The share of electricity from coal-fired plants has decreased. The share from nuclear plants decreased during 2011-2012 and has held steady since 2012. Concurrently, distributed solar PV’s share of electrical power generation has grown to 5 percent statewide from less than 0.5 percent in 2009.

The share of electrical power derived from natural gas (NG) in full-scale NG-fired power plants and smaller NG-fired peaker plants has fluctuated widely. Recent directive from the California Public Utilities Commission (CPUC) has been to build battery storage energy system (BESS) capacity rather than invest in new NG-fired peaker plants.

From 100 MMT CO_{2e} in 2009, GHG emission for electrical power in California has decreased to 61 MT CO_{2e} in 2017. Some of this reduction is attributed to GHG emission from out-of-state sources of imported electrical power purchased by in-state utilities. In 2009, of the total 100 MMT CO_{2e} emitted by California's electricity sector, about 48 MMT CO_{2e} were emitted out-of-state and 52 MMT CO_{2e} were emitted in-state. In comparison, in 2017, this situation has shifted. In 2017, of the total 61 MMT CO_{2e} emitted by California's electricity sector, about 23 MMT CO_{2e} were emitted out-of-state and 38 MMT CO_{2e} were emitted in-state. In California's electrical power sector, in-state GHG emission decreased to 38 MMT CO_{2e} in 2017 from 52 MMT CO_{2e} in 2009, which is -27 percent.

California legislative action played a key role in initiating the substantive change in how California's electrical grid is powered. The Renewables Portfolio Standard required California utility providers to use a higher proportion of zero-carbon electrical power sources such as wind and solar energy. SBX1 2 (Simitian), Chapter 1, established a 33 percent RPS requirement that 33 percent of total electricity retail sales in California must be served by renewable energy resources by 2020. Subsequent legislation has set additional RPS standards for future years.

Countywide Direction

Among other policies to reduce GHG emissions in the county, Contra Costa County's Climate Action Plan includes Measure RE 2, which calls for wastewater processors to install cogeneration infrastructure on wastewater treatment facilities. Measure RE 2 also calls for alternative non-fossil energy (*i.e.*, renewable or zero-carbon energy) wherever feasible at public and Semi-public buildings and land throughout unincorporated Contra Costa County.

Contra Costa County's General Plan Policy 8-52 also was re-written to foster development of renewable energy, including solar PV, as follows:

- 8-52. Solar energy facilities may be established in areas designated Commercial, Light Industry, Heavy Industry, Agricultural Lands, and Public and Semi-Public on the Land Use Element Map, in accordance with the Solar Energy Facilities Ordinance.

General Plan Policy 8-52 and Climate Action Plan Measure RE 2 are examples of how Contra Costa County has aligned its policies with state mandates and is directing land and resources for development of renewable energy sources.

Central San's Energy Program

Central San was ahead of the curve, initiating cogeneration around 1997.⁴⁵ In developing a waste-to-energy system at the WWTP, Central San has been able to reduce solid waste disposal and operating costs while serving its own needs for process steam, aeration blower air, and most electrical power. Various improvements have been made over time, such as improvements to automate and control natural gas fed to the gas turbine and increase efficiency of the aeration blowers.⁴⁶

Central San uses the energy in biomass and waste heat and purchases three energy sources: PG&E electricity, PG&E natural gas, and Acme Landfill gas. Combined heat and electrical power is generated at the WWTP by means of two (2) multiple hearth furnaces (MHFs) in combination with a natural gas-fired turbine cogeneration system. The two MHFs incinerate dewatered sludge after dewatering conditioning. A waste heat recovery boiler and cogeneration turbine make approximately 80 percent of the steam and 80-95 percent of the electricity needed at the WWTP. Boiler-generated steam is used mainly to drive the wastewater aeration blowers. The 20 percent remainder of steam demand at the WWTP is made up by auxiliary boilers that can be fired using either purchased landfill gas or natural gas. Landfill gas is piped

⁴⁵ The NG-fired cogeneration turbine received its initial Title V permit on July 1, 1997.

⁴⁶ As an example, the air wasting valve that adjusts air flow to the aeration blowers was continuously opening and closing slightly. This valve was replaced, and replacement had energy savings.

from Acme Landfill, and natural gas is from standard PG&E service. Landfill gas is used primarily as a supplemental fuel for the MHFs, and natural gas is used primarily in the cogeneration turbine.

Central San's objective is to become a Net Zero Energy Consumer. A Net Zero Energy Consumer applies energy conservation and energy efficiency while developing enough renewable, or "zero-carbon," energy to balance 100 percent of its annual energy use.

Central San's cogeneration system provides most of the steam and electrical power it needs; however, it needs some additional electricity on-site for WWTP operations and off-site for remote pumping stations. This currently is purchased from PG&E.

From 2014 to 2015, the WWTP consumed electricity at an average rate of 2,620 kW/day. The combined heat and power cogeneration system generated approximately 95 percent of the plant's electricity needs (approximately 2,500 kWh/day). Purchased electrical power from PG&E supplied the remaining needs (120 kWh/day). Solids handling, process pumping, and UV disinfection accounted for most of the WWTP's electrical power use.

In addition to the proposed project, Central San is planning for expected growth in its service area and to secure a Net Zero Energy future, with the following concepts on the drawing board:

- Replace the existing cogeneration turbine with a larger, more efficient turbine.
- Replace the existing energy recovery system and steam-driven aeration blowers with an Organic Rankine Cycle (ORC) turbine and high efficiency electric blowers and more efficient diffusers.
- Adding anaerobic digesters upstream of the existing MHFs to produce biogas which could be used to generate electricity.
- Add co-digestion of imported high-strength waste such as fats, oils, and grease (FOG).

Solar PV Energy

The proposed project is sized to balance the electricity produced at the WWTP with the incremental energy needed for Net Zero Energy on-site at the WWTP and off-site at its remote pumping stations. Like the proposed project, a typical 2 MW-rated solar installation in northern California typically generates 3,200–3,600 MWh per year.⁴⁷ Module and inverter efficiency is built into the mega-watt rating but weather or the amount of sun, termed "insolation" is not. In a California desert area such as Palmdale, a 2 MW-rated solar PV installation can generate upwards of 5,300 MWh per year.⁴⁸ This is a consequence of weather (*i.e.*, insolation) and is not a consequence of super-efficient technology. Insolation refers to the cumulative energy of the sun measured across a given area over a specified period, being expressed in kWh/m², for example. Solar irradiance is similar but refers to power across a given area at an instant, being expressed in W/m², for example. For solar PV, energy output is better estimated based upon insolation.

Insolation in Palmdale ranges seasonally from 2.5 to 7.7 kWh/m² each day, and insolation in San Jose ranges from 2.0 to 7.4 kWh/m² each day.⁴⁹ If modules could operate as rated 365 days, 11 hours per day, a 2MW installation theoretically could not produce more than approximately 8,000 MWh per year. Even with optimum location and the best weather, 2 MW solar PV installations in northern California generate in the range 3,200–3,600 MWh per year.

⁴⁷ City of San Jose Airport Division's 1.0 MW solar PV installation (S9047) generated 1,622 net MWh in 2019. Alameda Water District 1.3 MW solar PV installation (S9121) generated 2,027 net MWh in 2019.

⁴⁸ California Energy Commission, 2020. California Solar Energy Statistics and Data. Web page visited December 2020. https://ww2.energy.ca.gov/almanac/renewables_data/solar/index cms.php

⁴⁹ GAISMA, 2020. Visited December 2020. <https://www.gaisma.com/en/location/san-jose-california.html>

Use of solar PV generally is recognized displacing fossil-fired power generation and emissions. The U.S. EPA’s Greenhouse Gas Equivalencies Calculator applies the AVOIDED Emissions and geneRation Tool also known by the acronym “AVERT.” AVERT assumes energy efficiency or renewable energy projects or programs displace the marginal or peaker power plants, which ramped up or are brought on-line as necessary to meet demand. Adding a renewable energy sources is not likely to displace baseload power plants, which run all the time.

Discussion

a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

The proposed project is designed to make efficient use of the land. Trina Solar’s TallMax™ Plus solar modules at standard test conditions (STC conditions) are approximately 19% efficient,⁵⁰ which currently is among the solar panel industry’s best efficiency. The modules are approximately 1 m width x 2 m height x 35 mm thickness. They would be mounted in pairs, first-above-second, in portrait orientation, at 21 degrees tilt over horizontal (0 degrees). This arrangement is an effective use of space.

The proposed project would organize the module strings in rows following the natural contour of the land. Proposed grading would be minimal for leveling areas for panelboards pads or the transformer pad. Limited grading also would be performed for the service road to prepare a drivable surface. Energy spent in the form of on-road vehicle fuel, non-road equipment diesel, and electricity for power tools would be insignificant compared to the energy that will be generated by the proposed project.

While the proposed project would require energy, primarily for its construction and eventual decommissioning, that amount of energy would be *de minimis* in comparison to the amount of zero-carbon energy produced. Project operations would be a net energy producer without net emissions of GHGs. Estimation using U.S EPA’s avoided emissions and generation tool (AVERT) indicates that the proposed project could avoid 1,300 MT CO_{2e}/year in the first full year of operation and would emit only 125 MT CO_{2e} during its construction. (No impact)

b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

Distributed solar PV projects have been designated by the State of California as projects having statewide importance for reducing GHGs. The Clean Energy and Pollution Reduction Act of 2015 (SB 350, de León, 2015) set a goal of 50 percent renewables by 2030, up from 33 percent renewables by 2020. SB 350 also requires the California ARB to establish 2030 GHG targets for the electricity sector set in annual range of 30 MMT CO_{2e} to 53 MMT CO_{2e}. SB 100 (de León, 2017) accelerated the electricity sector percentage renewables to 60 percent from 50 percent by 2030 and established a statewide policy of 100 percent zero carbon electricity by 2045. Contra Costa County’s General Plan Policy 8-52 was re-written to foster development of renewable energy, including solar PV. The proposed project conforms to objectives of state and local policies to develop California’s solar energy resource. (No impact)

<u>Topics:</u>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>	<i>Not Applicable</i>
XVIII. MINERAL RESOURCES—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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

⁵⁰ Efficiency refers to the percentage of useful electricity converted from sunlight’s energy (termed “insolation”) incident on the panels.

<u>Topics:</u>	<u>Potentially Significant Impact</u>	<u>Less Than Significant with Mitigation Incorporated</u>	<u>Less Than Significant Impact</u>	<u>No Impact</u>	<u>Not Applicable</u>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Existing Conditions

The project site is situated on a minor hill and hillslope, away from the low-lying local stream channels of Pacheco Creek, Walnut Creek, and Grayson Creek. California’s Surface Mining and Reclamation Act (SMARA) of 1975, updated in 2007, limits new development on land having significant mineral deposits. In implementing SMARA, the California Geological Survey has the responsibility for identifying geologic deposits of valuable minerals (e.g., sand and hard rock used for construction, minerals used in manufacturing). Under SMARA, lands are classified into mineral resource zones (MRZs) according to the known or inferred mineral potential. The purpose of this classification process is to provide local agencies with information about the location, need and importance of various mineral resources within their jurisdictions, so that this information can be used in local planning and land use decisions.

Gravel, sand, hard rock and other mineral resources are not mapped as being present on or near the project site. The MRZ map relevant to the project site is Plate 2.34 (California Department of Conservation, 1983). Plate 2.34 shows that most of the project site is located within MRZ-4, areas unassigned due to lack of information. The project site is adjoined by land mapped in MRZ-1, areas where adequate information indicates that significant mineral deposits are not present.

The Contra Costa County General Plan’s Conservation Element addresses mineral resources and illustrates mineral resource zones significant to the State of California. Mapped deposits of a particular hard rock known as diabase near the north side of Mt. Diablo, clay at Port Costa, and deposits of a dome-gine sandstone west of Byron, which is used in the manufacture of heat-resistant glass, are shown in the Conservation Element. Gravel, sand, hard rock and other mineral resources are not mapped as being present on or near the project site.

Discussion

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?

Known mineral resources have not been mapped on the project site by the California Department of Conservation. (No impact)

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?

Locally-important mineral resource recovery sites are not depicted on resource maps showing the project site or vicinity.⁵¹ (No impact)

⁵¹ California Department of Conservation, 1983. *Mineral Resource Zones and Resource Sectors of Contra Costa County*, Special Report No, 146, Plates 2.2 and 2.34, prepared by Melvin C. Stinson, Michael W. Manson, and John J. Palppert (1983), (82 pp.). <https://maps.conservation.ca.gov/cgs/informationwarehouse/index.html?map=mlc>

<u>Topics:</u>	<u>Potentially Significant Impact</u>	<u>Less Than Significant with Mitigation Incorporated</u>	<u>Less Than Significant Impact</u>	<u>No Impact</u>	<u>Not Applicable</u>
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XIX. AGRICULTURE AND FOREST RESOURCES—

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board.—**Would the project:**

- | | | | | | |
|--|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|
| a) Convert Prime Farmland, Farmland of Statewide Importance, or Unique Farmland, or as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Natural Resources Agency, to non-agricultural use? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b) Conflict with existing zoning for agricultural use or a Williamson Act contract? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 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))? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| d) Result in the loss of forest land or conversion of forest land to non-forest use? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 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? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Existing Conditions

The 8.2-acre project site is located on gently sloping terrain on a minor hill. The entire project site is classified as grazing land on the California Department of Conservation's online California Important Farmland Finder (CIFF). It is designated for Public/Semi-Public Use by Contra Costa County. According to Contra Costa County's 2016 Agricultural Preserves Map, the project site is not under Williamson Act contract.⁵²

CIFF and FMMP Important Farmland Maps

These maps are compiled by the California Department of Conservation, Farmland Mapping and Monitoring Program (FMMP), pursuant to Section 65570 of the California Government Code. FMMP combines current land use information with U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS), digital soil survey data. The project site is located within mapped grazing land.⁵³ The project site is not part of a Prime Farmland, Farmland of Statewide Importance, or Unique Farmland.

NRCS Web Soil Survey

NRCS provides soil type (termed Map Unit Description) and Land Capability Classification for the project site and vicinity. Land Capability Classification indicates the suitability of soils for most kinds of field crops. Soils are grouped according to their limitations in a 3-part schema: capability class,

⁵² <https://www.contracosta.ca.gov/DocumentCenter/View/882>

⁵³ <https://maps.conservation.ca.gov/DLRP/CIFF/>

subclass, and unit. Land capability classes, which are the broadest groups, are designated by the numbers 1 through 8, indicating progressively more limitations for row crops as the number increases.

- Class 1 soils have slight limitations that restrict their use.
- Class 2 soils have moderate limitations that restrict the choice of plants or that require moderate conservation practices.
- Class 3 soils have severe limitations that restrict the choice of plants or that require special conservation practices, or both.
- Class 4 soils have very severe limitations that restrict the choice of plants or that require very careful management, or both.
- Class 5 soils are subject to little or no erosion but have other limitations, impractical to mitigate, that constrain their use mainly to pasture, rangeland, forestland, or wildlife habitat.
- Class 6 soils have severe limitations that make them generally unsuitable for cultivation and that constrain their use mainly to pasture, rangeland, forestland, or wildlife habitat.
- Class 7 soils have very severe limitations that make them unsuitable for cultivation and constrain their use mainly to grazing, forestland, or wildlife habitat.
- Class 8 soils have limitations that preclude commercial plant production and that constrain their use to recreational purposes, wildlife habitat, watershed or aesthetic purposes.

Land capability subclasses are designated by adding a small letter, “e,” “w,” “s,” or “c,” to the class numeral, for example, 2e. The letter “e” in this example indicates that the main hazard is the risk of erosion unless close-growing plant cover is maintained.

The soil type of the project site is mainly Alo clay - 15 to 30 percent slopes (AaE), covering approximately 7.5 acres of the project site. The soil type on 0.7 acre of the project site is Millsholm loam – 15 to 30 percent slopes (MeE). The Land Capability Classification of the project site is 4e (7.5 acres) or 6e (0.7 acres), with or without irrigation. This means that most soil on the project site generally has very severe limitations for cultivation.

Discussion

a) Convert to non-agricultural use any Prime Farmland, Farmland of Statewide Importance, or Unique Farmland, or as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program?

The proposed project would not convert to non-agricultural use any Prime Farmland, Farmland of Statewide Importance, or Unique Farmland, because the project site is mapped grazing land. Class 4 soils on the project site have very severe limitations for cultivation. (No impact)

b) Conflict with existing zoning for agricultural use or a Williamson Act contract?

The project site is not under Williamson Act contract, is zoned Heavy Industrial (H-I), and is designated for Public/Semi Public use by Contra Costa County. (No impact)

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?

The project site is mapped as grazing land and surrounding land in the Lagiss parcel (APN 159-140-042-7) similarly mapped grazing land. Nearby land is urban. The proposed project, therefore, could not conflict with or cause re-zoning of forest land or timberland. (No impact)

d) Result in the loss of forest land or conversion of forest land to non-forest use?

