Solar DG LLC

CALIFORNIA ENVIRONMENTAL QUALITY ACT INITIAL STUDY, MALLARD SLOUGH 1 & 2 SOLAR PROJECTS

Submitted to:
City of Pittsburg
65 Civic Avenue
Pittsburg, CA 94565

Submitted by:
NRG Solar DG LLC
100 California Street, Suite 650
San Francisco, CA 94111

Date: May 2016

TABLE OF CONTENTS

FIGURES

PRELIMINARY DESIGN DRAWINGS

APPENDICES

1.0 INTRODUCTION

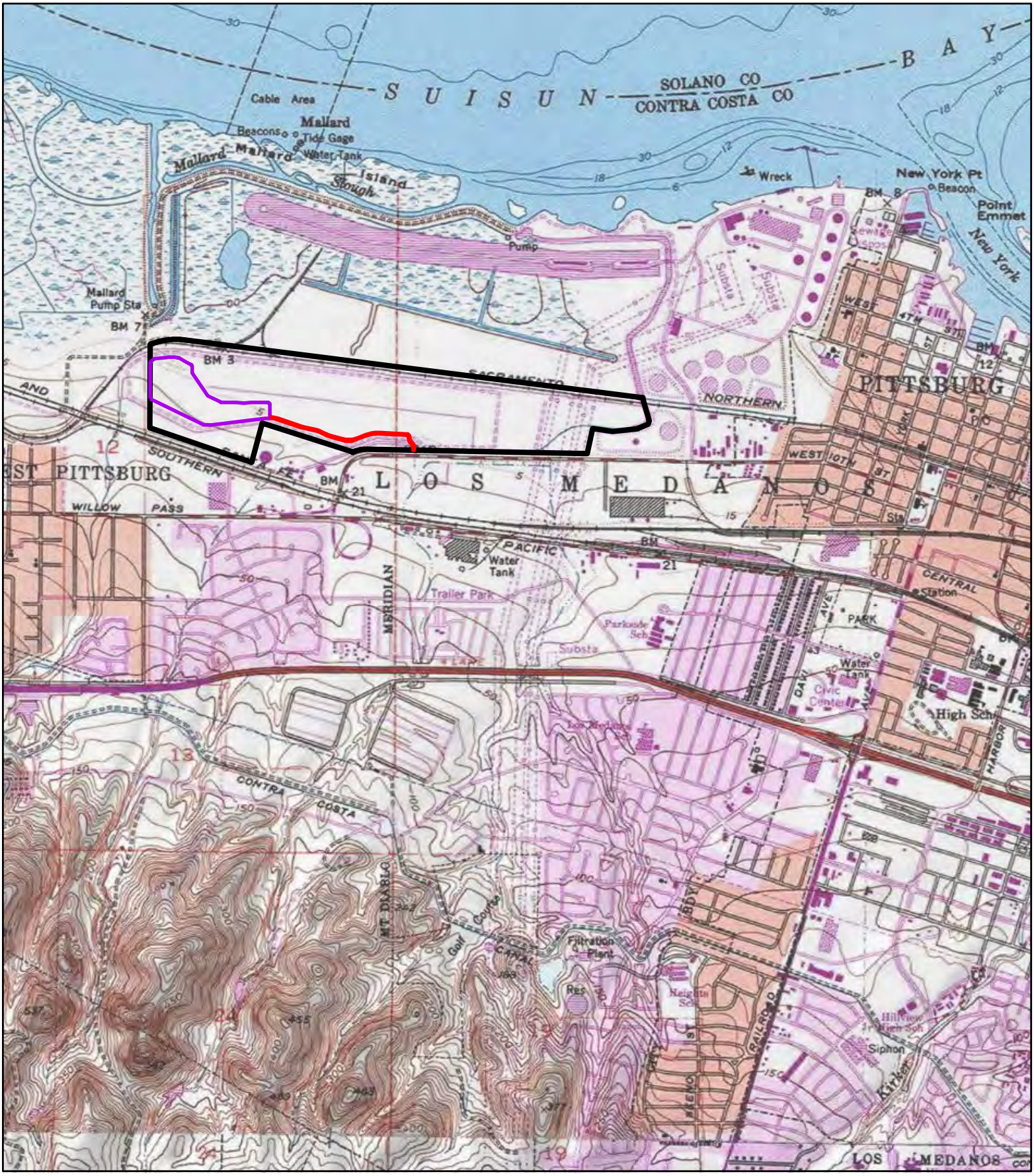
1.1 PROJECT OVERVIEW

The Mallard Slough 1 & 2 Solar Projects (Projects) are two proposed solar photovoltaic (PV) power generation developments located adjacent to each other in the City of Pittsburg, California, on an approximately 23-acre site (Site) owned by NRG Delta LLC and leased by NRG Solar DG LLC for a 25-year period. The Site is located on a portion of a vacant approximately 231-acre parcel (Parcel), nearly all of which has been graded. Figure 1, Project Location, shows the Parcel location. The Parcel is zoned general industrial except for the easternmost end that is zoned open space and is not proposed for development. The Parcel is part of a larger contiguous property that is the site of the existing natural gas-fired NRG Delta LLC Pittsburg power plant.

Construction of the Projects is expected to take a total of approximately 6 months following approximately 2 months of final design, and construction mobilization is expected to begin shortly after receipt of required permits and approvals. Construction would create an estimated 40 direct jobs during peak construction activity and an estimated 20 direct jobs on average over approximately 6 months during the field portion of construction work. Once constructed, the facility would passively generate electric output from the sun during daylight hours.

Approval to amend the zoning ordinance to establish a limited overlay district to authorize PV arrays and design review under zoning code Chapter 18.36 would be required from the City of Pittsburg. A generation tie line to the nearby Pacific Gas & Electric Company (PG&E) distribution system would be constructed by PG&E that would include approximately 760 feet of overhead lines along Willow Pass Road between an existing distribution pole and the Site access road entrance. Impacts of the proposed generation tie line along Willow Pass Road and following the access road within the Parcel are addressed in this Initial Study.

The Site Plan Review considered in this Initial Study is for the development features associated with the approximately 23-acre Site, the approximately two acre access road, and the proposed generation tie line. The Site and access road together are referred to in this Initial Study as the Development Area. The Limited Overlay District would be applied to the entire 231-acre parcel except the easternmost end that is zoned open space, with no physical change proposed outside of the Development Area. A separate entitlement permit and CEQA review would be required to utilize the Limited Overlay District outside the Development Area. Therefore, while both the Site Plan Review for the Projects and the City's consideration of the Limited Overlay District for the majority of the Parcel is the "Project" undertaking by the City for purposes of CEQA and evaluated herein, the analysis focuses on impacts due to those physical changes that would come about due to the Projects.



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Mallard Slough 1 & 2 Solar Projects

Project Location

Figure 1

Access Road

Site Boundary

APN 096-100-031

N

0 1,400 2,800 Feet

TRC

Sources: Copyright© 2013 National Geographic Society, i-cubed; Contra Costa County, 2015

11/17/2015

1.2 CALIFORNIA ENVIRONMENTAL QUALITY ACT

The proposed Projects constitute a "project" as defined by the California Environmental Quality Act (CEQA) (Public Resources Code, Section 21000 et seq.) and the "CEQA Guidelines" (California Code of Regulations, Title 14, Section 15000 et seq), and are thereby subject to the requirements of CEQA. For purposes of CEQA, the term "project" refers to the whole of an action which has the potential to result in a direct physical change or a reasonably foreseeable indirect physical change in the environment (CEQA Guidelines Section 15378). As the principal public agency responsible for approving the Project, the City of Pittsburg is the "lead agency" overseeing and administering the CEQA environmental review process.

As set forth in the provisions of CEQA Guidelines Section 15126.4, before deciding whether to approve a project, public agencies must consider the potential significant environmental impacts of the project and must identify feasible measures to minimize these impacts. Pursuant to CEQA Guideline Section 15064, if any aspect of the proposed project, either individually or cumulatively, may cause a significant effect on the environment, regardless of whether the overall effect of the project is adverse or beneficial, an Environmental Impact Report (EIR) must be prepared.

This Initial Study is a factual document, prepared in conformance with CEQA, and written for the purpose of making the public and decision-makers aware of the potential environmental consequences of the project. For any project impact that is considered "significant," the Initial Study identifies mitigation measures, where feasible, to reduce or avoid the significant effect. Before any action can be taken to approve the Project based on conclusions of this Initial Study, the City of Pittsburg must certify that it has reviewed and considered the information herein and that this document has been completed in conformity with the requirements of CEQA. Certification of conformity with CEQA does not approve or deny the Project.

1.3 ENVIRONMENTAL REVIEW

Consistent with CEQA, this Initial Study is a public information document for use by governmental agencies and the public to identify and evaluate potential environmental consequences of the Project and to recommend mitigation measures and/or standard conditions of approval to lessen or eliminate adverse impacts.

This Initial Study/Proposed Mitigated Negative Declaration is available for public review for a thirty days, during which time written comments on the Initial Study may be submitted to:

Hector Rojas
Senior Planner
City of Pittsburg
Planning Division
65 Civic Avenue
Pittsburg, CA 94565
Hrojas@ci.pittsburg.ca.us

2.0 PROJECT DESCRIPTION

The Mallard Slough 1 facilities (Mallard Slough 1) would generate approximately 2 megawatts (MW) of alternating current (AC) electric energy for purchase by the City of Pittsburg. The Mallard Slough 2 facilities (Mallard Slough 2) would generate approximately 1 megawatt of AC electric energy for purchase by the Delta Diablo Sanitation District. Once constructed, the facility would typically be unattended and would passively generate electric power from the sun during daylight hours. Routine monitoring and maintenance is anticipated to be needed once a month or less over the long term.

Approval to amend the zoning ordinance to establish a limited overlay district to authorize PV arrays and design review under zoning code Chapter 18.36 would be required from the City of Pittsburg. Existing and proposed zoning maps for the project are shown on Figures 2 and 3.

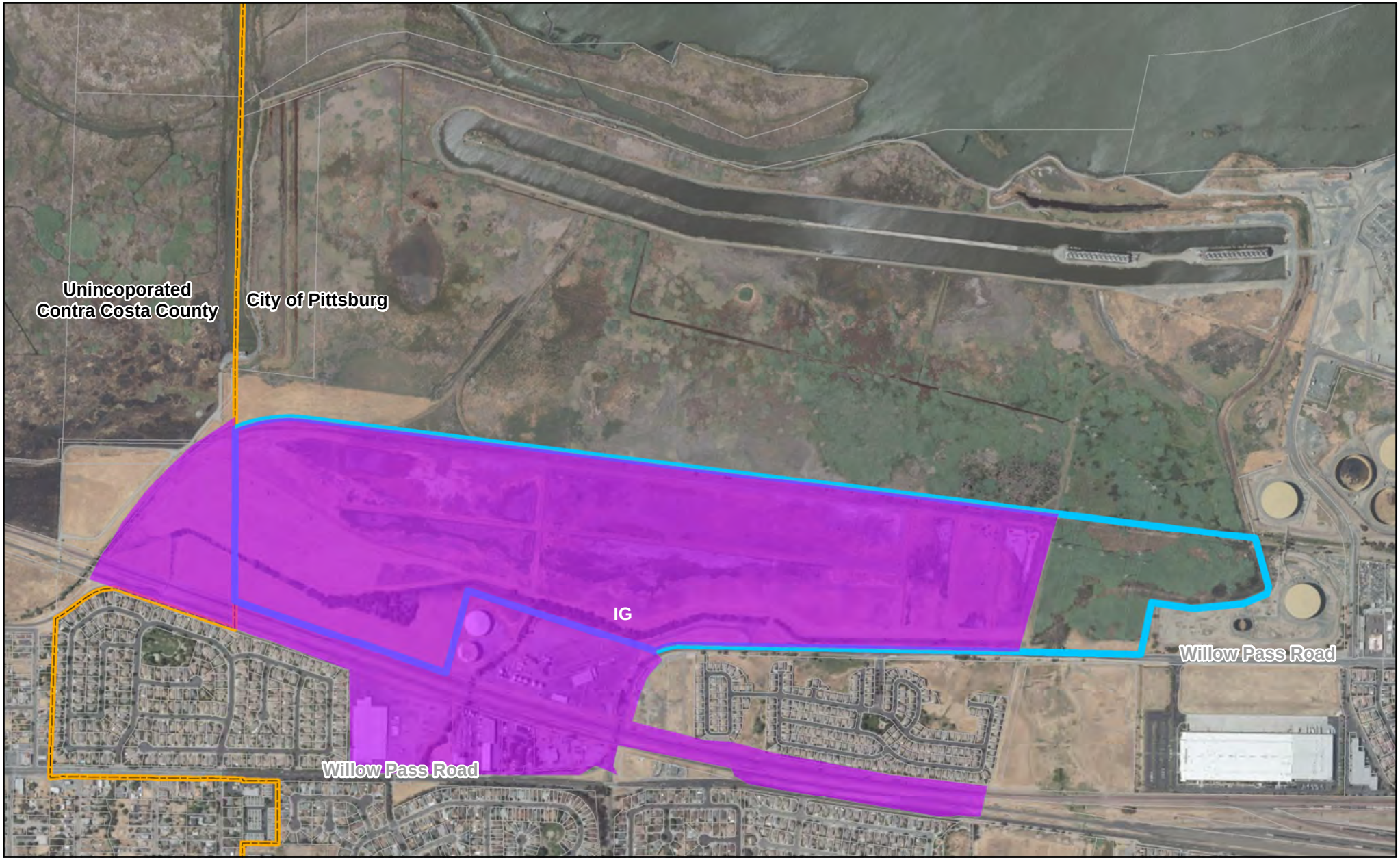
2.1 PURPOSE

The purpose of the Projects is to repurpose open NRG acreage to provide economic and reliable renewable energy to the City of Pittsburg and Delta Diablo Sanitation District (District) via PG&E's Renewable Energy Self-Generation Bill Credit Transfer Program. The Projects would generate significant annual savings for the City and the District, reducing electricity bills and providing savings the will be passed along to tax payers.