The proposed project is not a forestry resource, does not adjoin a forestry resource, and would not directly or indirectly cause conversion of forested land to non-forest use. (No impact)

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?

The proposed project would remove approximately 8.2 acres from existing grazing use, which is performed on Heavy Industrial (H-I) zoned land, under contractual agreement with Central San. Grazing use of the remainder of the 48 acre Lagiss parcel could still be viable on the remainder of the Lagiss parcel, as Central San intends to continue to lease it for that use. The proposed project would not convert land suitable for cultivation. In view of the location of the project site, changes resulting from implementation of the proposed project could not result in conversion of grazing land or non-grazing farmland located in the vicinity. (No impact)

<u>Topics:</u>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>	<i>Not Applicable</i>
XX. WILDFIRE —If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:					
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
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?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of fire-fighting runoff, post-fire slope instability or drainage changes?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Existing Conditions

The California Department of Forestry and Fire Protection (CalFIRE) has a legal responsibility to provide fire protection on all State Responsibility Areas (SRAs), which are defined based on land ownership, population density and land use. Some areas in California such as U.S. Bureau of Land Management (BLM) owned land or U.S. Forest Service owned land are designated as Federal Responsibility Areas (FRAs). Areas that are neither SRAs nor FRAs are Local Responsibility Areas (LRAs).

CalFIRE has also participated in mapping fire severity zones statewide through the Fire and Resource Assessment Program (FRAP). FRAP online interactive mapping illustrates areas having moderate, high, and very high fire risk.

The project site is located in an LRA, and the fire hazard severity zone is not mapped as moderate, high, or very high.⁵⁴ The distance of the project site from the nearest SRAs or FRAs is 2.75 miles.⁵⁵

Some communities are particularly vulnerable to fire due to their location next to forests and wildlands. Vulnerability can be compounded by socioeconomic factors such as age of the population, car ownership, and availability or lack of roads for ingress and egress. In response to drought and California wildland fires in 2017 and 2018, Executive Order N-05-19 directed CalFIRE to evaluate wildland fire risk and identify priority areas needing protection of life, property, and resources. This culminated in identification of priority landscapes and priority fuel reduction projects for 1) reducing wildfire threat to communities and 2) reducing wildfire risk to forest ecosystem services.

⁵⁴ <https://www.arcgis.com/home/webmap/viewer.html?webmap=64c885ae674744348ad0ebcc16fe02f0>

⁵⁵ <https://www.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=5ac1dae3cb2544629a845d9a19e83991>

Discussion

a) Substantially impair an adopted emergency response plan or emergency evacuation plan?

The project site is not located in an SRA or a fire hazard severity zone mapped as moderate, high, or very high. (Not applicable)

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?

The proposed project would have arrays solar PV panels on racking installed over ground mounts. Ground mounts, racking, and the panels would consist mainly of steel, aluminum, and glass, and no wood. The System Operator would be responsible for monitoring and vegetation management to keep vegetation low and off the panels and compliant with CCCFPD's Minimum Standards Bulletin for weed control. The CCCFPD's Exterior Hazard Control Unit has a primary objective of limiting fuel load through seasonal management of vegetation.

The proposed project would not have residents or other permanent occupants, such as on-site workers. The project site also located in a local responsibility area (LRA) and outside of mapped moderate, high, or very high fire hazard severity zones.

The project site currently has low fuel load owing to 1) current maintenance practices which include seasonal discing and mowing around the perimeter of the Central San-owned 48-acre Lagiss parcel and 2) existing use of the Lagiss parcel for cattle grazing. Provisions for vegetation management within the smaller project site would be part of the contract documents with the System Operator. (No impact)

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?

The proposed project would include construction of a perimeter service road and security fence. The service road would be enclosed within the security fence and, therefore, would not be accessible by the general public. Approximately 300 feet of powerline would be installed in underground conduit. Overhead power lines are not proposed. Also, the project site is not located in an SRA or very high fire hazard severity zone. (No impact)

d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of fire-fighting runoff, post-fire slope instability or drainage changes?

The 8.2-acre project site is located within a larger 48-acre parcel. This means that there will be substantial buffer land around the perimeter of the proposed project. The bulk of materials in the PV solar panels and ground mounts include aluminum in the frames, protective glass over the modules, and steel. The proposed project, therefore, would not add substantially to project site's existing fuel load. Potential exposures of neighbors or structures to conditions resulting from firefighting, such as firefighting runoff, post-fire slope instability or drainage changes are not apparent risks that could result from the proposed project. (No impact)

<u>Topics:</u>	<u>Potentially Significant Impact</u>	<u>Less Than Significant with Mitigation Incorporation</u>	<u>Less Than Significant Impact</u>	<u>No Impact</u>	<u>Not Applicable</u>
XXI. MANDATORY FINDINGS OF SIGNIFICANT EFFECTS—Would the project:					
a) Have the potential to degrade substantially the quality of the environment, reduce substantially 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, reduce substantially 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Have impacts that would be 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.)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Have environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

a) Have the potential to 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, 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?

The proposed project would convert approximately 8.2 acres of land currently used for cattle grazing to a solar PV use. Records searches of the CNDDDB and NWIC cultural resource inventory were conducted to check for known resources recorded by others. Pedestrian surveys were performed on the project site to characterize habitat suitability for protected species of plant or animal and look for surficial evidence of cultural resources.

Certain species of birds were identified that potentially could be present seasonally, which were not actually observed during reconnaissance of the project site. In particular, the burrowing owl (*Athene cunicularia*) may be present seasonally. Burrowing owl for refugia and seasonal nesting use ground squirrel burrows, which were numerous on the project site. Suitability of habitat on the project site for other rare, endangered or threatened species was considered and was determined not to be suitable.

Cultural resource sites have been recorded in the area. Historical resource scatters were identified during past investigation performed for SFPP petroleum product pipeline replacement. Pedestrian survey was performed on the project site to evaluate the potential presence or absence of archaeological or historical resources. Surficial evidence of cultural resources on the project site was not found. The proposed project, therefore, would not eliminate an important example of major periods of California history or prehistory.

Assessments of biological and cultural resources indicate that the proposed project would have less-than-significant effects upon biological and cultural resources with incorporation of the recommended mitigation measures. In particular, the proposed project would not substantially reduce the habitat of a fish or wildlife species, with incorporation of the recommended mitigation measure for burrowing owl. The proposed project would not cause a fish or wildlife population to drop below self-sustaining levels,

threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal. (Less-than-significant with mitigation incorporated)

b) Have impacts that would be 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.)

The proposed project could have individually limited air quality, noise, vibration, and transportation effects during its construction. As discussed herein, these effects could be caused by non-road, diesel-powered equipment, travel by workers and haul trucks during a relatively short period September 2021–February 2022. Individually, with mitigation incorporated, none of the individual construction effects evaluated herein would be significant.

Emissions of criteria air pollutants and ozone precursors during construction of the proposed project are estimated to be offset by emissions avoided for powering the utility grid. Emissions of GHGs during construction of the proposed project also are estimated to be offset by GHG emissions avoided for powering the utility grid. Basic mitigation measures would be implemented to control dust on the project site, and anti-trackout measures would be designed and implemented to mitigate potential trackout of soil onto Blum Road and re-entrained road dust. Individual air quality effects of the Central San’s proposed solar PV project, therefore, would be less-than-significant with mitigation measures incorporated.

Final Initial Study/Notice of Intent to Adopt a Mitigated Negative Declaration (MND) for the Lower Walnut Creek Restoration Project, dated October 2019, addresses individual construction-phase effects. The lead agency is Contra Costa County FCWCD, and the applicant is the State Lands Commission. The project was approved and the MND was adopted by FCWCD. FCWCD filed for an application for BCDC Permit to construct its project in October 2020.

San Francisco BCDC approved the staff recommendation to grant a permit for FCWCD’s Lower Walnut Creek (LWC) Restoration Project on November 19, 2020. Phase 1 construction could begin as early as May 2021, with subsequent seasonally-phased construction of Phase 2 and separate public access and amenities during 2022–2023. Overlap of the construction of Central San’s proposed solar PV project and FCWCD’s LWS Restoration Project during September 2021-January 2022 was considered and potential cumulative effects of construction of the two projects were evaluated.

Potential overlap of the construction of Central San’s proposed solar PV project and the State Route 4/I-680 interchange project also was considered. Phase 3 improvements include approximately four miles of a new travel lane in each of the eastbound and westbound directions between Martinez and Concord. Construction of the State Route 4/I-680 interchange project’s Phase 3 improvements began in 2020 and is expected to be completed in 2021. Temporary nighttime closures in 2020 diverted westbound or eastbound traffic onto Imhoff Drive between Solano Way and Pacheco Boulevard. Additional closures with traffic diversions are not planned by Caltrans during 2021. Construction of Central San’s proposed solar panel array project, therefore, is not expected to have a cumulative effect in conjunction with construction of the State Route 4/I-680 interchange improvements project.

Cumulative GHGs

Construction of the LWC Restoration Project, for all phases combined, would emit approximately 1,500 MT CO_{2e}, which has been rounded from the reported 1,527 MT CO_{2e}. In combination with the Central San’s proposed solar PV project, cumulative GHG emitted for construction of both projects would be approximately 1,700 MT CO_{2e} (rounded). Cumulative GHG emissions for the construction would be offset by avoided emissions, which for Central San’s proposed solar PV project are estimated to be 1,300 MT CO_{2e}/year in the first full year of operation.

Operation of the LWC Restoration Project would emit approximately 50 MT CO_{2e}/year (rounded from the reported 52 MT CO_{2e}/year). Operations GHG emission were estimated for the LWC Restoration Project using CalEEMod and assumed operation of approximately 12 acres of city park. The two projects combined would emit less than 100 MT CO_{2e}/year, beginning in 2024. This is well below the BAAQMD's recommended threshold of significant effect, which is 1,100 MT CO_{2e}/year. (Less than significant)

Cumulative Criteria Air Pollutant and Ozone Precursors

Phase 1 of the LWC Restoration Project could overlap with construction of Central San's proposed solar PV project during September 2021-January 2022.⁵⁶ Phase 1 includes restoration of the North Reach and South Reach. The overall schedule for Phase 1 of the LWC Restoration,—May 2021 through January 2022,—is longer than the schedule for construction of Central San's proposed solar PV project.

To evaluate potential cumulative daily emissions, emissions during the period of overlapping construction were added. This enabled comparison of average daily emissions of the two construction projects with the BAAQMD's daily emission thresholds of significant effect.

Construction of Phase 1 of the LWC Restoration Project could emit 2.1 lbs/day ROG and 35.5 lbs/day of NO_x, average over 105 workdays. The proposed solar PV project is estimated to emit 1.8 lbs/day ROG and 17.6 lbs/day NO_x. Combined, cumulative average daily emissions would be approximately 4 lbs/day ROG and 53 lbs/day NO_x (rounded). Combined ozone precursor emissions, therefore, would be lower than the BAAQMD's threshold, which is 54 lbs/day for each. (Less than significant)

Cumulative PM Exhaust

Construction of Phase 1 of the LWC Restoration Project could emit 0.75 lbs/day PM₁₀ exhaust and 0.71 lbs/day of PM_{2.5} exhaust, averaged over 105 workdays. The proposed solar PV project is estimated to emit 1.32 lbs/day PM₁₀ exhaust and 0.88 lbs/day PM_{2.5} exhaust. Combined, cumulative average daily emissions from the two construction projects would be approximately 2 lbs/day PM₁₀ (exhaust) and 1.6 lbs/day PM_{2.5} (exhaust), both being rounded. Combined emissions, therefore, would be lower than the BAAQMD's thresholds, which are 82 lbs/day for PM₁₀ exhaust and 54 lbs/day for PM_{2.5} exhaust. (Less than significant)

Cumulative PM (Dust)

Both projects would emit fugitive PM especially during earthwork on dry upland soil. The BAAQMD does not recommend a threshold of significant effect for fugitive dust. Instead, BAAQMD has adopted basic mitigation measures to minimize fugitive PM and anti-trackout Regulation 6, Rule 6. Compliance with the basic mitigation measures (see Table 8) and Rule 6 is adequate to minimize the potential adverse effects of fugitive PM to less-than-significant effects.

Unmitigated, construction of Phase 1 of the LWC Restoration Project in combination with construction of the proposed solar PV project could emit fugitive PM₁₀ in the average daily amount of 10 lbs/day (rounded). This estimate is for both on-site equipment and earthwork and off-site haul and worker travel, without basic mitigation measures (Table 8). With basic mitigation measures, the combined PM dust emissions of the two construction projects would be reduced by 50-55 percent, to approximately 5 lbs/day. (Less than significant with mitigation incorporated)

Cumulative Noise

⁵⁶ Appendix A of Final Initial Study/Notice of Intent to Adopt a MND for the LWC Restoration Project (Contra Costa County FCWCD, October 2019), lists construction tasks 1–22 with a timeline. Tasks having potential overlap with Central San's construction of the proposed solar PV project were identified as follows: 2, 4, 7–9, 14, and 16–22.

Both projects would generate noise during construction. Neither project would entail impulsive noise, such as that from pile driving, or other special noise from unusually noisy construction equipment or processes (e.g., hoe pack, hoe ram, pavement breaker, hydraulic hammer, jackhammer, blasting).

The shortest separation distance between the South Reach of the LWC and Central San's proposed solar PV project is approximately 0.44 mile. Over this 2,600-foot distance, construction equipment noise originating in the South Reach would attenuate by at least -34 dBA. Separation distances between the South Reach and the nearest sensitive receivers are even longer—3,500 feet to Blum Road/Explorer Way residences and 3,900 feet to Blum Road/Austen Way residences. Over these longer distances, construction equipment noise originating in the South Reach would attenuate by at least -37 to -39 dBA.

During less noisy construction on Central San's proposed solar PV project site, noise from the more distant South Reach construction site could contribute cumulatively at sensitive receivers. A low to moderate construction noise scenario is defined here as construction noise level in the range 73–77 dBA on Central San's proposed solar PV project site and a noise level of 88 dBA⁵⁷ in the South Reach, both at 50 feet from working equipment. Noise at 88 dBA in the South Reach would drop by -37 to -39 dBA, to 51 dBA residential receivers near Blum Road/Explorer Way and to 49 dBA at residential receivers along Austen Way. Construction noise level in the range 73–77 dBA on Central San's proposed solar PV project site would drop to 51–55 dBA at receivers near Blum Road/Explorer Way and to 47–51 dBA at receivers along Austen Way. Cumulative equipment noise from both construction sites combined would be in the range 51–56 dBA at the nearest residential receivers. Cumulative construction noise levels would be 53–56 dBA at receivers near Blum Road/Explorer Way and 51–53 dBA at receivers along Austen Way.

During periods of low to moderate construction noise on Central San's proposed solar PV project site, concurrent construction of the two projects could add up to +2 dBA to construction noise levels and up to +3 dBA to ambient daytime noise levels, both at the receivers near Blum Road/Explorer Way and along Austen Way. Cumulative ambient noise levels would remain near the existing daytime ambient L_{eq} , which is approximately 54–55 dBA. Under a low to moderate construction noise scenario, the two construction projects would not add more than approximately +3 dBA to the existing daytime ambient L_{eq} . Cumulative noise levels at the property lines would not approach or exceed 75 dBA. Under a low to moderate construction noise scenario, therefore, the projects do not have a significant cumulative effect.

During noisier construction on Central San's proposed solar PV project site, noise from the closer solar PV construction site would dominate. A high construction noise scenario is defined here as construction noise level in the range 78–82 dBA on Central San's proposed solar PV project site and construction noise level of 80 dBA in the South Reach, both at 50 feet from working equipment. Construction noise levels from equipment working on the two sites would combine as 52–60 dBA at the nearest residential receivers. Combined construction noise levels would be 56–60 dBA at the nearest receivers at Blum Road/Explorer Way and 52–56 dBA at receivers along Austen Way.

During periods of high construction noise on Central San's proposed solar PV project site, combined construction noise from the two projects would add less than +0.5 dBA to the construction noise level from only the proposed solar PV project. High construction noise on Central San's proposed solar PV project site could add up to +7 dBA to the existing daytime ambient L_{eq} . Cumulative noise levels at the property lines would not approach or exceed 75 dBA; therefore, the projects under a high construction noise scenario do not have a significant cumulative effect.

⁵⁷ Table 4 presents maximum noise levels at a distance of 50 feet from common construction equipment. Other lower noise levels are possible when equipment is not under typical load or is idling.