2.2 PROJECT LOCATION AND SURROUNDINGS

An area map showing the Site location and surrounding lands is provided in Figure 3, Site Vicinity. The Site is located on a portion of Contra Costa County Assessor's Parcel Number 096-100-031 located at the western edge of the City of Pittsburg. The Parcel is bounded to the north by an approximately 497-acre parcel owned by NRG Delta LLC that encompasses the Pittsburg power plant facilities and vacant lands. Inactive oil storage tank farms occur on lands to the east of the parcel and lands to the west are vacant. The parcel is bounded to the south by Willow Pass Road, the Burlington Northern & Santa Fe Railroad and Union Pacific Railroad rights-of-way (ROWs), and an industrial facility. Lands to the south of Willow Pass Road and the railroad ROWs include residential, commercial and industrial developments.

Access to the Site would occur via an existing dirt road from Willow Pass Road that would be improved. The existing dirt road would be scarified, compacted, and surfaced with compacted gravel to meet fire department access requirements. The driveway intersection with Willow Pass Road will be improved with a pavement apron with adequate room to pull off the travelled roadway to unlock/lock the gate.



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Mallard Slough 1 & 2 Solar Projects
Existing Zoning
Figure 2

Existing Zoning

- General Industrial (IG)
- APN 096-100-031

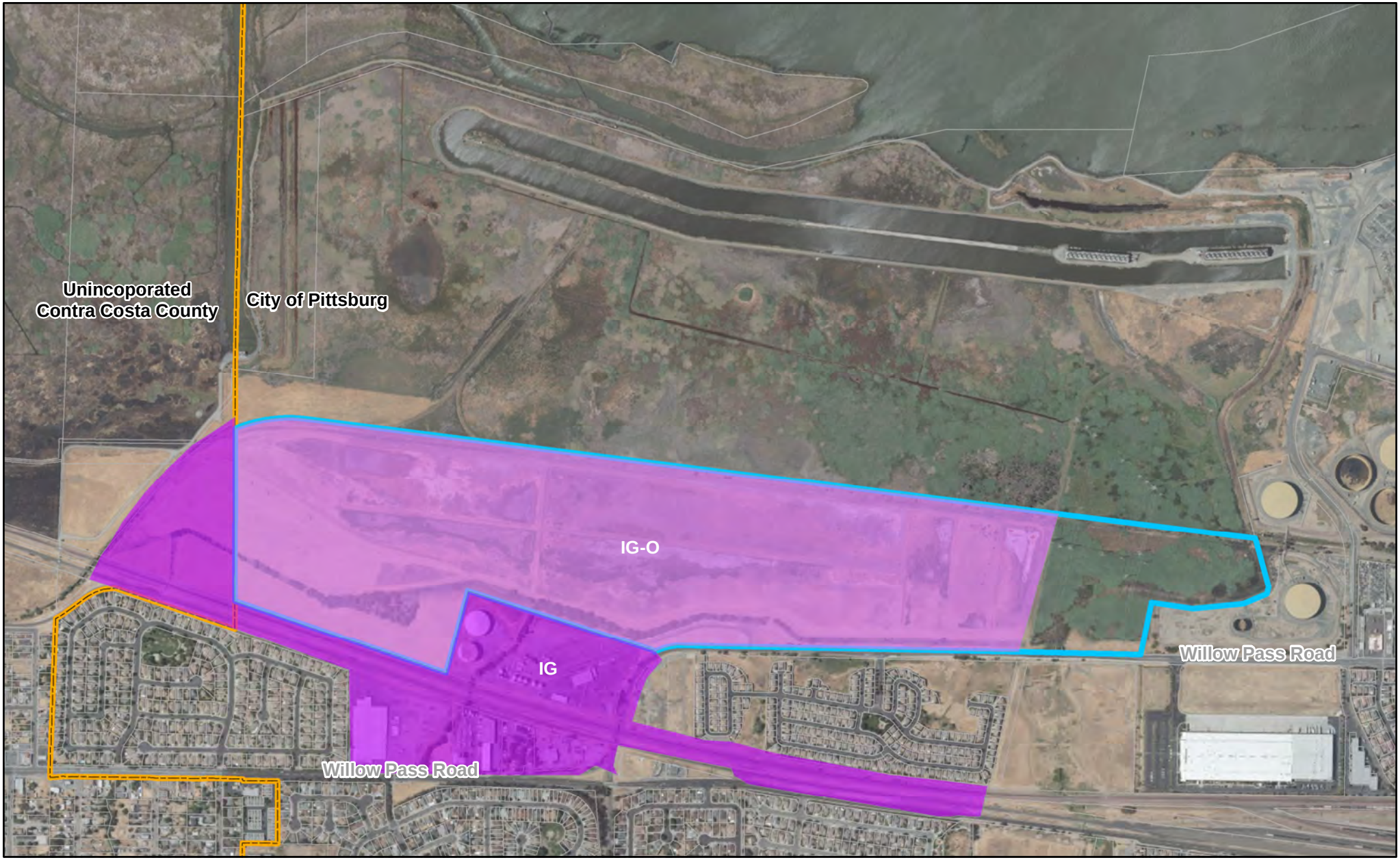
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community; TRC, 2015; Contra Costa County, 2015; CALTRANS, 2014

N

0 500 1,000 1,500 2,000 Feet

TRC

5/18/2016



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Mallard Slough 1 & 2 Solar Projects
Proposed Zoning
Figure 3

Proposed Zoning

- General Industrial (IG)
- General Industrial - Limited Overlay (IG-O)
- APN 096-100-031

N

0 500 1,000 1,500 2,000 Feet

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community; TRC, 2015; Contra Costa County, 2015; CALTRANS, 2014

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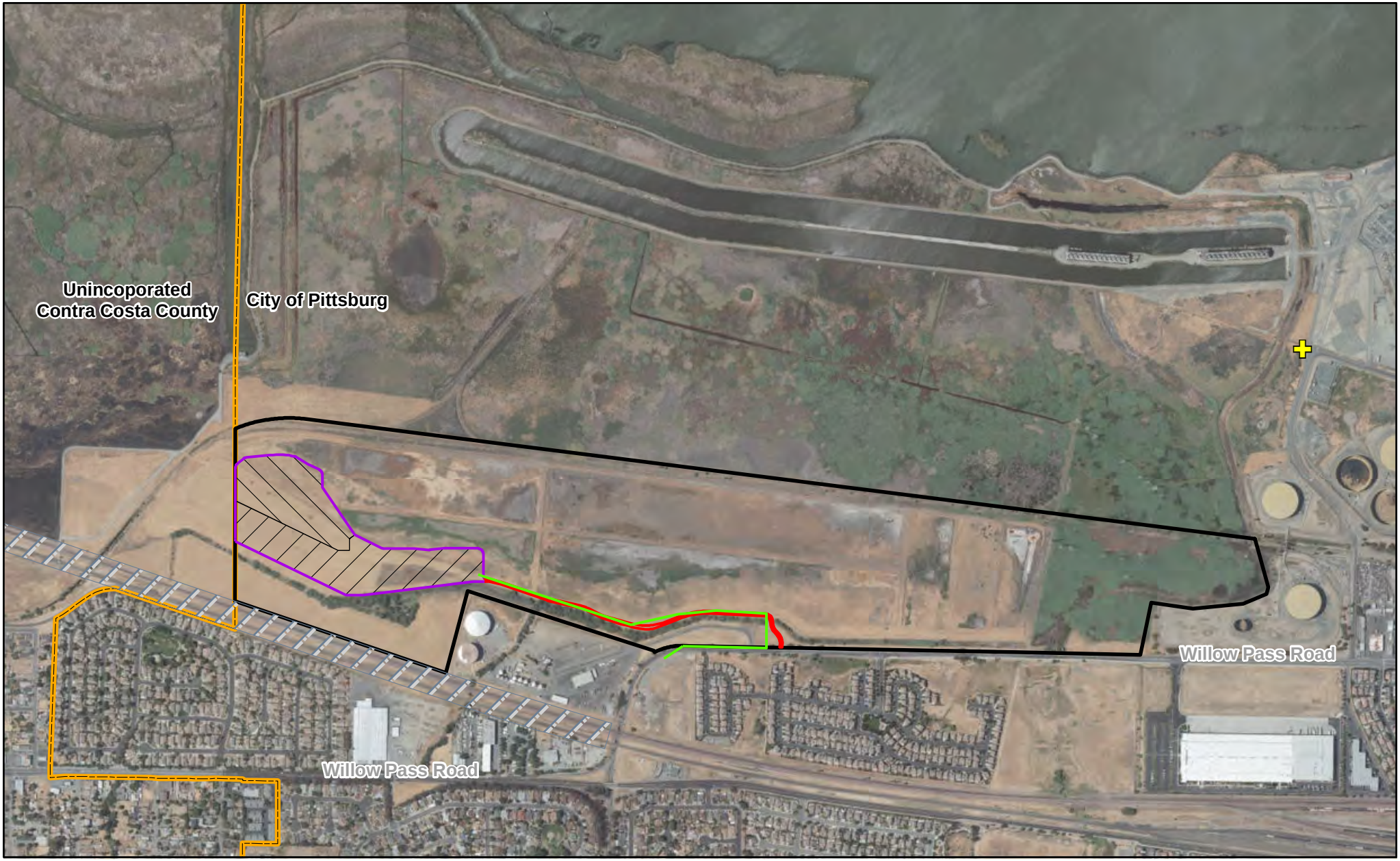

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- Existing Power Plant Fire Hydrant
- 21 kV Overhead Generation Tie Line
- Access Road
- Site Boundary
- Mallard Slough 1
- Mallard Slough 2
- Railroad ROW
- APN 096-100-031

Mallard Slough 1 & 2 Solar Projects
Site Vicinity
Figure 4

N

0 500 1,000 1,500 2,000 Feet

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community; TRC, 2015; Contra Costa County, 2015; CALTRANS, 2014

TRC

1/20/2016

There are few opportunities for public viewing of the Site due to the generally low topographic relief, absence of development on surrounding lands, and sound walls outside of the nearest residences that would block most views. Representative photographs of the Site and surrounding lands are provided in Figure 5, Representative Site Photographs.

2.3 PROJECT FACILITIES

2.3.1 General

The primary components of the proposed Projects include:

- Solar PV module arrays;
- Inverters;
- Transformers, circuit breakers and switchgear; and
- A generation tie line to connect the Projects to the existing 21 kilovolt (kV) PG&E grid.

The Solar PV module arrays are the predominant feature of the Projects and would encompass most of the Site. The PV panels utilize anti-reflective technology and absorb and convert sunlight directly into direct current (DC) electricity. They consume no fossil fuels or water and produce no air emissions. The PV modules would be laid out on a uniform grid pattern with access roads provided at the Site perimeter and intermittently within the arrays to facilitate routine maintenance and access. The preliminary layout and conceptual design details of the Projects are shown in the Preliminary Design Drawings provided in following pages. The final design drawings would be subject to approval by the City prior to construction.

2.3.2 Generating Technologies

The Projects would utilize crystalline silicon technology PV panels on single-axis tracker supports. Typical elevation details are provided in the Preliminary Design Drawings. The PV modules would be arranged in rows and would be connected by a drive shaft to drive motors that would rotate the solar panels from east to west to follow the sun throughout the day. The panels would have a maximum height of approximately 15 feet above the ground over most of the Site and up to 20 feet above the ground in the lowest Site areas.

2.3.3 Energy Delivery

Wiring that would be installed underground would deliver DC electricity from the solar panels to electrical equipment pads with inverters to convert the DC current to AC and transformers to step up the voltage of the AC current for compatibility with the existing nearby PG&E distribution system. The inverters and transformers would be supported on concrete footings up to approximately 10 feet by 32 feet in size. The enclosures for the electrical equipment would be 15 feet or less in height.

Photo 1: View toward the northeast over the parcel containing the Site and surrounding lands from the south edge of the railroad ROWs at the end of Winter Way. The project Site is located just beyond the trees visible in the mid-ground of this photo which would partially shield the proposed solar arrays for views from the south.

Photo 2: A 10-foot high concrete wall separates the railroad ROW from residence to the south. The wall blocks views of the parcel from neighborhoods to the south with exceptions for the second story of some two-story units.

Mallard Slough 1 & 2 Solar Projects
Representative Site Photographs
Figure 5

TRC

Photo 3: View toward the northwest of the existing gate and access road at the proposed project entrance on Willow Pass Road.

Photo 4: View east along Willow Pass Road from the existing access road gate. Willow Pass Road is straight with good visibility in both directions at the access road entrance.

Photo 5: View west along Willow Pass Road from the existing access road gate.

Photo 6: View of existing access road crossing the culvert in the drainage ditch. Recently disked soil is evident from fire prevention practice.

Photo 7: View east of access road on north side of the drainage ditch. Access road bends to the right in mid-ground of the photo where the view of the culvert crossing is blocked by riparian vegetation.

Photo 8: View west from the existing access road on north side of the drainage ditch. The photo is from the east end of the proposed solar array area. All or much of the site soils consist of fill evident in the unnatural terrain seen in this photo. Riparian vegetation at left of photo occurs in the manmade ditch.

Photo 9: View generally westward over the proposed array footprint. The proposed array areas would extend almost to the riparian vegetation visible at the left background of this photo, but the project is designed to stay clear of the riparian vegetation.