For the low to moderate construction noise scenario, at the nearest residential receivers, concurrent or overlapping construction of the LWC Restoration Project and proposed solar PV project could add up to +3 dBA to the existing daytime L_{eq} , which is approximately 54–55 dBA. For the high construction noise scenario, at the nearest residential receivers, concurrent or overlapping construction of the two projects could add to the existing daytime ambient L_{eq} up to +7 dBA. The former is a potential cumulative effect resulting from concurrent or overlapping constructing of both projects. The latter is a potential individual effect resulting from construction of the proposed solar PV project. It is an “individual” effect because it would accrue without any overlap with construction in the South Reach of LWC. At the property lines of the nearest residences, cumulative noise from mobile non-road construction equipment and non-construction sources would not approach or exceed 75 dBA, which is the applicable threshold of significant effect. Therefore, the potential cumulative effect construction noise is be less-than-significant. (Less than significant)

Cumulative Groundborne Vibration

Because vibration attenuates rapidly with increasing distance from the source of vibration, there is rarely a cumulative increase in ground vibration from the presence of multiple trucks or multiple pieces of non-road construction equipment. In general, more trucks or more equipment result in more episodes or more vibration peaks over a given window of time, but do result in higher amplitudes.⁵⁸

Worker and haul traffic for construction in the South Reach of the LWC Restoration Project would be routed differently on Imhoff Drive and Conco Road. Therefore, there would not be a cumulative vibration effect on the northern segment of Blum Road, north of Imhoff Drive. (No impact)

c) Have environmental effects that would cause substantial adverse effects on human beings, either directly or indirectly?

A variety of potential effects on people were considered, including exposure to noise or vibration; exposure to particulate matter (PM); exposure to electromagnetic fields (EMF); inadequate emergency response or emergency access; and, added risk of flooding, for example. Effects were determined to be less-than-significant or less-than-significant with implementation of the recommend mitigation measures. (Less-than significant)

⁵⁸ Caltrans, 2020. *Transportation and Construction Vibration Guidance Manual*, Final Report, CT-HEANP-RT-20-365.01.01, April 2020, 190 pp.).

4. MITIGATION MEASURES AND PROJECT ENHANCEMENTS

Changes or other mitigation measures would be necessary to minimize impacts of the proposed project to less-than-significant effects. Mitigation measures recommended consist of the following:

Mitigation measure III-1

BUOW avoidance surveys (also termed “pre-construction surveys”) shall be conducted no less than two (2) weeks prior to any ground disturbance. Multiple surveys may be necessary, based upon the schedule and work progress. BUOW avoidance surveys are recommended for ground mount installation, perimeter service road and access driveway construction, utility trench excavation, and equipment pads.

If installation of ground mounts for arrays are staggered over an elapsed time of one month or longer, it is recommended that separate surveys be performed for each array. Surveys shall be conducted by a qualified biologist following Burrowing Owl Survey Protocol methods. Based upon the pre-construction survey findings, if burrowing owls are found on or next to the project site, one of the following additional mitigation measures shall be implemented:

Mitigation measure III-2A

If burrowing owls are found to occupy an area of construction or an area proximate to the construction during September 1 to January 31 (non-breeding season):

In this event, occupied burrows and additional buffer zone shall be fenced per the CDFW Staff Report on Burrowing Owl Mitigation. The fenced area shall not be entered or disturbed. Work can proceed outside the fenced area.

If avoidance is not practical, passive relocation may be implemented in accordance with a Burrowing Owl Exclusion Plan⁵⁹ submitted to and approved by CDFW.

Mitigation measure III-2B

If burrowing owls are found during February 1 to August 31 (breeding season):

This event is not anticipated in view of the proposed project construction schedule, which is September 1 through January 31. However, necessary actions under this contingency are described below, in case an adjustment to the proposed construction schedule becomes necessary.

If burrowing owls are found, ground-disturbing activities will follow the Burrowing Owl Consortium’s burrowing owl avoidance guidance. Occupied burrows and additional buffer zone will be avoided, without disturbance during the entire nesting season.

Mitigation measure IV-3

- To avoid potential inadvertent disturbance of off-site historical resources during construction, off-site vehicle and pedestrian travel will be prohibited except on the access road. This can be accomplished with a combination of worker notification/orientation during safety meetings, signage, and installation of either temporary fencing or the permanent security fence early in the schedule. Construction staging is prohibited in the protected resource zone.

Mitigation measure IV-4

- In the event of discovery of suspected archaeological resources or buried human remains, construction be halted. The System Operator and contractor would consult with the County

⁵⁹ See CDFW Staff Report on Burrowing Owl Mitigation, Appendix E, March 7, 2012.
<https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=83843&inline>

coroner, identified descendants (if any are identified by NAHC), and/or a qualified archaeologist, depending on the nature of the discovery.

Mitigation measure VIII-5

- The construction project would implement basic mitigation measures recommended by the BAAQMD and listed in [Table 8](#) (see Section VIII, page 57). With implementation of the basic mitigation measures and compliance with applicable Regulation 6, Rule 6, of the BAAQMD, the proposed project would not conflict with the CAP.

Mitigation measure XII-6

- Drainage outlets and retention basins around the perimeter service road have been designed so as not to alter the overall existing drainage pattern or volume of runoff, concentrate runoff at unengineered collection points, or accelerate erosion. These features will be constructed as shown in the SWCP.

Mitigation measure XII-7

- Recycling requirements will be incorporated into the System Operator’s contract and construction/demolition documents to assure that EOL recycling of components and materials (e.g., glass, aluminum) is performed in a responsible sustainable way.

Mitigation measure XIV-8

- A Geotechnical Engineering Investigation Report has been performed to ascertain soil and bedrock conditions across the site, so that appropriate load-bearing values and depths are used in the design (NV5, 2021). California Building Code Sections 1806 and 1807.4 address load-bearing values and embedded post or poles. Construction of the proposed project shall incorporate recommendations of the Geotechnical Engineering Investigation Report for ground mounts, access driveway, perimeter service road, trenches, and flatwork.

Mitigation measure XV-9

- Implement on-site features recommended in the SWCP and Geotechnical Engineering Investigation Report such as raised curbs, retention basins, and rip rap spillways, and geotextile fabric to accommodate stormwater runoff, minimize erosion, and retain incremental runoff volumes added by proposed impermeable surfaces.

Mitigation measure XV-10

- Prepare a Stormwater Pollution Prevention Plan (SWPPP) with practices to be implemented by the System Operator and Contractor, such as seeding, mulching, installation of silt fence and straw wattle.

Mitigation measure XV-11

- Implement the measures recommended in the SWCP during construction of the perimeter service road and driveway so as not to alter the overall drainage pattern of the site. Along the asphalt paved segments of the perimeter service road, install the raised asphalt curb where shown to direct stormwater runoff to appropriate outlets to proposed retention basins.

Mitigation measure XV-12

- Prepare the perimeter service road and security fence first during construction to minimize off-road travel, rainy season soil disturbance, and related erosion.

Mitigation measure XV-13

- Revegetate ground cover as soon as possible after finishing racking and installation of panels.

5. REFERENCES

Adapting to Rising Tides (ART), 2021. Bay Shoreline Flood Explorer, online interactive mapping tool nicknamed “ART Program,” designed and developed by the San Francisco Estuary Institute (SFEI), visited January 2021. <https://explorer.adaptingtorisingtides.org/explorer>
(Note: *Adapting to Rising Tides* is a program of the San Francisco BCDC.)

Alameda County, Planning Department, 2020. *Livermore Community Solar Farm Draft EIR*, SCH# 2018092012, March 2020, (215 pp.).

Alameda County, Planning Department, 2018. *Initial Study and Mitigated Negative Declaration for the CalSun Solar Project*, September 2018, (197 pp.).

Amick, Hal, and Michael Gendreau, 2002. *Construction Vibrations and Their Impact on Vibration-Sensitive Facilities*, February 22, 2000, (10 pp.), presented at ASCE Construction Congress 6, Orlando, Florida.
<http://documents.dps.ny.gov/public/Common/ViewDoc.aspx?DocRefId=%7B02C5868F-FB8F-4168-99DD-EE289F4E3DF0%7D>

Bay Area Air Quality Management District (BAAQMD), 2018. Regulation 6, Rule 6, Prohibition of Trackout, adopted August 1, 2018, (3 pp.).
<https://www.baaqmd.gov/rules-and-compliance/rules/regulation-6-rule-6-prohibition-of-trackout>

BAAQMD, 2018. *Permit Evaluation and Statement of Basis for Minor Revisions to the Major Facility Review Permit for Central Contra Costa Sanitary District Facility #A0907*, August 2018, (40 pp.).
http://www.baaqmd.gov/~media/files/engineering/title-v-permits/a0907/a0907-_08_2018_mrevision_proposed_sob_a27141_a29344_02-pdf.pdf?la=en

BAAQMD, 2017. Final 2017 Clean Air Plan, adopted April 19, 2017, (268 pp.).
https://www.baaqmd.gov/~media/files/planning-and-research/plans/2017-clean-air-plan/attachment-a_-_proposed-final-cap-vol-1-pdf.pdf?la=en

BAAQMD, 2017. California Environmental Quality Act Air Quality Guidelines, May 2017, (224 pp.).
https://www.baaqmd.gov/~media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en

BAAQMD, 2015. Bay Area Emissions Inventory Summary Report: Greenhouse Gases (Base Year 2011), updated 2015, (52 pp.).
http://www.baaqmd.gov/~media/files/planning-and-research/emission-inventory/by2011_ghgsummary.pdf

BAAQMD, 2011. *2011 Bay Area GHG Emitting Facilities*, an Excel workbook.
http://baaqmd.gov/~media/Files/Planning%20and%20Research/Emission%20Inventory/BY2011_GHG_SummaryByFacility.ashx?la=en

Bay Area Census, 2021. 2010 block level population by SFBA county, web page visited January 2021.
http://www.bayareacensus.ca.gov/small/2010_Pop_Block_County.xls

Bay Conservation and Development Commission (BCDC), 2020. Draft Minutes of Virtual Commission Meeting on November 19, 2020, Agenda Item 8: Public Hearing and Vote on the Lower Walnut Creek Restoration Project (Application for BCDC Permit 2019.005.00), December 11, 2020, (33 pp.).
<http://www.bcdc.ca.gov/cm/2020/11-19-Draft-Minutes.pdf>

BCDC, 2020. Agenda Item 8: Application Summary for Contra Costa County Flood Control and Water Conservation District Lower Walnut Creek Restoration Project (Application for BCDC Permit 2019.005.00), for Commission consideration and possible vote on November 19, 2020, November 6, 2020, (6 pp. without exhibits).

<http://www.bcdc.ca.gov/cm/2020/11-19-Lower-Walnut-Creek-Application-Summary.pdf>

California Air Resources Board (ARB), 2020. *Annual Summary of 2019 Greenhouse Gas Emissions Data Reported to the California Air Resources Board*, an Excel workbook, November 4, 2020.

https://www.arb.ca.gov/cc/reporting/ghg-rep/reported-data/2019-ghg-emissions-2020-11-04.xlsx?_ga=2.126133518.2004873984.1609725154-1060674672.1608746783

California ARB, 2020. Renewables Portfolio Standard, web page visited July 2020.

<https://ww2.arb.ca.gov/enforcement-renewables-portfolio-standard>

California ARB, 2013. *PM_{2.5} Area Designation Recommendations for the Revised Federal PM_{2.5} Annual Standard*, October 28, 2013, (18 pp.).

<https://www3.epa.gov/pm/designations/2012standards/rec/r9carec1.pdf>

California ARB, 2007. *PM_{2.5} Area Designation Recommendations for the Federal PM_{2.5} 24-Hour Standard*, December 17, 2007, (3 pp., letter without the attachments).

https://www3.epa.gov/pmdesignations/2006standards/rec/letters/09_CA_rec.pdf

California Building Standards Commission (CBSC), 2019. 2019 California Building Code, Title 24, Part 2, Chapter 18: Soils and Foundations.

<https://up.codes/viewer/california/ibc-2018/chapter/18/soils-and-foundations#18>

CBSC, 2019. 2019 California Building Code, Title 24, Part 2, Chapter 16: Structural Design.

<https://up.codes/viewer/california/ibc-2018/chapter/16/structural-design#16>

California Burrowing Owl Consortium, 1993. Burrowing Owl survey Protocol and Mitigation Guidelines, April 1993, (15 pp.)

<https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=83842&inline>

California Department of Conservation, Division of Land Resource Protection, 2021. California Important Farmland Finder, web page visited January 2021.

<https://maps.conservation.ca.gov/DLRP/CIFF/>

California Department of Conservation, Division of Mines and Geology, 2021. *Landslide Hazard Identification Map No. 32: Relative Landslide Susceptibility*, DMG Open-File Report 95-12, Plate 32A, web site visited January 2021.

https://filerequest.conservation.ca.gov/?q=oFr_95-12

California Department of Conservation, Division of Mines and Geology, 1995. *Landslide Hazards in the Martinez-Orinda-Walnut Creek Area, Contra Costa County, California, Landslide Hazards Identification Map No. 32*, prepared by Wayne D. Haydon, (42 pp.).

California Department of Conservation, 1987. *Mineral Land Classification: Aggregate Materials in the San Francisco-Monterrey Bay Area*, Special Report No, 146, Part II, prepared by M.C. Stinson, M.W. Manson, and J.J. Palppert (1983), (1 p.).

<https://maps.conservation.ca.gov/mineralresources/>

California Department of Conservation, 1983. *Mineral Resource Zones and Resource Sectors of Contra Costa County*, Special Report No, 146, Plates 2.2 and 2.34, prepared by Melvin C. Stinson, Michael W. Manson, and John J. Palppert (1983), (82 pp.).

<https://maps.conservation.ca.gov/cgs/informationwarehouse/index.html?map=mlc>

California Department of Fish and Wildlife, (CDFW), 2012. *Staff Report on Burrowing Owl Mitigation*, March 7, 2012, (36 pp.).

<https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=83843&inline>

California Department of Forestry and Fire Protection (CalFIRE), 2020. CalFIRE Fire and Resource Assessment Program (RAP), Wildland Urban Interface (WUI), and Wildfire Hazard Potential, ArcGIS mapping.

<https://www.arcgis.com/home/webmap/viewer.html?webmap=64c885ae674744348ad0ebcc16fe02f0>

CalFIRE, 2020. Federal Responsibility Areas (FRAs), State Responsibility Areas (SRAs), and Local Responsibility Areas (LRAs), ARCGis mapping.

<https://www.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=5ac1dae3cb2544629a845d9a19e83991>

CalFIRE, 2019. *Community Wildfire Prevention & Mitigation Report*, prepared pursuant to Executive Order N-05-19, February 22, 2019, (29 pp.).

<https://www.fire.ca.gov/media/5584/45-day-report-final.pdf>

California Department of Pesticide Regulation, 2017. *A Guide to Pesticide Regulation in California—2017 Update*, (147 pp.). <https://www.cdpr.ca.gov/docs/pressrls/dprguide.htm>

<https://www.cdpr.ca.gov/docs/pressrls/dprguide/dprguide.pdf>

California Department of Toxic Substances Control, 2021. EnviroStor online data repository for hazardous waste enforcement and cleanup sites, visited January 2021.

<https://www.envirostor.dtsc.ca.gov/public/>

California Energy Commission (CEC), 2020. California Solar Energy Statistics and Data. Web page visited December 2020.

https://ww2.energy.ca.gov/almanac/renewables_data/solar/index cms.php

CEC, 2020. California 2019 Total System Electric Generation. Web page visited December 2020.