Design Drawings (1 of 9)

Design Drawings (2 of 9)

Design Drawings (3 of 9)

Design Drawings (4 of 9)

Design Drawings (5 of 9)

Design Drawings (6 of 9)

Design Drawings (7 of 9)

Design Drawings (8 of 9)

Design Drawings (9 of 9)

The electrical equipment pads with inverters and accompanying transformers would be placed within the arrays to optimize efficiency. Based on preliminary engineering, Mallard Slough 1 may include two 1,000 kV or four 500 kV inverters and Mallard Slough 2 may include one 1,000 kV or two 500 kV inverters. The transformers would step up the AC voltages from the inverters to a grid interconnect voltage of 21 kV. The power then would be conveyed through the proposed 21-kV generation tie line for interconnection to PG&E's distribution system.

The proposed generation tie line would be installed underground between inverter skids and a riser pole located near the Site access gate. From the riser pole, an overhead line with eight to nine 30 to 45 foot high wood or steel poles would be constructed along the access road to Willow Pass Road. An additional approximately 760 feet of overhead line would be constructed using about four new 30 to 45 foot high wood or steel poles along Willow Pass Road westward to an existing pole on the PG&E 21 kV electric distribution grid. The route for this generation tie line is shown in Figure 4, Site Vicinity, and in the Preliminary Design Drawings. It is anticipated that PG&E would construct and operate the generation tie line or, at minimum, the portion outside of the Parcel adjacent to Willow Pass Road.

2.3.4 Ancillary Facilities and Requirements

The existing dirt road that provides access to the Site from Willow Pass Road would be improved to provide access for the Projects. The road bed would be scarified and compacted and surfaced 20 feet wide with compacted gravel. Within the Site, the internal access roads would be scarified, compacted and graveled to provide for all-weather passage and adequate turning radii in accordance with Contra Costa County Fire Protection District (CCCFPD) requirements. A paved apron will be provided at Willow Pass Road.

The Site would be secured with seven-foot-tall fencing consisting of six-foot high chain link fabric with a one foot high security wire top. A controlled access gate with a minimum width of 20 feet would be located at the Site entrance and a second gate would be located near the northwest corner of the Site where an existing road would provide for emergency access. Conceptual fence details are provided in the Preliminary Design Drawings.

Water would be required during operations for panel washing and for fire protection. Deionized water would be used for panel washing and would be delivered to the Site as needed from a commercial purified water vendor. Fire protection water would be provided by an onsite tank that would be installed near the Site entrance. The tank would be dedicated for fire water reserve and the system would be designed to deliver 10,000 gallons of fire water to the hydrant in accordance with CCCFPD requirements. The tank would be

filled initially and following periodic testing using water trucks filled from an existing power plant fire hydrant shown in Figure 4, Site Vicinity.

No buildings are proposed. Secured, intermodal-type storage containers may be brought onsite temporarily to store parts and equipment during construction activities or periodic maintenance activities. A trailer may be brought onsite for temporary construction offices. Construction staging would occur onsite.

The Projects would include one or more meteorological monitoring stations to track insolation, irradiance, temperature, wind direction, and wind speed. These stations are typically 6 to 8 feet tall and may include a taller (up to 30 feet) anemometer for measuring wind speed. These stations are typically mounted on one or more poles or towers. Photographs of example pole and tower mounted stations are shown in Appendix A.

No new permanent nighttime lighting is proposed. Motion activated lighting would be provided at entrance gates for safety and security. Lighting would be off except when triggered by motion, and would be directed downward and shielded to focus illumination on desired areas only.

No designated permanent parking places are proposed since operation and maintenance activity would be minimal and, when present, operations and maintenance personnel would be able to park temporarily (e.g., a few hours) within the project Site. Construction parking also would take place within the Site.

2.3.5 Drainage

Mean annual rainfall is approximately 13 inches. The Site and surrounding lands consist of previously graded gently rolling terrain. The southern portion of the Site slopes southward toward an offsite manmade drainage ditch, and the northern portion slopes northward toward offsite graded shallow closed depressions that support seasonal wetlands. These pre-project drainage conditions would be maintained under the proposed grading plan. A preliminary grading plan is provided in the Preliminary Design Drawings and shows the proposed contours generally unchanged with grading limited to the general smoothing of the existing topography so that Site drainage would not be significantly affected. The area within the fence line would be smoothed, scarified and recompacted to facilitate construction. The PV module piles would be small in diameter such that their cumulative area would be negligible compared to the Site area. Other impervious area that would be created by the Projects would also be a limited to a negligible portion of the Site consisting of the relatively small footings for inverters, transformers and switchgear and the fire water tank.

The northwest and northeast corners of the Mallard Slough 2 array is within the 1 percent chance annual flood zone. The PV module racks in these areas would be elevated on taller piles than the remainder of the Site so that the lowest PV panel position is a minimum of one foot above the flood elevation.

2.4 CONSTRUCTION

Construction is scheduled to begin shortly after receipt of permits, and would take up to 6 months to complete. Construction crews would generally work during daylight hours on weekdays. City ordinance limits on construction work hours would be adhered to. Fencing described in Section 2.3.4 would be installed initially to provide security during construction. Construction parking, offices and laydown would be located within the Site Boundary.

Construction would occur under the State General Permit for stormwater discharges from construction sites. NRG Solar DG LLC would file a Notice of Intent and Storm Water Pollution Prevention Plan (SWPPP) and would be required to comply with the General Permit until construction disturbances are stabilized and a Notice of Termination is accepted by the RWQCB. The SWPPP would be developed by a Qualified SWPPP Developer and include Best Management Practices (BMPs) for controlling erosion and preventing impacts to water quality consistent with the California Storm Water Quality Association BMP handbook for construction sites. To prevent an increase in the potential to emit dust during construction, disturbed surfaces would be stabilized with water as necessary and in accordance with Bay Area Air Quality Management District (BAAQMD) guidelines and the City's grading Ordinance (Section 15.88.060). To prevent an increase in wind or water erosion following grading, the design includes stabilizing disturbed areas as soon as practical. Crushed rock would be used to stabilize the access road and onsite road surfaces as needed to meet CCCFPD requirements. As necessary, areas that are not graveled or occupied by foundations would be stabilized by re-vegetation, application of a non-toxic soil binder, or other means of stabilization.

Water use for dust control and soil compaction during construction is expected to total approximately 12 acre feet over the six months of field construction work. Construction equipment would include a dedicated water truck and construction water would be obtained from an existing nearby fire hydrant located on the NRG Delta LLC power plant site as shown in Figure 4, Site Vicinity. Sanitary facilities for construction would be provided with self-contained portable units maintained by a licensed contractor.