<https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/2019-total-system-electric-generation>

CEC, 2019. *2019 Annual Generation—Plant Unit*, web page visited December 2020.

https://ww2.energy.ca.gov/almanac/electricity_data/web_qfer/Annual_Generation-Plant_Unit cms.php

CEC, 2018. *2018 Annual Generation—Plant Unit*, web page visited December 2020.

https://ww2.energy.ca.gov/almanac/electricity_data/web_qfer/Annual_Generation cms.php?goSort=annual.plantID&year=2018

CEC, 2017. *2017 Annual Generation—Plant Unit*, web page visited December 2020.

https://ww2.energy.ca.gov/almanac/electricity_data/web_qfer/Annual_Generation cms.php?goSort=SumOfnetMWh&year=2017

CEC, 2016. *2016 Annual Generation—Plant Unit*, web page visited December 2020.

https://ww2.energy.ca.gov/almanac/electricity_data/web_qfer/Annual_Generation_cms.php?goSort=SumOfnetMWh&year=2016

California Environmental Protection Agency (Cal/EPA), 2021. Cortese List Data Resources, web page visited January 2021. <https://calepa.ca.gov/sitecleanup/corteselist/>

California Governor's Office of Emergency Services (Cal/OES), 2020. My Hazards, online interactive mapping resource, visited January 2021. <https://myhazards.caloes.ca.gov/>

California Legislative Analyst's Office, 2020. *Assessing California's Climate Policies—Electricity Generation*, January 6, 2020, (32 pp.).
<https://lao.ca.gov/reports/2020/4131/climate-policies-electricity-010320.pdf>

California Public Utilities Commission (CPUC), 2019. *California Solar Initiative Annual Program Assessment*, June 2019, (67 pp.)
https://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/Utilities_and_Industries/Energy/Energy_Programs/Demand_Side_Management/2019-CSI-APA.pdf

CPUC and CalRecycle, 2019. Memorandum of Understanding between the California Public Utilities Commission and California Department of Resources Recycling and Recovery, regarding approaches to recycling of PV panels and EV batteries, January 8, 2019, (5 pp.).
https://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/Utilities_and_Industries/Energy_-_Electricity_and_Natural_Gas/CPUC%20%20CalRecycle_MOU_Fully%20Exctd_1-8-19.pdf

CPUC, 2016. *California's Distributed Energy Resources Action Plan: Aligning Vision and Action*, revised May 3, 2017, (12 pp.).
[https://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/About_Us/Organization/Commissioners/Michael_J._Picker/DER%20Action%20Plan%20\(5-3-17\)%20CLEAN.pdf](https://www.cpuc.ca.gov/uploadedFiles/CPUC_Public_Website/Content/About_Us/Organization/Commissioners/Michael_J._Picker/DER%20Action%20Plan%20(5-3-17)%20CLEAN.pdf)

California, State of, 2016. SB 32, also known as the Global Warming Solutions Acts, filed with the Secretary of State and chaptered, September 26, 2016.
http://www.leginfo.ca.gov/pub/15-16/bill/sen/sb_0001-0050/sb_32_bill_20160908_chaptered.html

California, State of, 2016. Assembly Bill No. 2868, filed with the Secretary of State and chaptered, September 8, 2016.
https://leginfo.legislature.ca.gov/faces/billTextClient.xhtml?bill_id=201520160AB2868

California, State of, 2014. Assembly Bill No. 2188, an act to amend Section 714 of the Civil Code, and to amend Section 65850.5 of the Government Code, relating to solar energy, Chapter 521, chaptered September 21, 2014.
https://leginfo.legislature.ca.gov/faces/billPdf.xhtml?bill_id=201320140AB2188&version=20130AB218891CHP

California, State of, 2006. AB 2778 (Lieber), filed with the Secretary of State and chaptered, September 29, 2006.
http://www.leginfo.ca.gov/pub/05-06/bill/asm/ab_2751-2800/ab_2778_bill_20060929_chaptered.html

California, State of, 2006. AB 32 (Núñez/Pavley), Global Warming Solutions Act of 2006, filed with the Secretary of State and chaptered, September 27, 2006.
https://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=200520060AB32

California, State of, 2006. SB 1 (Murray/Levine), filed with the Secretary of State and chaptered, August 21, 2006.

http://www.leginfo.ca.gov/pub/05-06/bill/sen/sb_0001-0050/sb_1_bill_20060821_chaptered.html

California, State of, 2003. AB 1685 (Leno), filed with the Secretary of State and chaptered, October 12, 2003.

http://www.leginfo.ca.gov/pub/03-04/bill/asm/ab_1651-1700/ab_1685_bill_20031012_chaptered.html

California, State of, 2000. AB 970 (Ducheny), California Energy Security and Reliability Act of 2000, filed with the Secretary of State and chaptered, September 7, 2000.

http://www.leginfo.ca.gov/pub/99-00/bill/asm/ab_0951-1000/ab_970_bill_20000907_chaptered.html

California Department of Transportation (Caltrans), 2020. *Transportation and Construction Vibration Guidance Manual*, CT-HWANP-RT-20-365.01.01, April 2020, (190 pp.).

<https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tcvgm-apr2020-al1y.pdf>

Caltrans, 2021. Caltrans Water Quality Planning Tool, web page visited January 2021.

<http://svctenvims.dot.ca.gov/wqpt/wqpt.aspx>

Caltrans, 2013. *Transportation and Construction Vibration Guidance Manual*, CT-HWANP-RT-13-069.25.3, September 2013, (190 pp.). (*Recently updated.*)

Caltrans, 2008. *Interstate 680/State Route-4 Interchange Improvement Project Final Environmental Assessment with FONSI and Initial Study with Negative Declaration (EA/IS)*, State Clearinghouse Number 2006082017, November 26, 2008. (454 pp.).

<https://www.ccta.net/wp-content/uploads/2019/02/Final-Environmental-Report.pdf>

Caltrans, 2002. *I-680/SR-4 Interchange Improvement Project Draft EA/IS, Chapter 2: Affected Environment, Environmental Consequences, and Mitigation Measures*, (130 pp.).

Caltrans, 2002. *I-680/SR-4 Interchange Improvement Project Draft EA/IS*, Appendix F: Noise measurements, Modeling Results, and Barrier Analysis, (13 pp.).

Caltrans, 2002. *I-680/SR-4 Interchange Improvement Project Draft EA/IS*, Appendix A: Project Phases and Details, Figure A-12 (noise measurement locations), (21 pp.).

Caltrans, 2002. *Transportation Related Earthborne Vibrations*, Technical Advisory, Vibration, TAV-02-01-R9601, February 20, 2002, (33 pp.).

http://www.vibrationdata.com/tutorials_alt/caltrans_earth.pdf

California Regional Water Quality Control Board (RWQCB), San Francisco Bay Region, 2015. Municipal Regional Stormwater NPDES Permit, Order No. R2-2015-0049/NPDES Permit No. CAS612008, November 15, 2015, (359 pp.).

https://www.waterboards.ca.gov/sanfranciscobay/water_issues/programs/stormwater/Municipal/R2_2015_0049_amended.pdf

California RWQCB, San Francisco Bay Region, 2019. Municipal Regional Stormwater NPDES Permit, Order No. R2-2019-0004/NPDES Permit No. CAS612008, revising R2-2015-0049, November 18, 2019, (25 pp.).

https://www.waterboards.ca.gov/sanfranciscobay/board_info/agendas/2019/February/6c_final_to.pdf

California State Water Resources Control Board (SWRCB), 2021. Online data repository for leaking underground storage tank cases, site investigations, groundwater monitoring, and cleanups, with emphasis upon groundwater protection, visited January 2021.
<https://geotracker.waterboards.ca.gov/>

Central Contra Costa Sanitary District (Central San), 2016. *2016 Recycled Water Quality & Distribution Annual Report*, April 6, 2017, (22 pp.).
<http://weblink.centernalsan.org/WebLink/DocView.aspx?dbid=0&id=720089&page=1&cr=1>

Central San, 2017. *Comprehensive Wastewater Master Plan*, Technical Executive Summary, 2017, (40 pp.). <https://www.centernalsan.org/post/comprehensive-wastewater-master-plan>

Central San, 2017. *FY 2016-17 Optimizations, Innovations, and Achievements*, June 30, 2017, (53 pp.).
https://www.centernalsan.org/sites/main/files/file-attachments/optimizations_innovations_and_achievements_report_-_up_to_end_of_fy_16-17.pdf?1607103416

Cleveland, Tommy, 2017. *Health and Safety Impacts of Solar Voltaics*, White Paper for NC State University Clean Energy Technology Center, May 2017. (21 pp.).
<https://nccleantech.ncsu.edu/wp-content/uploads/2019/10/Health-and-Safety-Impacts-of-Solar-Photovoltaics-PV.pdf>

Contra Costa Clean Water Program (CCCWP), 2017. *Stormwater C.3 Guidebook: Stormwater Quality Requirements for Development Applications*, 7th Edition, May 17, 2017, (160 pp.).
https://www.cccleanwater.org/userfiles/kcfinder/files/Stormwater_C3_Guidebook_7th_Edition_2017-05-12%281%29.pdf

Contra Costa County, 2021. CCMAP zoning districts, web site visited April 21, 2021.
<https://ccmap.cccounty.us/Html5/index.html?viewer=CCMAP>

Contra Costa County, 2020. Proposed General Plan Text Amendments related to Solar Energy Generating Facilities, adopted by action of the County Board of Supervisors on February 25, 2020, (2 pp.).
http://64.166.146.245/docs/2020/BOS/20200225_1494/40889_GP%20Solar%20Amendments%20February%2025%202020.pdf

Contra Costa County, 2020. *Buchanan Field Noise Program*, (8 pp.), web page accessed December 2020.
<https://www.contracosta.ca.gov/DocumentCenter/View/46626>

Contra Costa County, 2020. Ordinance No. 2020-07, Solar Energy Facilities, adopted by action of the County Board of Supervisors on February 25, 2020, (5 pp.).
http://64.166.146.245/mindocs/2020/BOS/20200225_1494/minutes/1044_022520%20D.6%20Ord%202020-07.pdf

Contra Costa County, 2017. Land Use Element Map, December 19, 2017.
<https://www.contracosta.ca.gov/DocumentCenter/View/47170>

Contra Costa County, 2015. *Emergency Operations Plan*, June 26, 2015, (65 pp.)
<https://www.cocosheriff.org/home/showpublisheddocument?id=168>

Contra Costa County, 2015. *Climate Action Plan*, adopted by the County Board of Supervisors, December 15, 2015, (240 pp.).

<https://www.contracosta.ca.gov/DocumentCenter/View/39791/Contra-Costa-County-Climate-Action-Plan>

Contra Costa County, 2008. *Buchanan Field Airport Master Plan Update*, October 2008.

<https://www.contracosta.ca.gov/4016/Buchanan-Field-Master-Plan-RevOct-2008>

Contra Costa County, 2005. *General Plan 2005-2020*, Chapter 8: Conservation Element, January 18, 2005, (54 pp.). <https://www.contracosta.ca.gov/DocumentCenter/View/30918>

Contra Costa County, 2005. *General Plan 2005-2020*, Chapter 11: Noise Element, January 18, 2005, (41 pp.). <https://www.contracosta.ca.gov/DocumentCenter/View/30921>

Contra Costa County, 2005. *Contra Costa County General Plan 2005-2020*, January 18, 2005.

<https://www.contracosta.ca.gov/4732/General-Plan>

Contra Costa County, 2005. *Contra Costa County General Plan 2005-2020*, Chapter 5: Transportation and Circulation Element, January 18, 2005.

<https://www.contracosta.ca.gov/DocumentCenter/View/30915>

Contra Costa County, 2005. *Contra Costa County General Plan 2005-2020*, Chapter 8: Conservation Element, January 18, 2005.

<https://www.contracosta.ca.gov/DocumentCenter/View/30918>

Contra Costa County, 2000. *Airport Land Use Compatibility Plan*, December 13, 2000.

<https://www.contracosta.ca.gov/documentcenter/view/851>

Contra Costa County, 2000. *Airport Land Use Compatibility Plan*, Chapter 3: Buchanan Field Airport Policies, (11 pp.), December 13, 2000.

<https://www.contracosta.ca.gov/DocumentCenter/View/856/Buchanan-Field-Airport-Policies>

Contra Costa County, Department of Conservation and Development, 2020. Recreational Opportunities, web page visited October 2020.

<https://www.contracosta.ca.gov/5791/Recreation-Opportunities>

Contra Costa County, Department of Conservation and Development, 2020. Staff Report to the County Planning Commission on Solar Energy Facilities - Zoning and General Plan Updates, County file #GP19-0001, #ZT19-0004, #RZ19-3251, January 22, 2020.

https://www.contracosta.ca.gov/DocumentCenter/View/62561/Web-Version-GP19-0001_RZ19-3251_ZT19-0004_SR_CPC_1-22-20

Contra Costa County, Department of Conservation and Development, 2017. 2016 Agricultural Preserves Map, February 1, 2017. <https://www.contracosta.ca.gov/DocumentCenter/View/882>

Contra Costa County, Flood Control and Water Conservation District (FCWCD), 2019. Lower Walnut Creek Restoration Project, Drawing Sheets No. 1 through 100, December 10, 2019

<https://www.contracosta.ca.gov/DocumentCenter/View/67587>

Contra Costa County, Flood Control and Water Conservation District, 2020. Lower Walnut Creek Restoration Project, Reports & Documents.

<https://www.contracosta.ca.gov/5792/Reports-Documents>

Contra Costa County, Flood Control and Water Conservation District, 2019. Lower Walnut Creek Restoration Project, 95 Percent Improvement Plans, December 10, 2019, (100 pp.).

<https://www.contracosta.ca.gov/DocumentCenter/View/67587>

Contra Costa County, Flood Control and Water Conservation District, 2019. *Final Initial Study/Notice of Intent to Adopt a Mitigated Negative Declaration*, SCH Number 2019099043, October 19, 2020, (688 pp.).

http://sfbayrestore.org/sites/default/files/2019-11/item_07_lower_walnut_creek_ex3.pdf

Contra Costa Transportation Authority, 2018. *Contra Costa Countywide Bicycle & Pedestrian Plan*, 2018, (86 pp.).

<https://ccta.net/wp-content/uploads/2018/10/5b96efb579d75.pdf>

Diversified Project Services International, Inc., 2021. *Stormwater Control Plan for Central Contra Costa Sanitary District Solar Project*, May 6, 2021, (17 pp.).

East Contra Costa County Habitat Conservancy, 2021. East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan, document web page, visited January 2021.

<https://www.contracosta.ca.gov/department/cd/water/HCP/documents.html>

El Dorado Irrigation District, 2019. Initial Study/Mitigated Negative Declaration for Solar Panel Installation at the CDeer Creek Wastewater Treatment Plant, May 2019, (151 pp.).

ESA, 2019. *Lower Walnut Creek Restoration Project, Initial Study & Notice of Intent to Adopt a Mitigated Negative Declaration*, SCH# 2019099043, prepared for Contra Costa Flood Control and Water Conservation District, September 2019, (218 pp.).

<https://ceqanet.opr.ca.gov/2019099043/2/Attachment/pFumNi>

ESA, 2019. *Lower Walnut Creek Restoration Project Habitat Assessment*, appended to the MND as Appendix B, July 2019, (156 pp.).

<https://ceqanet.opr.ca.gov/2019099043/2/Attachment/v5Z7s3>

Federal Aviation Administration (FAA), 2018. *Technical Guidance for Evaluating Selected Solar Technologies on Airports*, Version 1.1, April 2018, (161 pp.).

https://www.faa.gov/airports/environmental/policy_guidance/media/FAA-Airport-Solar-Guide-2018.pdf

FAA, 2015. *Evaluation of Glare as a Hazard for General Aviation Pilots on Final Approach*, Final Report, DOT/FAA/AM-15/12, Office of Aerospace Medicine, July 2015, (18 pp.).

https://www.faa.gov/data_research/research/med_humanfacs/oamtechreports/2010s/media/201512.pdf

Federal Emergency Management Agency (FEMA), 2020. Flood Map Service Center Portal, Map Panel 06013C00089H, effective March 21, 2017.

<https://msc.fema.gov/portal/home>

Federal Highway Administration (FHWA), 1978. *FHWA Highway Noise Prediction Model*, Final Report, Report No. FHWA-RD-77-108, December 1978, (272 pp.).

Federal Transit Administration. 2018. *Transit Noise and Vibration Impact Assessment Manual*, FTA Report No. 0123, Final Report, September 2018, (258 pp.).

https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf

Federal Transit Administration. 2006. *Transit Noise and Vibration Impact Assessment*, Report No. FTA-VA- 90-1003-06, Final Report, May 2006, (261 pp.).

https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/FTA_Noise_and_Vibration_Manual.pdf

Fehr & Peers, 2019. *Contra Costa County General Plan Transportation Baseline Report*, October 2019, (48 pp.).

https://envisioncontracosta2040.org/wp-content/uploads/2019/12/CCC_Baseline_Report_Oct2019.pdf

GAISMA, 2020. Visited December 2020. <https://www.gaisma.com/en/location/san-jose-california.html>

Graymer, R.W., D.L. Jones, and E.E. Brabb, 1994. *Preliminary Geologic Map Emphasizing Bedrock Formations in Contra Costa County, California*, U.S. Geological Survey Open-file Report 94-622.

<http://pubs.usgs.gov/of/1994/of94-622/ccmap.pdf>

Graymer, R.W., D.L. Jones, and E.E. Brabb, 1994. *Preliminary Geologic Map Emphasizing Bedrock Formations in Contra Costa County, California*, U.S. Geological Survey Open-file Report 94-622,

Geologic explanation pamphlet, (8 pp.). <https://pubs.usgs.gov/of/1994/of94-622/ccgeo.pdf>

Hanifi, Hamed, David Dassler, *et al.*, 2016. *Optimized Tab Width in Half-Cell Modules*, 6th International Conference on Silicon Photovoltaics, SiliconPV 2016, Energy Procedia 92, 2016, (pp. 52–59).

<https://www.sciencedirect.com/science/article/pii/S1876610216304362/pdf?md5=91239bc47816e185d7c291f5df2a68d4&pid=1-s2.0-S1876610216304362-main.pdf>

Holman & Associates, 2020. *Results of Archaeological Field Survey for Central Contra Costa Sanitary District Solar Array Project, Martinez in Contra Costa County, California*, June 25, 2020, (38 pp.).

Huffmann-Broadway Group, Inc., 2020. *Special Status Species Assessment for Central Contra Costa Sanitary District Solar Array, Contra Costa County, California*, June 4, 2020, (10 pp.).