The Site and access road are designed to avoid the seasonal wetlands located just outside of the northern Site boundary and the manmade ditch with riparian vegetation located just outside the southern boundary. Construction activities would remain a minimum of 30 feet away from the seasonal wetlands and 50 feet

away from the riparian corridor in accordance with Pittsburg General Plan Policy 9-P-9. Roads graveled to limit erosion and Site perimeter fencing would be the only exceptions in the 50 foot buffer zone surrounding riparian vegetation, since an existing road would be utilized and improved. BMPs would include installation of silt fencing and high visibility construction fencing at the permitted limit of disturbance where the Site is near the seasonal wetland and riparian buffer zones. There would be no trimming of riparian vegetation and where the existing road is improved within the buffer zone there would be no disturbance within the dripline.

It is anticipated that PG&E would construct the generation tie line at minimum from the existing distribution grid to the Parcel. NRG Solar DG LLC may construct the portion of the tie line that is on the Parcel, and would be responsible for construction of the PV generation facilities which would include three types of activities; grading and ground preparation, assembly/installation, and commissioning/testing.

2.4.1 Grading and Ground Preparation

Grading would occur following the final grading plan approved by the City Engineering Division. The Site is gently sloping and suitable for solar array development with minimal clearing and grading. Clearing would be limited to non-native annual grass and some isolated small shrubs. No trees occur on the Site. The area within the fence line would be smoothed, scarified and re-compacted to facilitate construction. Roads would be scarified and compacted and then surfaced with gravel. At footings for inverter pads and switchgear, existing soil would be removed to a depth of 2 feet and replaced with compacted imported fill following recommendations of the geotechnical report.

Typical types and quantities of equipment anticipated to be needed for grading and preparation could include:

TYPE	QUANTITY
Bulldozer (e.g. CAT D7)	2
Grader (e.g. CAT D7)	1
Scraper (15-30 CY)	1
Water Truck (3,000- 5,000 gal)	1
Self-Propelled Compactor	1
Quad Carts	2
Bobcat	2
Dump truck	2

2.4.2 Equipment Assembly/Installation

Upon completion of ground preparation, pile foundations, PV modules, footings, inverters, transformers and other equipment would be installed. The design is presently contemplated to use embedded foundations (e.g., driven piles) to secure the PV racks to the ground. These types of footings would typically extend five to ten feet below the ground surface and would minimize required grading and result in minimal surface disturbance. The final footing design and related engineering evaluations would be subject to approval in conjunction with building permit issuance.

Racks would be assembled on the pile foundations and PV Panels installed on the racks. The small footings that would be constructed for inverters and other equipment would be poured on a compacted engineered fill subgrade described in Section 2.4.1. Pre-mixed concrete would be delivered to the Site and no onsite batching is anticipated. Trenching for underground installations is not expected to encounter saturated soils but could require dewatering in the event of rain. Trenching would be backfilled and compacted upon completion.

Typical types and quantities of construction equipment that could be needed for equipment assembly and installation include:

TYPE	QUANTITY
Rough Terrain Forklift	2
Hydraulic Ram Pile Driver	1
Tractor	2
Water Truck (3,000- 5,000 gal)	1
Quad Carts	2
Bobcat	1
Crane	1

2.4.3 Commissioning/Testing

Plant systems would be checked, tested, and adjusted before being placed into commercial operation. This phase of construction would primarily utilize light vehicles for personnel and equipment transport including light trucks and quad carts.

2.4.4 Waste Management

Construction would generate scrap metal, concrete, wood, plastic, paper materials, and rubbish. Construction management practices would include designated collection areas at the construction offices and staging locations. Recyclable materials would be separated and managed for recycling to the extent practical. Wastes and recyclable materials would be shipped offsite by licensed haulers to waste management and recycling facilities permitted to accept the materials. Trash consisting of food and products that potentially attract animals would be stored in closed collection containers and removed from the Site regularly. Construction wastes and recyclable materials would be shipped offsite regularly. Waste materials would be managed onsite with BMPs to prevent the pollution of stormwater runoff. If hazardous waste is generated, it would be managed in accordance with California Code of Regulations Title 22 Division 4.5 requirements.

2.4.5 Construction Workforce and Trip Generation

The onsite construction workforce would consist of laborers, craftspeople, supervisory personnel, and support personnel. The onsite assembly and construction workforce is expected to reach a peak of approximately 40 workers; the average number of workers onsite is anticipated to be approximately 20. An estimated maximum of 10 truck deliveries per week would be required during construction to supply equipment, materials, and components.

2.5 OPERATION AND MAINTENANCE

The Projects would passively generate electric power during daylight hours and would not have onsite staff. Most monitoring would be conducted remotely, and only occasional maintenance is expected to be required following commissioning. An intermittent workforce of one to two individuals is anticipated. Initially, personnel would likely visit the Projects weekly, but it is anticipated that eventually maintenance visits would be reduced to once a month or less. Operations activities would include monitoring of plant performance, performing periodic equipment maintenance, and responding to needs for plant adjustment. As necessary, additional temporary or contract personnel would be utilized for services such as security or specialized maintenance. The expected maintenance would generate little traffic during operations. The areas surrounding the inverters and switchgear would be graveled and would have adequate space for parking several vehicles.

Operation and maintenance of the Projects would generate minimal noise, primarily from fans used to cool electrical equipment and transformers. Maximum audible noise levels for equipment are expected to be approximately 70 dBA at a five meter distance. Considering the distance to nearest sensitive receptors, it is

not expected that fans or transformers would be audible from any residential area, park or other sensitive receptor location.

O&M vehicles would include light duty trucks (e.g., pickup, flatbed) and other light equipment for maintenance and module washing. Heavy equipment would not be utilized during normal operation. Large or heavy equipment may be brought to the facility infrequently for equipment repair or replacement or vegetation control.

Minimal amounts of water would be required for panel washing activities and general maintenance. The need for panel washing would be infrequent (e.g., months to years between washings) and determined on operating considerations, including actual soiling of the PV panels and any expected benefit from cleaning. Should cleaning be necessary, demineralized water would be sprayed on the PV panels to remove dust. An estimated 3,500 gallons of water would be necessary for each wash event. This water would be trucked to the Site from a commercial purified water vendor.

Sanitary facilities for operations would be provided with self-contained portable units maintained by a licensed contractor. The periodic hauling of sanitary waste offsite by a licensed contractor is the only anticipated routine waste generation during operations. Other wastes from equipment replacement or other work would be removed from the Site at the end of the day.

3.0 ENVIRONMENTAL CHECKLIST FORM

1. Project Title:	Mallard Slough 1 & 2 Solar Projects
2. Lead Agency Name and Address:	City of Pittsburg 65 Civic Avenue, Pittsburg, CA 94565
3. Contact Person & Phone Number:	Hector Rojas, 925-252-4920
4. Project location:	911 Willow Pass Road, Pittsburg, CA
5. Project Sponsor Name and Address:	NRG Solar DG LLC 100 California Street, Suite 650 San Francisco, CA 94111 Attention: Joe Corning 415 627 1636 Joe.Corning@nrg.com
6. General Plan Designation:	Industrial and Open Space
7. Zoning:	Existing: General Industrial (IG) and Open Space (see Figure 2) Proposed: IG with Limited Overlay and Open Space (see Figure 3)
8. Description of project:	Ground mounted solar photovoltaic electric generating arrays. See Section 2.0 of this Initial Study for details.
9. Surrounding Land uses and setting:	Vacant property zoned industrial surrounds the proposed array sites. The proposed zoning overlay would affect the array sites and most of the remainder of Parcel 096-100-031 which is bordered by uses including undeveloped land, open space, railroad and City ROWs and industrial development. Commercial and residential uses occur to the south across the railroad ROWs and Willow Pass Road.
10. Other public agencies whose approval is required:	The projects are designed to avoid impacts to sensitive natural resources including waters and riparian and wetland areas; therefore, no authorizations are required from natural resource agencies. Additionally, the design of the Projects would be reviewed by the Contra Costa County Fire Protection District for adherence to the fire code.

3.1 ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

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

- □ Aesthetics
- □ Agriculture and Forest Resources
- □ Air Quality
- ■ Biological Resources
- ■ Cultural Resources
- ■ Geology and Soils
- □ Greenhouse Gas Emissions
- □ Hazards and Hazardous Materials
- □ Hydrology/Water Quality
- □ Land Use/Planning
- □ Mineral Resources
- ■ Noise
- □ Population and Housing
- □ Public Services
- □ Recreation
- □ Transportation/Traffic
- □ Utilities/Service Systems
- ■ Mandatory Findings of Significance

3.2 DETERMINATION: (To be completed by the Lead Department.)
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 would not be a significant effect in this case because mitigation measures would be required that would reduce impacts to a less than significant level. A MITIGATED NEGATIVE DECLARATION will be prepared.

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

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

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

_____ _____

Signature Date

_____

Title

3.3 EVALUATION OF ENVIRONMENTAL IMPACTS:

A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources the Lead Department cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project would not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

Once the Lead Department has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

"Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level. (Mitigation measures from Section XVII, "Earlier Analyses," may be cross-referenced.)

Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA processes, an effect has been adequately analyzed in an earlier EIR or negative declaration. (State CEQA Guidelines § 15063(c)(3)(D).) In this case, a brief discussion should identify the following:

a) Earlier Analysis Used. Identify and state where they are available for review.
b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of, and adequately analyzed in, an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

The explanation of each issue should identify: the significance threshold, if any, used to evaluate each question, and; mitigation measures identified, if any, to reduce the impact to less than significance. Sources of thresholds include the General Plan, other planning documents, and City ordinances. Some thresholds are unique to geographical locations.

Climate Change Impacts: When determining whether a project's impacts are significant, the analysis should consider, when relevant, the effects of future climate change on: 1) worsening hazardous conditions that pose risks to the project's inhabitants and structures (e.g., floods and wildfires), and 2) worsening the project's impacts on the environment (e.g., impacts on special status species and public health).

1. AESTHETICS

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒

No Impact: The Site area is not designated as being within a scenic vista or scenic resources area in the City or County General Plan, nor would if affect views from any State- or County-designated Scenic Highway or Scenic Route. It is within the "Urban Uses" limits designated in the County General Plan. The Development Area would be located on previously graded vacant lands that are zoned General Industrial. Surrounding lands consist of vacant, relatively flat terrain with limited opportunity for access or view. Existing views of the surrounding area include a mix of disturbed open space, industrial, commercial, and residential development. Considering these factors, the Project would not impact any scenic vista.

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

No Impact: No designated or eligible State scenic highways are near the Development Area. The nearest State scenic highway is State Route (SR) -24, located approximately 24 miles south of the Development Area. The Development Area is not visible from SR 24; therefore, the Projects would not affect scenic resources within a State scenic highway corridor.

c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☒	☐

Less than Significant Impact: The Development Area and surrounding lands consist of disturbed non-native grassland in a setting of mostly industrial uses, vacant land, and open space. Once constructed, the most prominent visual feature would be the solar arrays. The arrays would be located on graded vacant lands in relatively flat terrain where opportunity for public view is limited. The maximum height of the panels would be approximately 15 feet over most of the Site and up to 20 feet in areas of lower ground. This height would not create a significant view obstruction or be out of scale or character with other existing industrial uses in the area. The arrays would be located two thirds of a mile from Suisun Bay, which is considered a scenic waterway in the Contra Costa County General Plan. Considering this intervening distance, the disturbed condition of the Parcel, and the low height of proposed facilities within surrounding setting of industrial and other developments, the Projects would not substantially degrade views from Suisun Bay. The closest potential sensitive viewers would be more than 500 feet to the south of the Site, where some two story residences may be able to see the arrays from the second floor. Ground-level views from this neighborhood are blocked by a sound barrier wall between the residences and the adjacent railroad ROWs. A photo simulation depicting a typical view of the Development Area from ground level at viewpoint narrow break in the sound barrier wall is provided in Figure 6, Project Visual Simulation. Considering second floor height compared to the distance to the long distance to the intervening vegetation, partial shielding by vegetation would be less than shown in the ground-level visual simulation but would still occur for residences with second floor windows facing northward above the sound barrier wall.

Approximately four new generation tie line poles would be constructed along Willow Pass Road for approximately 760 feet until reaching the access road entrance. From there, the generation tie line would be installed along the access road for approximately 0.70 mile to the Site. Considering that the proposed generation tie line along Willow Pass Road would be a short (approximately 760 foot) extension of the existing PG&E distribution system with only approximately four new poles in an already developed area, and considering that the remainder of the generation tie line would be within the Parcel distant from public receptors and partially screened from view by existing vegetation, the visual impact of the proposed generation tie line would be less than significant.

Considering these factors, the Projects would not substantially degrade existing visual character or quality of the Site or surrounding areas.

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

Less than Significant Impact: The solar arrays and other equipment would be relatively low to the ground and therefore, would not create substantial shadows offsite. The proposed photovoltaic technology uses non-reflective panels to convert solar energy into electric energy. The panels are specially designed with anti-reflective coatings to absorb as much of the sun's energy as possible so as to maximize efficiency. They reflect much less of the sun's energy than normal glass because the panels are not reflective. Considering that the panels are designed with an anti-reflective coating for solar energy conversion efficiency, the Projects would not be a substantial source of glare. Construction is not planned to occur during the nighttime. In addition, no permanent night lighting is proposed. Motion-activated lighting would be provided at entrance gates for safety and security. The limited night lighting would not conflict with surrounding land use conditions and would not be expected to adversely affect night time views. Considering these factors, shadows, light and glare would have a less than significant impact on daytime and night time views in the area.

View northeast from Photo 1 viewpoint (Figure 3) simulating view of solar arrays from residences to the south. Riparian vegetation along the south edge of the Site partially screens views from this direction.