Imperial County, 2018. *Draft Environmental Impact Report for Big Rock Cluster Solar Farm*, SCH No. 2017121078, April 2008, (410 pp.).

Imperial County, 2018. *Air Quality/Greenhouse Gas Report for the Big Rock Cluster Solar Farm*, SCH No. 2017121078, prepared by OB-1 Air Analysis, revised March 1, 2018, (163 pp.).

International Carbon Bank & Exchange, 2020. Liquid, gaseous, and solid fuels converter metric tons of CO₂. Web page accessed December 2020.

<https://www.icbe.com/carbondatabase/volumeconverter.asp>

Iowa State University, Iowa Environmental Mesonet, 2018. Annual and Monthly Wind Roses for Concord (Buchanan) Station CCR, California, January 1970–April 2018.

https://mesonet.agron.iastate.edu/sites/windrose.phtml?station=CCR&network=CA_ASOS

Jennings, Mark R., 2020. *Habitat Assessment for the California Tiger Salamander and Western Pond Turtle, Central San – Contemplated Solar Panel Array Project*, letter appended in the special status species assessment submitted by HBG, May 23, 2020, (5 pp.).

Joint Venture Silicon Valley, 2020. Regional Renewable Energy Procurement (R-REP) initiative, web site visited December 2020.

<https://jointventure.org/initiatives/completed-initiatives/solar-procurement/r-rep>

Jones & Stokes, June 2004. *Transportation- and Construction-Induced Vibration Guidance Manual*, Contract No. 43A0049, Task Order No. 18, prepared for Caltrans, June 2004, (159 pp.).
https://www.ci.benicia.ca.us/vertical/sites/%7BF991A639-AAED-4E1A-9735-86EA195E2C8D%7D/uploads/Caltrans_2004.pdf

Kern County Planning and Natural Resources Department, 2020. *Draft Environmental Impact Report for the Pastoria Solar Project*, SCH# 2019090305, Volume 1, Chapters 1 through 10, June 2020, (756 pp.).

Kern County Planning and Natural Resources Department, 2020. *Draft Environmental Impact Report for the Pastoria Solar Project*, SCH# 2019090305, Volume 2, Appendices A through B, June 2020, (1264 pp.).

King, Ken W., and Matthew J. DeMarco*, 2003. *Impacts of Construction Vibrations on Rock Pinnacles and Natural Bridges, General Hitchcock Highway, Tuscon, AZ*, (19 pp.). *Central Federal Lands Highway Division, FHWA, Denver Federal Center.
<http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.563.1382&rep=rep1&type=pdf>

Marangio, Michael, 2020. Biological Assessment for Future Solar Panel Array, prepared for the Central Contra Costa Sanitary District, April 30, 2020, (25 pp.).

Martinez, City of, 2017. *Draft 2035 General Plan*, Chapter 9: Noise and Air Element, (48 pp.).
<https://www.cityofmartinez.org/civicax/filebank/blobdload.aspx?BlobID=19927>

National Oceanic and Atmospheric Administration (NOAA), 2020. Tides & Currents, Datums for Station #9415102, Martinez-Amorco Pier California, accepted June 17, 2020.
<https://tidesandcurrents.noaa.gov/datums.html?id=9415102>

National Renewable Energy Laboratory (NREL), 2018. *Best Practices for Operation and Maintenance of Photovoltaic and Energy Storage Systems*, 3rd Edition, NREL/TP-7A40-73822, (153 pp.).
<https://www.nrel.gov/docs/fy19osti/73822.pdf>

New South Wales, Department of Environment and Conservation (NSW DEC), 2006. *Assessing Vibration: A Technical Guideline*, DEC Publication 2006/43, February 2006 (35 pp.)
<http://www.environment.nsw.gov.au/resources/noise/vibrationguide0643.pdf>

NoiseNet.org, 2020. Disturbance of Occupants by Vibration, British Standard BS 6472-2008. Web page accessed December 2020.
http://www.noisenet.org/Vibration_Enviro_Disturbance.htm

NoiseNet.org, 2020. Building Damage by Vibration, British Standard BS 7385-1993. Web page accessed December 2020.
http://www.noisenet.org/Vibration_Enviro_Building_Damage.htm

NV5, 2021. *Geotechnical Engineering Report ,Central Contra Costa Sanitary District Solar Photovoltaic Project, Martinez, Contra Costa County, California*, February 8, 2021, (56 pp.).

Pacific Gas & Electric Company (PG&E), 2020. *Corporate Responsibility and Sustainability Report 2020*, (154 pp.).
https://www.pgecorp.com/corp_responsibility/reports/2020/assets/PGE_CRCSR_2020.pdf

PG&E, 2019. *Climate Change, PG&E Emissions Reported to the California Air Resources Board, 2016, 2017, and 2018 Emissions (MT CO₂e) and Emission Rates (lbs CO₂e/MWh) from PG&E-Owned Power Generation and Operations*, web page visited December 2020.
https://www.pgecorp.com/corp_responsibility/reports/2019/en02_climate_change.html

Pittsburg, City of, 2013. *California Environmental Quality Act Initial Study Columbia Solar Energy Project*, January 2013, (87 pp.).

San Francisco Bay Restoration Authority, 2019. Staff Recommendation Lower Walnut Creek Restoration Project, Project No. RA-013, December 06, 2019, (16 pp.).
http://sfbayrestore.org/sites/default/files/2020-01/item_07_lower_walnut_creek.pdf

San Francisco Bay Restoration Authority, 2019. Staff Recommendation Lower Walnut Creek Restoration Project, Project No. RA-013, Exhibit 1: Project Location and Site Maps, December 06, 2019, (2 pp.).
http://sfbayrestore.org/sites/default/files/2019-11/item_07_lower_walnut_creek_ex1.pdf

Spaven Consulting, 2011. *Solar Photovoltaic Energy Facilities: Assessment of Potential for Impact on Aviation*, January 2011, (13 pp.).
<https://www.solarchoice.net.au/wp-content/uploads/Reflectivity-of-Solar-Electric-PV-Modules.pdf.pdf>

U.S. Army Corps of Engineers, 2020. Public Notice for a Department of the Army Permit to discharge fill material into jurisdictional waters of the U. S. associated with the construction of the Lower Walnut Creek Restoration Project, Public Notice Number 2004-292960S, issued April 16, 2020 (Comments due May 18, 2020). <https://www.spn.usace.army.mil/Missions/Regulatory/Public-Notices/Article/2152688/spn-2004-292960-lower-walnut-creek-restoration-project/>

U.S. Census Bureau, 2020. Census Tract, Block Groups, and Blocks, interactive map.
https://data.census.gov/cedsci/map?vintage=2018&layer=VT_2018_040_00_PP_D1&mode=selection

U.S. Department of Agriculture, Natural Resources Conservation Service (USDA/NRCS), 2021. Web Soil Survey, web site visited January 2021.
<https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx>

USDA/NRCS, 2021. Map Unit Description: Alo clay (AaE), 15 to 30 percent slopes, Contra Costa County, California, web page visited January 5, 2021.

USDA/NRCS, 2021. Map Unit Description: Millsholm clay loam (MeE), MLRA 15, 15 to 30 percent slopes, MLRA 15---Contra Costa County, California, web page visited January 5, 2021.

U.S. Environmental Protection Agency (U.S. EPA), 2021. Rainfall Erosivity Calculator for Small Construction Sites, online tool, web page visited January 2021.

U.S. EPA, 2020. Greenhouse Gas Equivalencies Calculator—Calculations and References, web page visited December 2020.
<https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>

U.S. EPA, 2020. Design Values 2019 Interactive Map, web page visited December 2020.
<https://epa.maps.arcgis.com/apps/MapSeries/index.html?appid=bc6f3a961ea14013afb2e0d0e450b0d1>

U.S. EPA, 2020. PM_{2.5} (2006) Designated Area Design Values, data are current as of August 31, 2020.
<https://www3.epa.gov/airquality/greenbook/rdtc.html>

U.S. EPA, 2020. 8-Hour Ozone (2008) Designated Area Design Values, data are current as of August 31, 2020. <https://www3.epa.gov/airquality/greenbook/hdtc.html>

U.S. EPA, 2020. Greenhouse Gases Equivalencies Calculator - Calculations and References, web page visited December 2020. <https://www.epa.gov/energy/greenhouse-gases-equivalencies-calculator-calculations-and-references>

U.S. EPA, 2016. Federal Register, Vol. 81, No. 86, Determinations of Attainment by the Attainment Date, Extensions of the Attainment Date, and Reclassification of Several Areas for the 2008 Ozone National Ambient Air Quality Standards, May 4, 2016. <https://www.govinfo.gov/content/pkg/FR-2016-05-04/pdf/2016-09729.pdf>

U.S. EPA, 2015. Avoided Emission Factors Generated from AVERT, AVERT version 3.0 Excel workbook. posted September 15, 2015, web page visited December 2020. <https://www.epa.gov/statelocalenergy/avoided-emission-factors-generated-avert-0>

U.S. EPA, 2014. Area Designations for the 2012 Annual Fine Particle (PM_{2.5}) Standard, visited September 2020. <https://www3.epa.gov/pm/designations/2012standards/staterec.htm>

U.S. EPA, 2012. *Stormwater Phase II Final Rule: Construction Erosion Erosivity Waiver*, EPA 833-F-00-014, revised March 2012, (12 pp.).

U.S. EPA, 2008. Area Designations for the 2006 24-Hour Fine Particle (PM_{2.5}) Standard, visited September 2020. <https://www3.epa.gov/pmdesignations/2006standards/state.htm>

U.S. Fish and Wildlife Service (USFWS), 2021. Classification of Wetlands and Deepwater Habitats of the United States: Riverine System. <https://www.fws.gov/wetlands/documents/classwet/riverine.htm>

USFWS, 2021. Classification of Wetlands and Deepwater Habitats of the United States: Palustrine System. <https://www.fws.gov/wetlands/documents/classwet/palustri.htm>

USFWS, 2021. National Wetlands Inventory, Wetlands Mapper, visited January 19, 2021. <https://www.fws.gov/wetlands/data/mapper.html>

USFWS, 2004. *Endangered and Threatened Wildlife and Plants; Determination of Threatened Status for the California Tiger Salamander; and Special Rule Exemption for Existing Routine Ranching Activities*, Final Rule, Federal Register, Vol. 69, No. 149, pp. 47212–47248, August 4, 2004. (38 pp.). <https://www.govinfo.gov/content/pkg/FR-2004-08-04/pdf/04-17236.pdf>

Wilson, Ihrig & Associates, Inc., 2004. *Truck Vibration Monitoring Results, Penitencia Water Treatment Plant Construction*, January 2004, (12 pp.)

6. PUBLIC NOTICE AND COMMENT

Central San intends to release this Draft Initial Study and Mitigated Negative Declaration (IS/MND) for the subject Central San Proposed 1.75 MW Solar Panel Array at 4451 Blum Road in Unincorporated Contra Costa County, Martinez, California.

Reviewing agencies, organizations and interested persons should focus on the content and accuracy of the Draft IS/MND in discussing potential impacts upon the environment. Comments may be sent to Central San during the review period (see below).

Copies of the Draft IS/MND will be available for review on Central San's website: <https://www.centernalsan.org/solar> or by contacting Mr. Russell Leavitt, Environmental Coordinator at (925) 768-3430 or e-mail: RLeavitt@centernalsan.org.

The Draft IS/MND will be circulated for a 30-day review period. Persons responding are urged to submit their comments in writing. Written comments should be delivered to the Central San's main office, at the address listed below, by **no later than 4:30 p.m. on August 13, 2021**. Submittal of written comments via e-mail (Microsoft Word format) is also acceptable. Questions regarding this Draft IS/MND should be directed to Mr. Russell Leavitt, Environmental Coordinator, at (925) 768-3430 or e-mail: RLeavitt@centernalsan.org.

A virtual public hearing will be held by the Central San Board of Directors on Thursday September 2, 2021, for the purpose of considering public comments regarding the Final IS/MND. Both written comments and oral testimony from the public hearing will be part of the project record to be considered for project adoption by the Central San Board of Directors.

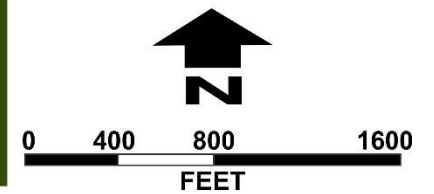


Figure 1
Project Location

Proposed Solar Panels



NOTES:
Boundaries shown are approximate.



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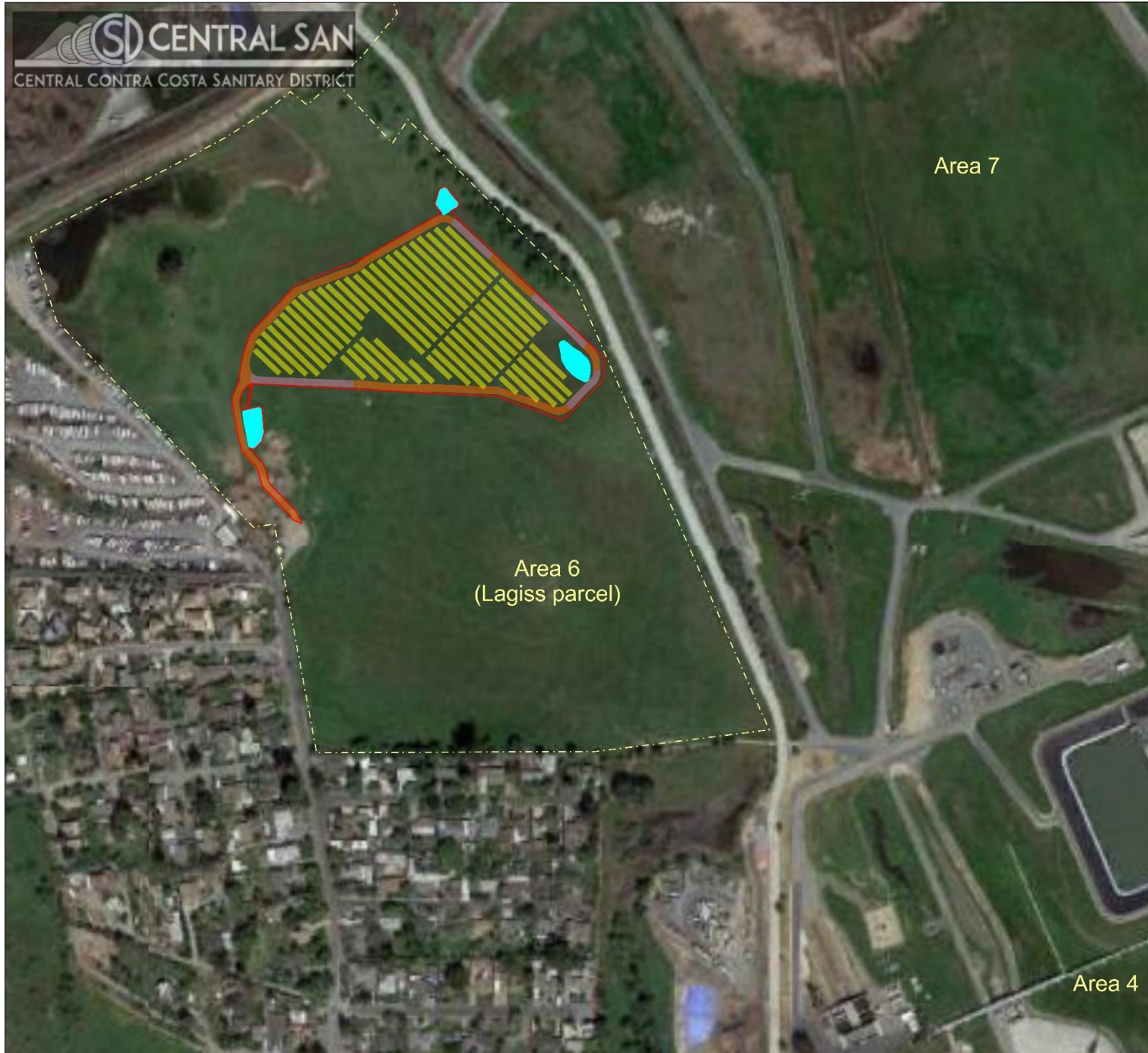
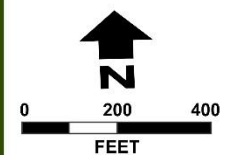


Figure 2
Proposed
Solar
Project



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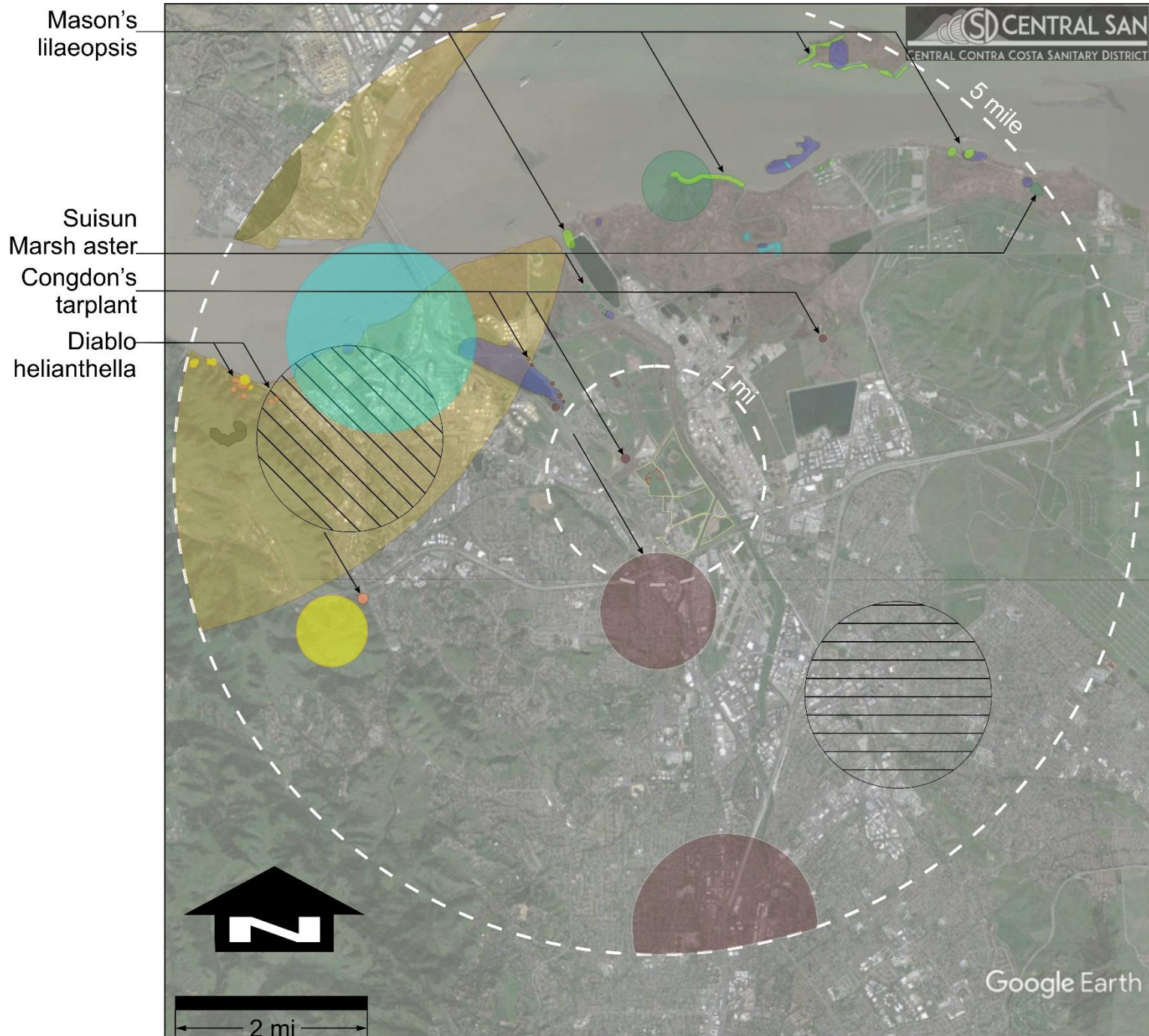


Figure 3
Plants
Occurrence Map
 California Natural Diversity Database
 March 2020

KEY

-  Contra Costa goldfields
-  Long-styled sand-spurrey
-  Soft salty bird's-beak
-  Mason's lilaeopsis
-  Suisun Marsh aster
-  Mt. Diablo fairy lantern
-  Carquinez goldenbush
-  Jepson's coyote thistle
-  Diablo Helianthella
-  Congdon's tarplant
-  Delta tule pea

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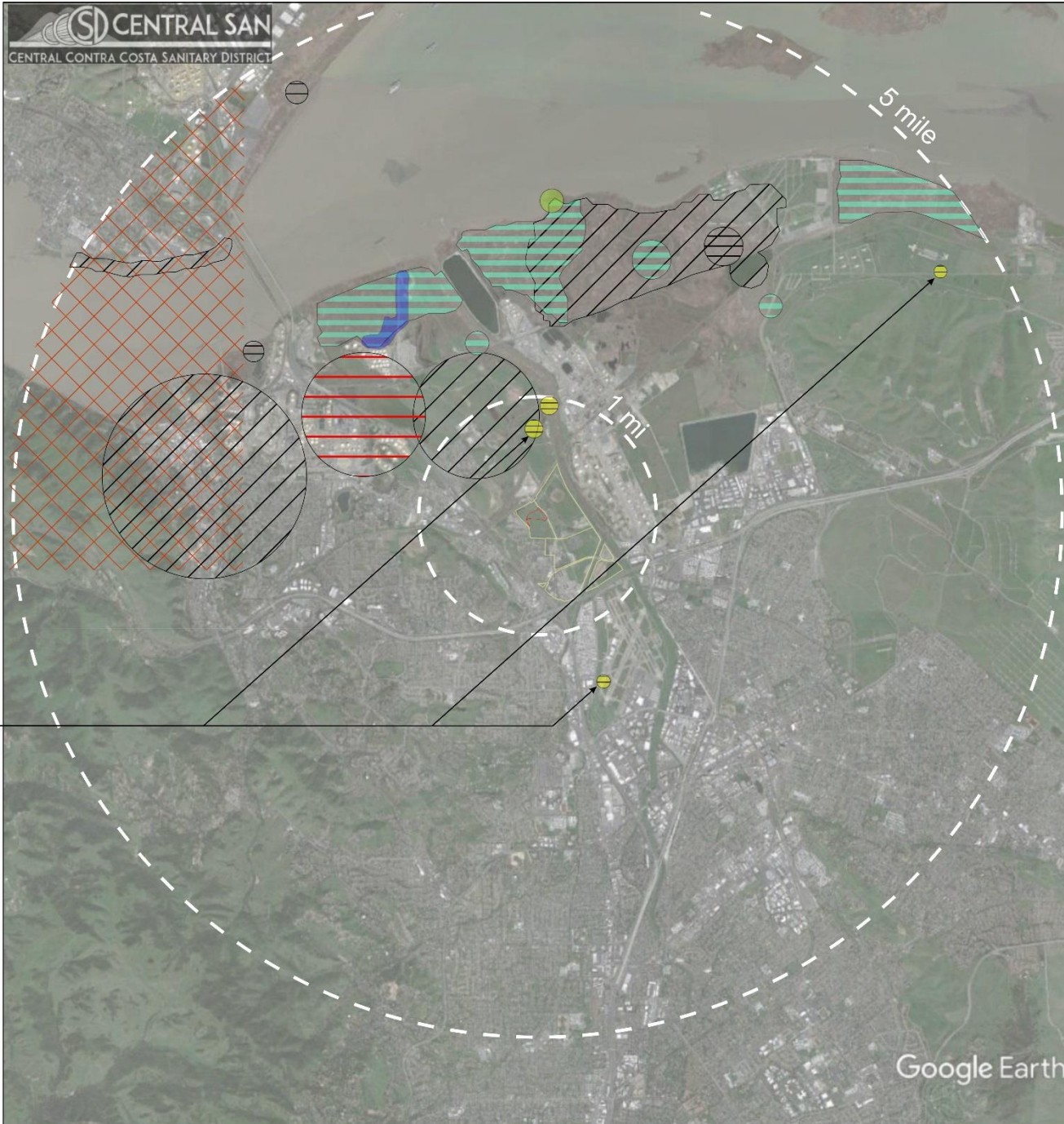


Figure 4 Birds Occurrence Map

California Natural Diversity Database
March 2020

KEY

-  California Ridgway's rail
-  California black rail
-  Tri-colored blackbird
-  Suisun song sparrow
-  Burrowing owl
-  Peregrine falcon
-  Saltmarsh common yellow-throat
-  Yellow rail

Burrowing owl



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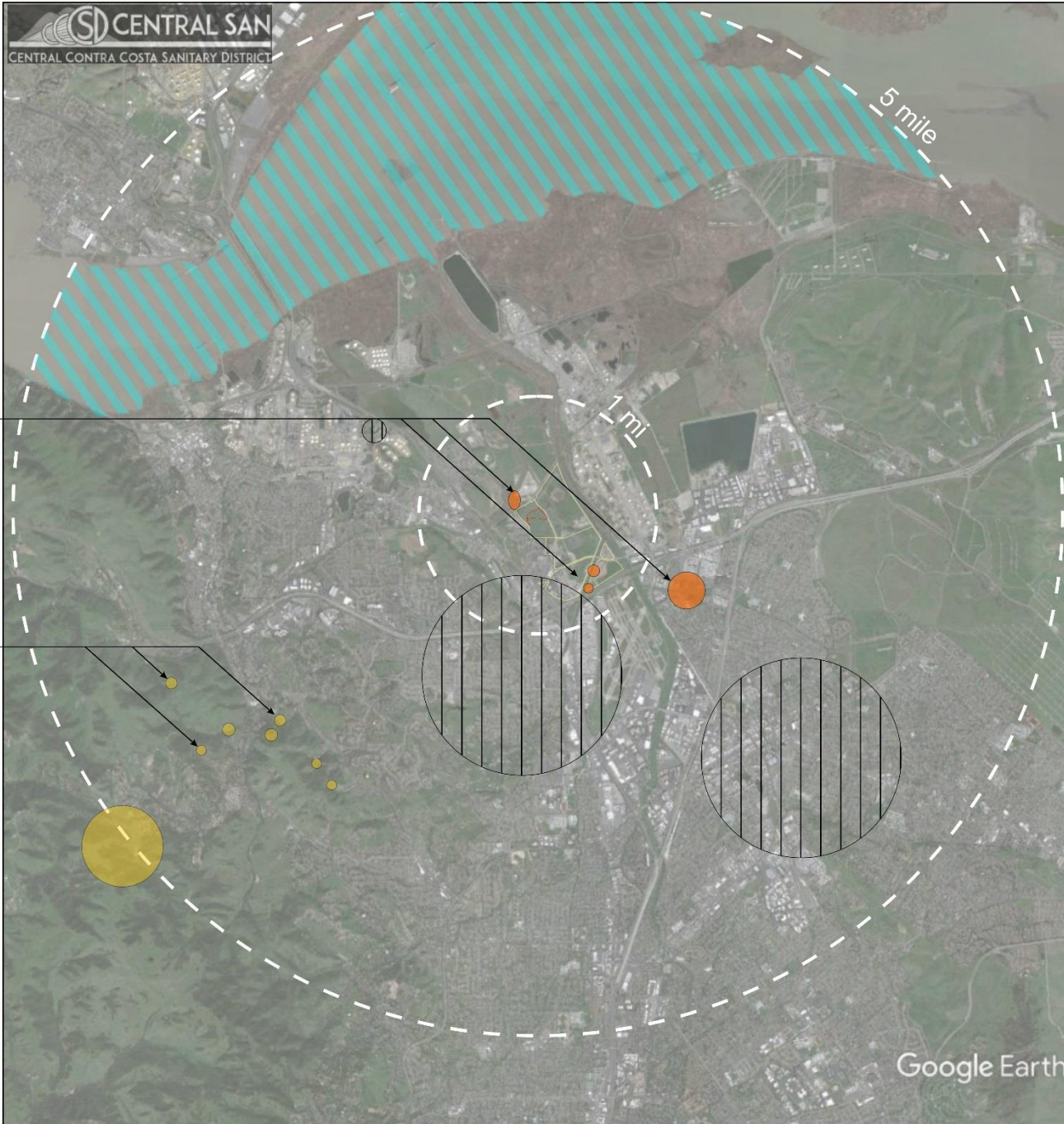
Figure 5 Amphibians, Reptiles & Fish

Occurrence Map

California Natural Diversity Database
March 2020

Western
Pond Turtle

Alameda
Whipsnake



KEY

-  California tiger salamander
-  Alameda whipsnake
-  Western pond turtle
-  Longfin smelt






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Figure 6 Mammals

Occurrence Map California Natural Diversity Database March 2020



KEY

-  Salt marsh harvest mouse
-  Big free-tailed bat
-  Pallid bat



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Figure 7 Insects

Occurrence Map

California Natural Diversity Database
March 2020

KEY

 Western bumble bee



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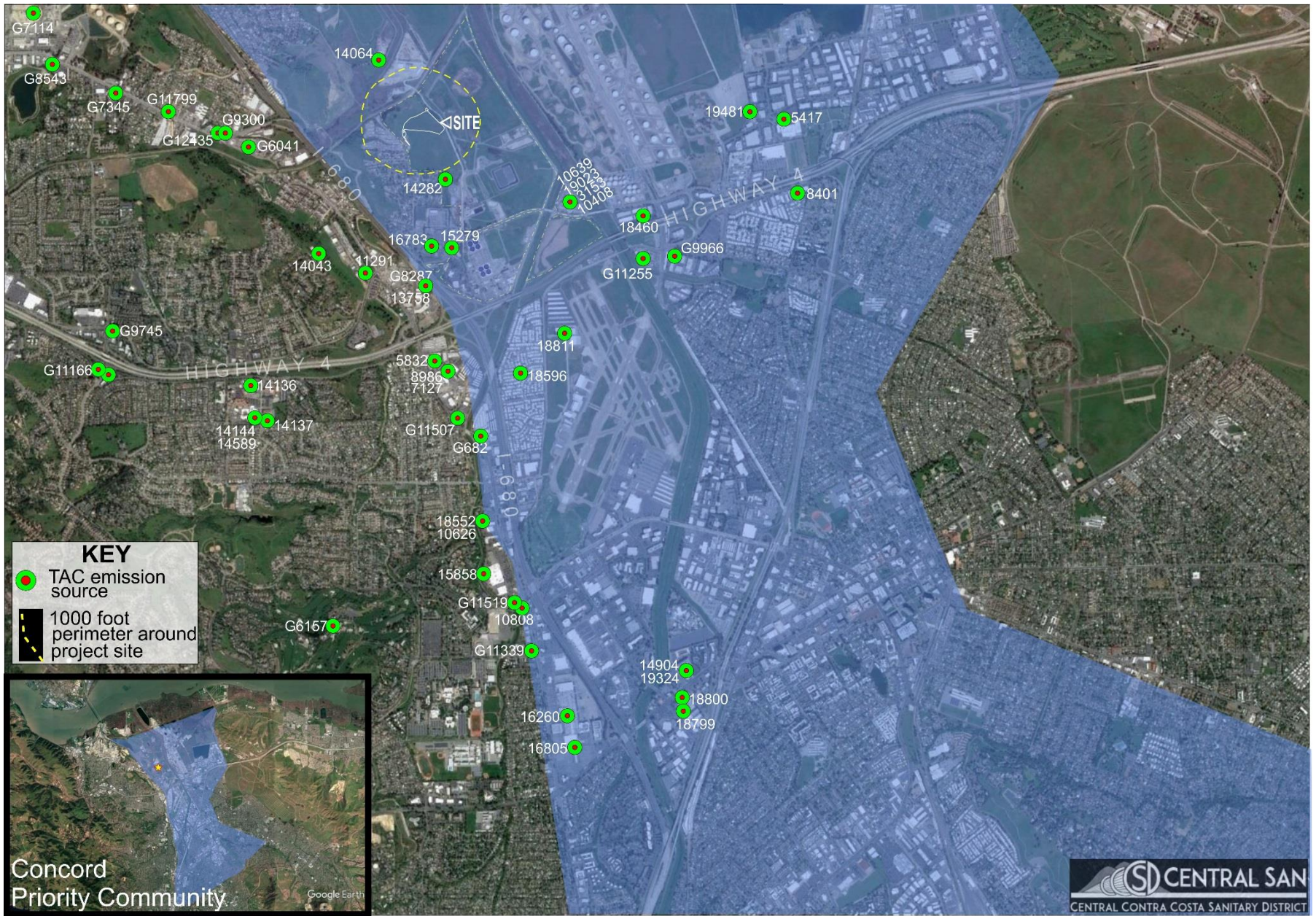
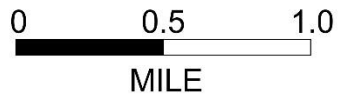
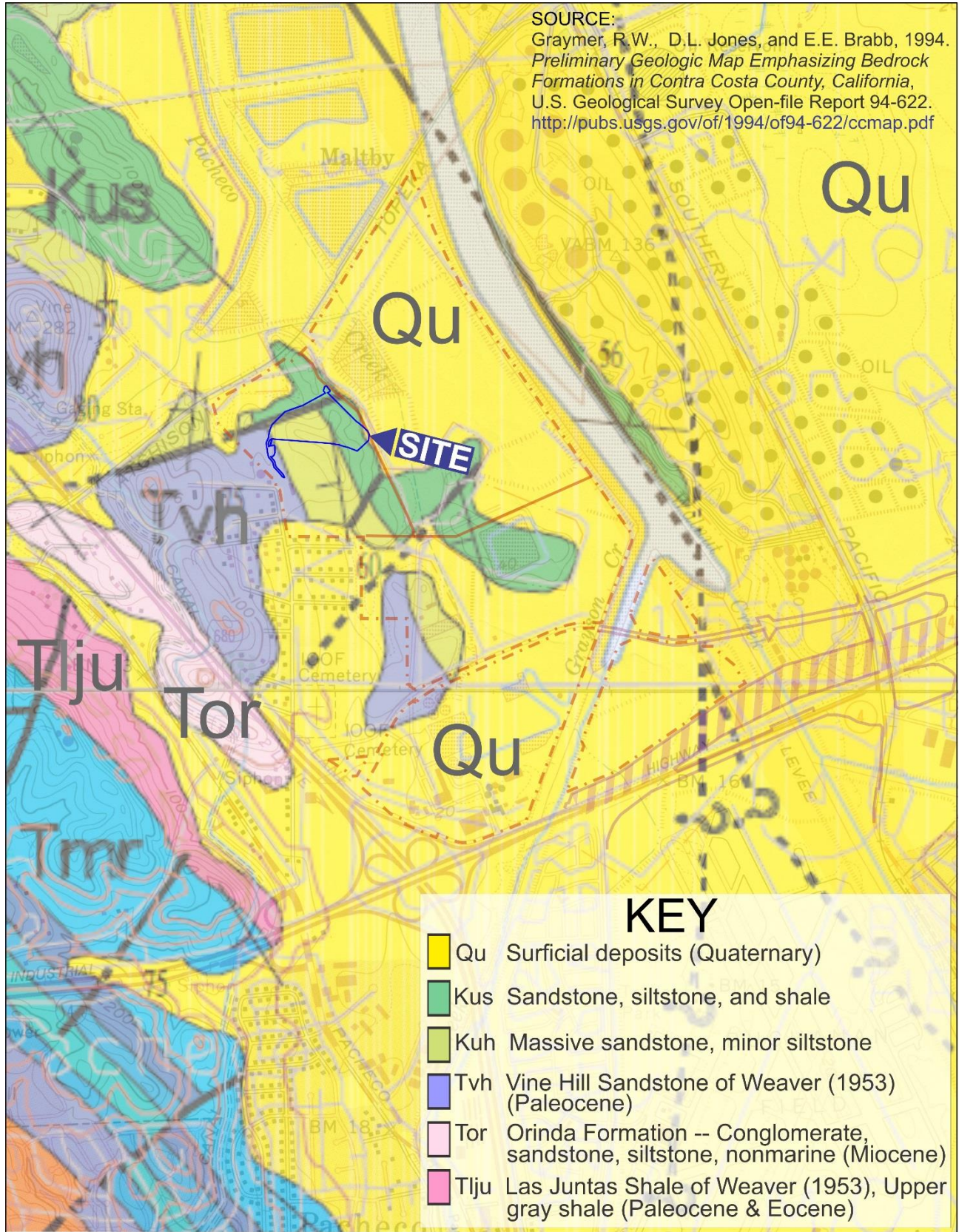


FIGURE 8
BAAQMD Priority Community
 Concord, California



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SOURCE:
 Graymer, R.W., D.L. Jones, and E.E. Brabb, 1994.
*Preliminary Geologic Map Emphasizing Bedrock
 Formations in Contra Costa County, California,*
 U.S. Geological Survey Open-file Report 94-622.
<http://pubs.usgs.gov/of/1994/of94-622/ccmap.pdf>



KEY

- Qu Surficial deposits (Quaternary)
- Kus Sandstone, siltstone, and shale
- Kuh Massive sandstone, minor siltstone
- Tvh Vine Hill Sandstone of Weaver (1953) (Paleocene)
- Tor Orinda Formation -- Conglomerate, sandstone, siltstone, nonmarine (Miocene)
- Tiju Las Juntas Shale of Weaver (1953), Upper gray shale (Paleocene & Eocene)



Figure 9
Geologic Map
 Portion of Quadrangles
 Vine Hill & Walnut Creek

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SOURCE:
 USGS, 1980. Vine Hill & Walnut
 Creek, 7.5-minute series topographic
 State of California Special Studies
 Zones, Vine Hill & Walnut Creek
 Quadrangles, effective July 1, 1993.

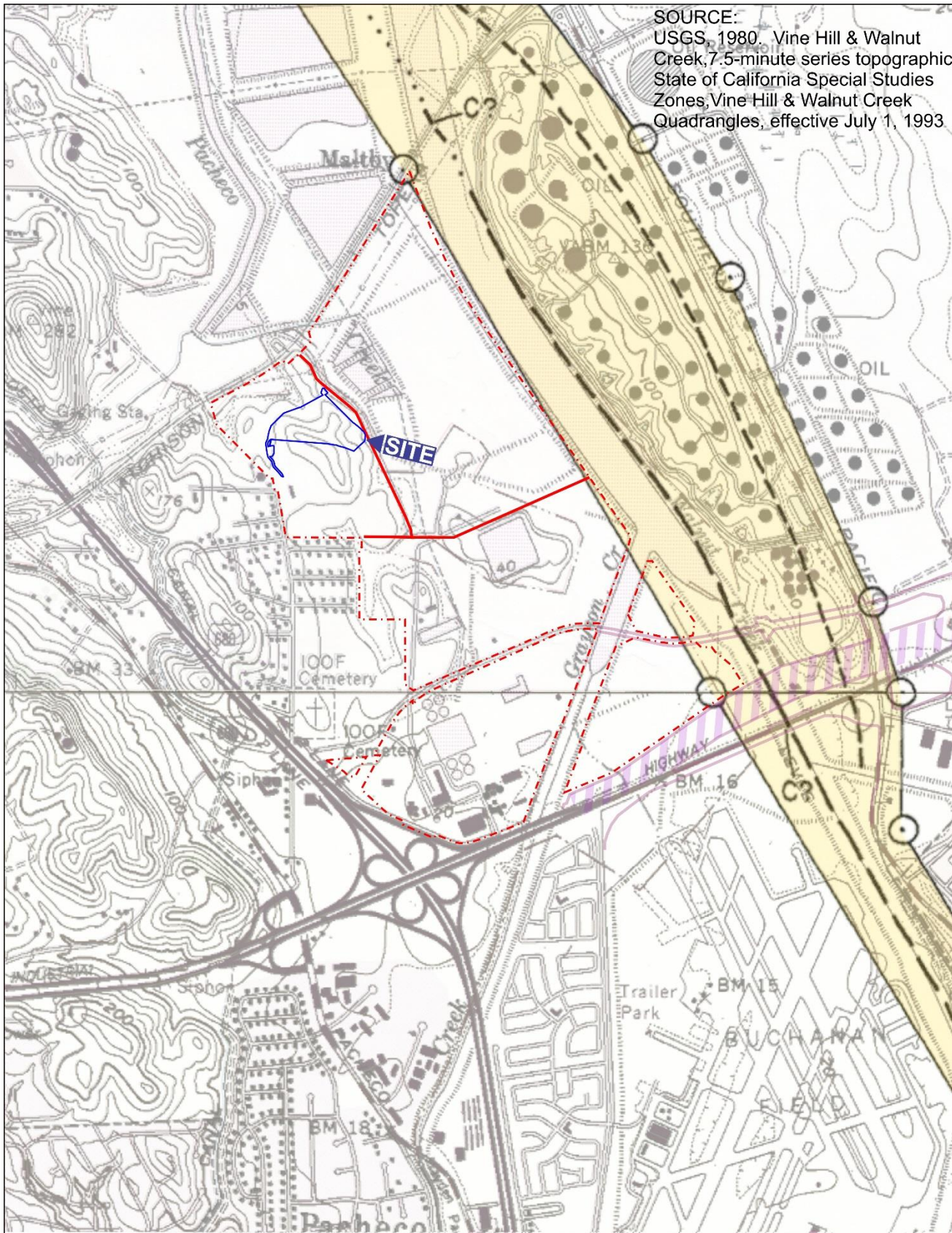


Figure 10
Earthquake Hazard Zone
Special Studies Zone
Vine Hill Quadrangle

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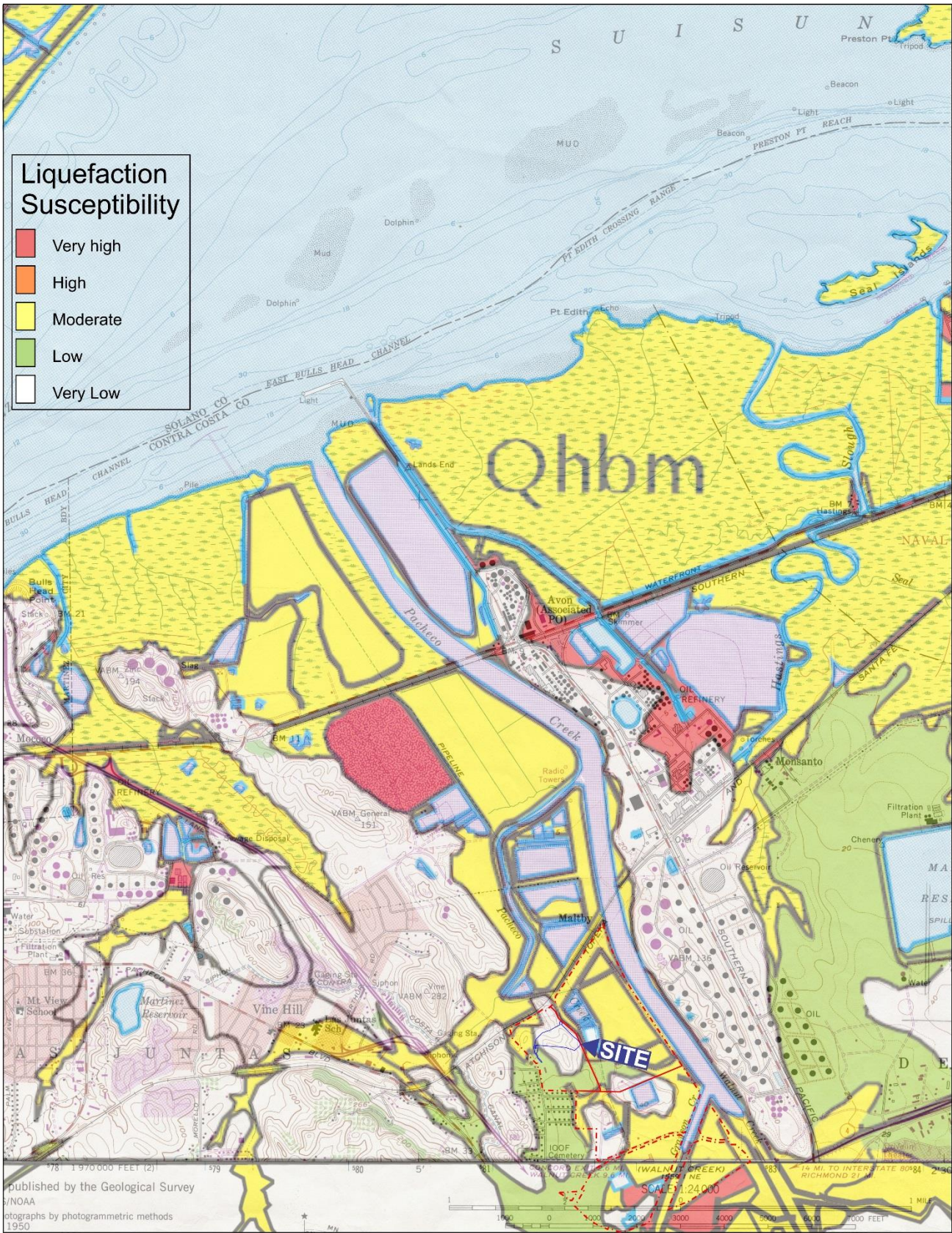


Figure 11
Liquefaction Hazard
Portion of Vine Hill Quadrangle

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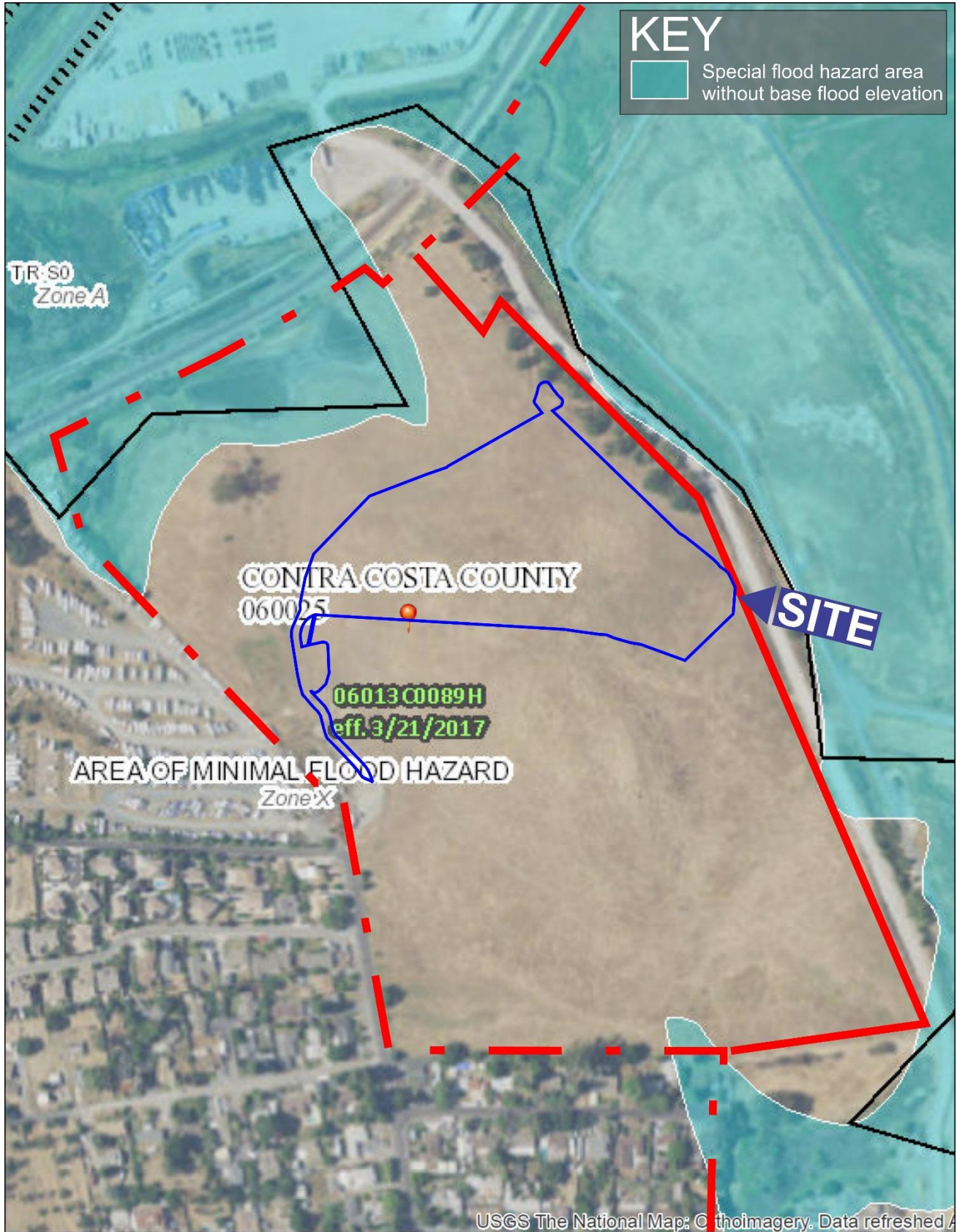


Figure 12
Flood Hazard
FEMA Flood Panel 06013C0089H

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Source:
 Adapting to Rising Tides (ART), 2021. Bay Shoreline Flood Explorer,
 online interactive mapping tool. <https://explorer.adaptingtorisingtides.org/explorer>

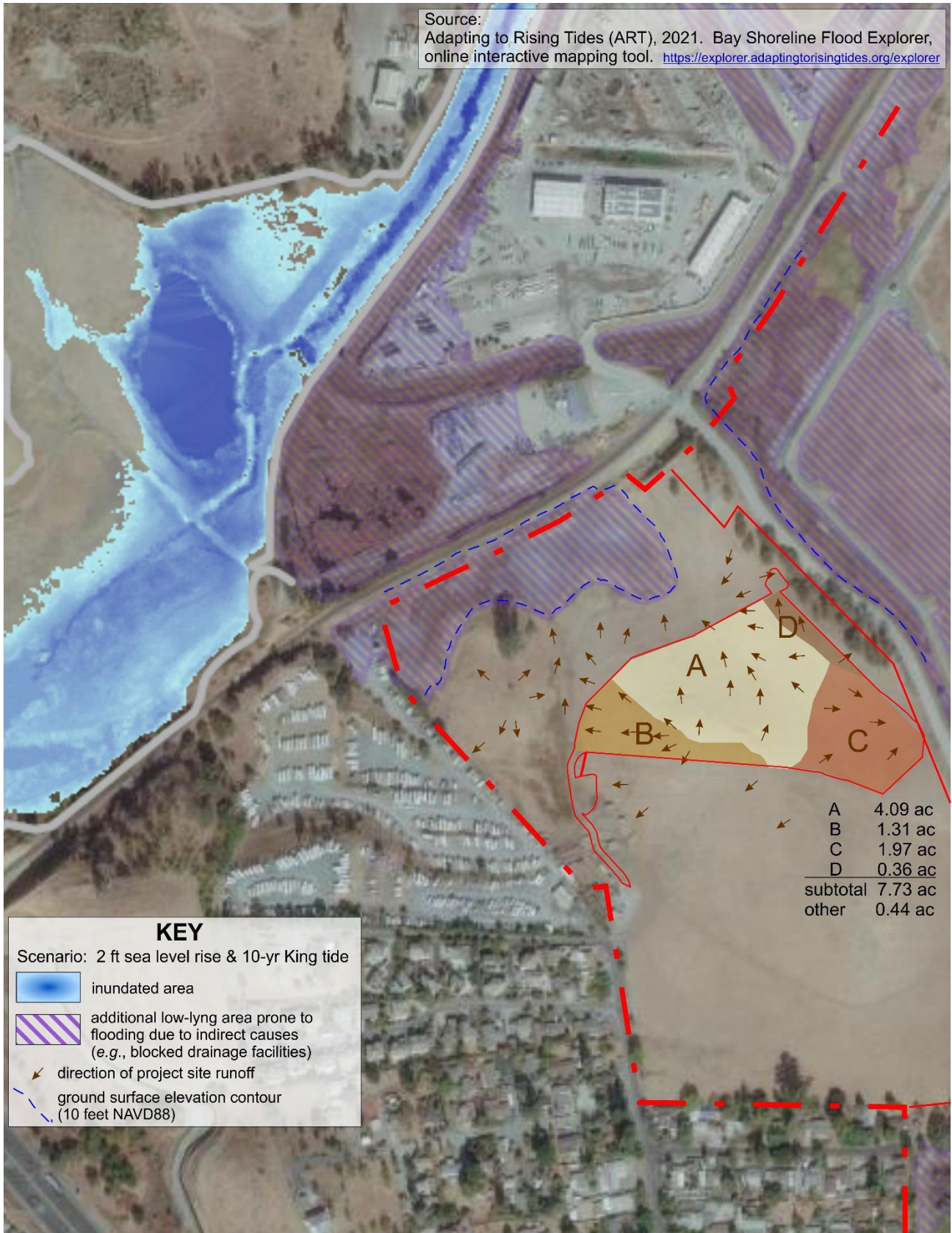


Figure 13
Drainage & Flooding
with Sea Level Rise & Storm Surge

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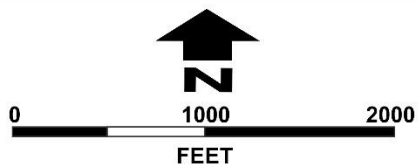
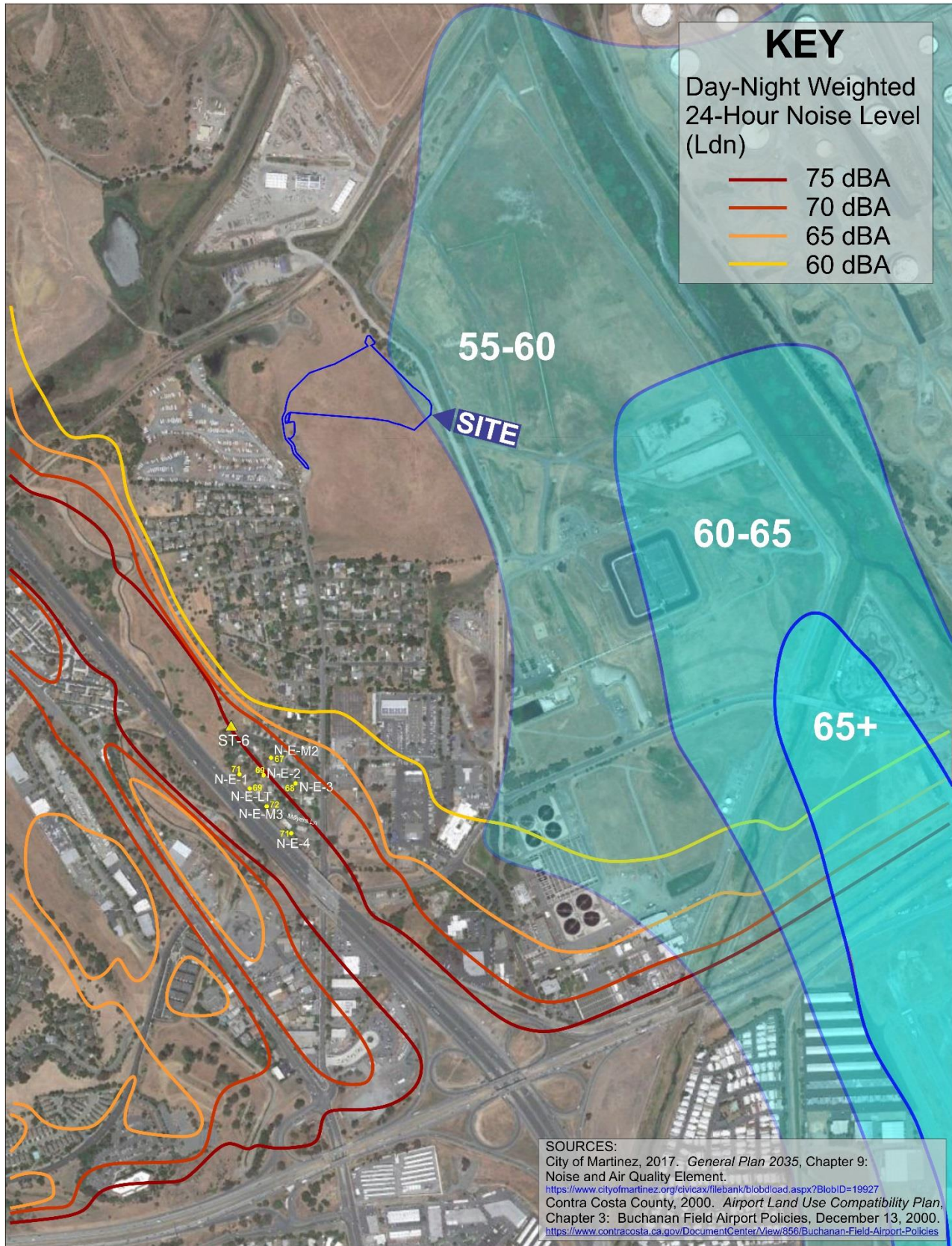


Figure 14
Noise Levels
from Highways
and Buchanan Field Airport

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KEY

Zone 1:

Prohibited–

1. New structures except aeronautical facilities.
2. Storage of fuel or haz materials.

Zone 2:

Prohibited–

1. Housing, grade schools, day cares, hospitals, and nursing homes.
2. Aboveground haz materials storage except up to 2,000 gallons nonflammable.
3. Buildings over 2 habitable floors above ground.

Zone 3:

Prohibited–

1. Housing, grade schools, hospitals, and nursing homes.
2. Aboveground fuel or haz materials storage over 2,000 gallons.
3. Buildings over 3 habitable floors above ground.

Zone 4:

Prohibited–

1. Aboveground fuel or haz materials storage over 2,000 gallons.
2. Buildings over 4 habitable floors above ground.

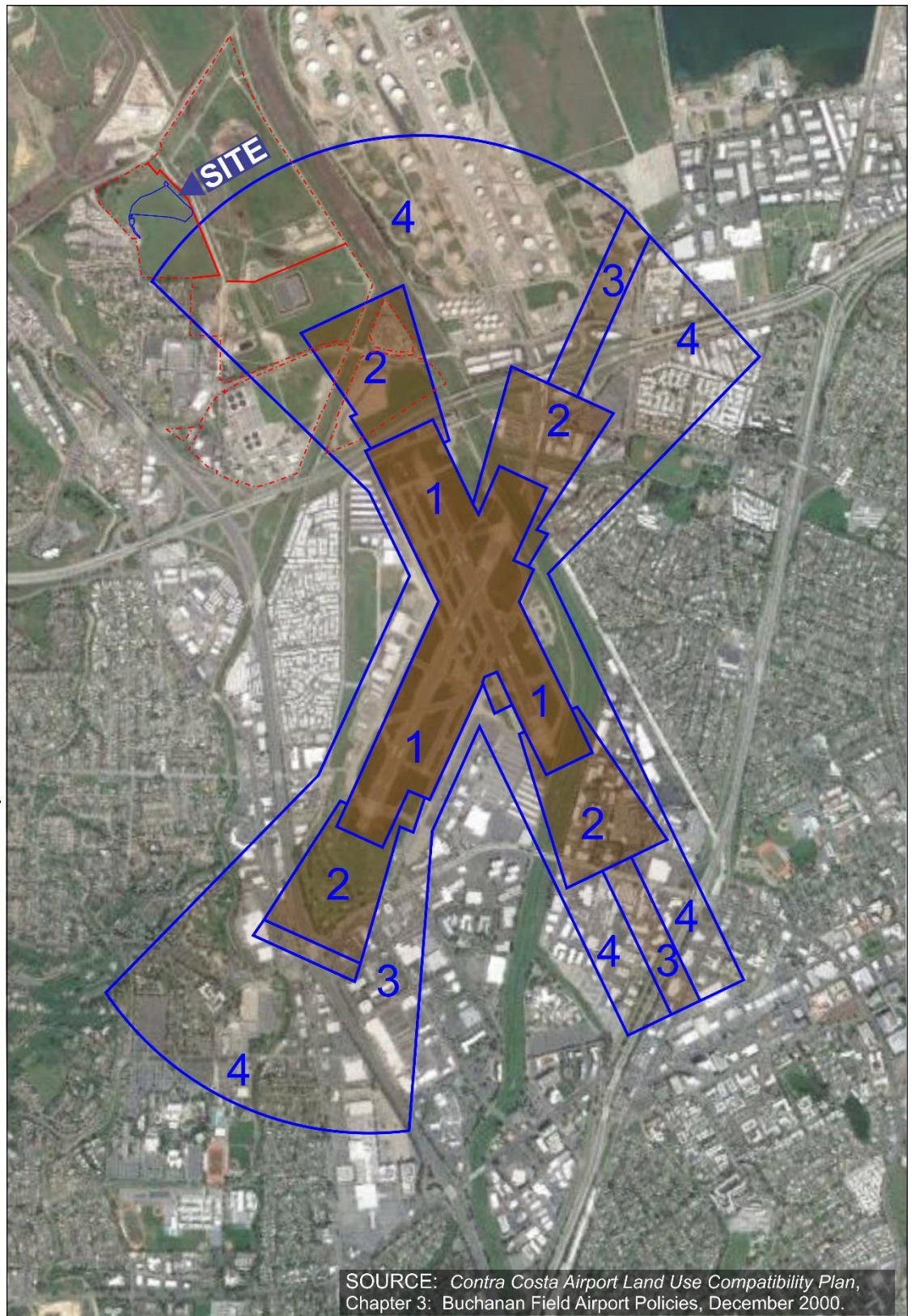


Figure 15
Airport Safety Zones
Buchanan Field Airport

LIST OF ABBREVIATIONS & ACRONYMS

Abbreviation or Acronym	Meaning
AaE	Alo clay
AB	California Assembly Bill
ABAG	Association of Bay Area Governments
AC	alternating current
ALUC	Airport Land Use Commission
APN	assessor parcel number
ARB	California Air Resources Board
ART	Adapting to Rising Tides (a program of BCDC)
AST	above-ground storage tank
ASTM	American Society for Testing and Materials
ATSF	Atchison Topeka & Santa Fe railroad
AVERT	AVoided Emissions and geneRation Tool
BAAQMD	Bay Area Air Quality Management District
BCDC	San Francisco Bay Conservation and Development Commission
BESS	battery energy storage system
BMP	Best Management Practice
BNSF	Burlington Northern and Santa Fe railroad
BUOW	burrowing owl
CAP	Clean Air Plan or Climate Action Plan
CalEEMod	California Emissions Estimator Model
CalFIRE	California Department of Forestry and Fire Protection
Cal-IPC	California Invasive Plant Council
Cal/OSHA	California Occupational Safety and Health Administration
Caltrans	California Department of Transportation
CAT	Caterpillar Tractor
CCCYPD	Contra Costa County Fire Protection District
CCCSD	Central Contra Costa Sanitary District
CCCWP	Contra Costa Clean Water Program
CCR	California Code of Regulations
CCTA	Contra Costa Transportation Authority
CCWD	Contra Costa Water District
CDC	California Department of Conservation
CDFW	California Department of Fish and Wildlife
CDO	Cease and Desist Order
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CIFF	California Important Farmland Finder
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CNPS	California Native Plant Society
CO	carbon monoxide

Abbreviation or Acronym	Meaning
CO ₂ e	carbon dioxide equivalents
CPS	Chint Power Systems
CPUC	California Public Utilities Commission
CTS	California tiger salamander
CWP	County Watershed Program
dBA	A-weighted decibel
DC	direct current
DG	distributed generation
DPF	diesel particulate filter
DPM	diesel particulate matter
DTSC	California Department of Toxic Substances Control
EBRPD	East Bay Regional Park District
EOL	end-of-life
EPA	Environmental Protection Agency
ESA	federal Endangered Species Act
eVDV	estimated Vibration Dose Value
FAA	Federal Aviation Administration
FCWCD	Contra Costa County Flood Control and Water Conservation District
FHSZ	fire hazard severity zone
FHWA	Federal Highway Administration
FMMP	Farmland Mapping and Monitoring Program
ft	Feet
FTC	Federal Trade Commission
FEMA	Federal Emergency Management Agency
FIRM	Federal Insurance Rate Maps
GHG(s)	greenhouse gas(es)
gpcd	gallons per capita per day
h	hours (as in 1 megawatt-hour or 1 MWh)
HCP	Habitat Conservation Plan
HSAP	Worker Health, Safety and Hazard Awareness Plan
HI	heavy industrial land use
HMMP	Hazardous Materials Management Plan
hp	Horsepower
Hz	hertz or 10 Hz is the same as 10 cycles per second
I, I-680	Interstate highway 680
in	Inch
JMLT	John Muir Land Trust
kilo	1,000 kW is 1,000 watts
kVA	1 kilovolt-amp or 1,000 volt-amps
kW	Kilowatts
lbs	Pounds
lbs/day	pounds per day
LCFS	Low-Carbon Fuel Standard
L _{dn}	Day-Night Community Noise Level
LI	light industrial land use
LWC	Lower Walnut Creek
m	meter (3.28 feet)

Abbreviation or Acronym	Meaning
mm	millimeter or 0.001 m
µg/m ³	micrograms per cubic meter
MeE	Millsholm loam
MHHW	Mean Higher High Water
MLLW	Mean Lower Low Water
MND	Mitigated Negative Declaration
MRP	Municipal Regional Permit
MRZ	mineral resource zone
msl	mean sea level datum
MT	metric tons, 2,200 lbs, 1,000 kilograms
MMT	millions of metric tons
MW	megawatt (one million watts)
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NAVD88	North American Vertical Datum of 1988
NFPA	National Fire Protection Association
NG	natural gas
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NOx	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NREL	National Renewable Energy Laboratory
NWIC	Northwest Information Center
OHP	Office of Historic Preservation
PE	Professional Engineer
PG&E	Pacific Gas & Electric Company
PM	particulate matter
ppmv	parts per million by volume
PPV	peak particle velocity
PRC	Public Resources Code
PS	public/semi-public land use
PV	Photovoltaic
RES	Renewable Energy Standard
RES-BCT	Renewable Energy Self-Generation Bill Credit Transfer
RMS	root mean square
ROG(s)	Reactive Organic Gas(es)
RPS	Renewables Portfolio Standard
RWQCB	California Regional Water Quality Control Board
SB	California Senate Bill
SFBA	San Francisco Bay Area
SFEI	San Francisco Estuary Institute
SFPP	Santa Fe Pacific Partners
SGIP	Self-Generating Incentive Program
SH	single-family housing
SLF	Sacred Lands File
SIP	State Implementation Plan [for air quality]
SMARA	Surface Mining and Reclamation Act
SPCCP	Spill Prevention, Control, and Countermeasures Plan

Abbreviation or Acronym	Meaning
SR, SR 4	State Route, State Route 4
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State of California Water Resources Control Board
TAC	Toxic Air Contaminant
TCPA	Toxic Pits Cleanup Act
tpy	tons per year
UPRR	Union Pacific Railroad
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
UST	Underground Storage Tank
VMT	Vehicle miles traveled
WPT	Western pond turtle
WWTP	wastewater treatment plant