Mallard Slough 1 & 2 Solar Projects
Project Visual Simulation
Figure 6

TRC

2. AGRICULTURE / FOREST

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
No Impact: There are no farmlands on or adjacent to the Development Area. Therefore, no impact would occur to agricultural land conversion.				
b) Conflict with existing zoning for agricultural use, or with a Williamson Act contract?	☐	☐	☐	☒
No Impact: There are no Williamson Act Contracts on the Development Area, as the Site is not used for agricultural production. The Site is vacant and zoned for industrial use; therefore, no impact would occur.				
c) 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?	☐	☐	☐	☒
No Impact: There are no farmlands or forest land on the Development Area, as the Site is vacant and zoned for industrial use. Therefore, no impact would occur.				

3. AIR QUALITY

Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations.

	Potentially Significant Impact	***Less Than Significant Impact with Mitigation Incorporated***	***Less Than Significant Impact***	***No Impact***
Would the project:				
a) Conflict with or obstruct implementation of applicable air quality plan?	☐	☐	☒	☐

Less than Significant: The Development Area is located within the jurisdiction of the Bay Area Air Quality Management District (BAAQMD). The Projects would not conflict with or obstruct implementation of any applicable air quality plan. The Projects would not add dwelling units or structures that would generate operational emissions, or add full-time employees that would commute to and from the Projects on a daily basis. An intermittent work force of one or two individuals is anticipated. Initially, personnel would likely visit the Site weekly, but it is anticipated that over the long term visits would be reduced to once per month or less. Operations maintenance would result in exhaust and particulate emissions from vehicle use. These emissions would be minor considering the small and infrequent level of activity.

Construction would also result in dust and fuel-burning emissions during the approximately six month period of field construction. Project construction emissions were calculated using the California Emissions Estimator Model (CalEEMod) version 2013.2.2 as described in Appendix B The BAAQMD significance thresholds for construction activities and estimated project emissions are:

Criteria Pollutant	**Average Daily Threshold (pounds)**	**Project Emissions (pounds)**	**Significant?**
Oxides of Nitrogen (NOx)	54	51.4	Less than Significant
Reactive Organic Gasses (ROGs)	54	3.0	Less than Significant
Exhaust Particulate Matter (PM10)	82	1.8	Less than Significant
Exhaust Particulate Matter (PM2.5)	54	1.8	Less than Significant

Source: BAAQMD CEQA Air Quality Guidelines, Updated May 2011.

The CalEEMod results indicate that construction emissions from the Project would be less than the BAAQMD significance thresholds. It should be noted that the BAAQMD's thresholds of significance identified above were adopted in 2010 and were challenged in a lawsuit. On March 5, 2012 the Alameda County Superior Court found that the BAAQMD had failed to comply with CEQA when adopting the thresholds, although it did not rule on the validity of the thresholds based on merit. The Court mandated that BAAQMD set aside the thresholds and cease dissemination of them until they had complied with CEQA. Despite this, the 2010 significance thresholds can still be used for comparison purposes.

The design of the Projects includes controlling dust during construction by water application. As described in Section 2.4, the Projects will include watering of exposed surfaces during construction at least two times per day, which is consistent with BAAQMD CEQA Air Quality Guidelines (BAAQMD, 2012). .A nontoxic dust palliative may also be used. Furthermore, pursuant to the City Grading Ordinance (Section 15.88.060) during grading, all graded surfaces and materials are required to be wetted, protected or otherwise contained in such a manner as to prevent any nuisance from dust or spillage upon adjoining streets, and equipment and material on the site must be used in such a manner as to avoid excessive dust.

As described in Section 2.4, construction of the Projects will include stabilizing disturbed surfaces as soon as practical to prevent an increase in the potential to emit dust following grading, which is consistent with BAAQMD CEQA Air Quality Guidelines (BAAQMD, 2012). Crushed rock would be used to stabilize road surfaces as needed for to meet CCCFPD requirements. Areas that are not graveled or occupied by foundations would be stabilized by re-vegetation, application of a non-toxic soil binder, or other means of stabilization. The following requirements as set forth in Title 13 of the California Code of Regulations for diesel-fueled construction equipment would additionally help to ensure that emission levels during construction do not conflict with or obstruct implementation of BAAQMD's air quality plans:

- Individual diesel truck idling in excess of five consecutive minutes would be prohibited consistent with Title 13 of the California Code of Regulations §2485.
- Diesel-power construction equipment would use low-sulfur diesel fuel pursuant to requirements of Title 13 of the California Code of Regulations §2281.

The facility would generate electricity year-round displacing the need for generation from power plants that burn fossil fuel. Considering that construction emissions would be short-term and operations emissions would be minor, the Projects would be expected to result in a long-term net reduction of emissions to air through displacement of fossil fuel-fired electric generation.

b) Violate any applicable federal or state air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☒	☐

Less than Significant Impact: As described in Response 3a, construction emissions would be temporary and are not expected to exceed BAAQMD construction-related significance thresholds. Further, the operational components of the Projects would not add residential or non-residential dwelling units or be growth-inducing. The Projects would not diminish an existing air quality rule or future compliance requirement. As a result, the Projects would not violate any applicable federal or state air quality standards or contribute substantially to an existing or projected air quality violation.

c) 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?	☐	☐	☒	☐

Less than Significant Impact: BAAQMD is state and/or federal nonattainment for ozone and fine particulate matter (PM-2.5) and state nonattainment for coarse particulate matter (PM-10). The Projects would be solar electric generating facilities that would reduce the demand for fossil fuel generated electric power and thereby result in a long-term reduction in emissions of oxides of nitrogen (NOx) and volatile organic compounds (VOCs) that are precursors to ozone. The facilities would generate electricity without particulate emissions. The particulate emissions from maintenance during operations of the Projects (anticipated monthly or less over the long term) would be too negligible to result in a cumulative net increase in PM-10 or PM-2.5 concentrations. Construction emissions would not exceed BAAQMD's 2010 construction-related significance thresholds. These thresholds were designed to establish the level at which the BAAQMD believes emissions could cause significant environmental impacts under CEQA when considered in conjunction with other sources. The Projects would not conflict with any air quality plan, regulation or rule and would provide a long-term air quality benefit by displacing electric demand from fossil fuel fired generation. Considering these factors, the Projects would not result in a cumulatively considerable net increase of any non-attainment criteria pollutant.

d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐

Less than Significant Impact: Sensitive receptors are land uses that include members of the population that are particularly sensitive to the effects of air pollution such as children and the elderly and people with illnesses. Examples include residences, hospitals, schools, or convalescent homes. The nearest sensitive receptor is a residential community approximately 500 feet south of the Site. The Projects would be solar PV generating facilities that would convert solar energy to electric energy without pollutant emissions. Construction emissions would be less than significant as described in Response 3a above. Considering these factors, the Projects would not expose sensitive receptors to substantial pollutant concentrations.

e) Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐

Less than Significant Impact: The Projects would not be a significant source of odors. A potential source of odor is diesel engine emissions during construction. However, these short term impacts related to odor during construction would be less than significant due to the considerable distance between the array locations where most construction would occur and nearest offsite receptors. During operation, the solar PV generating facilities would convert solar energy to electric energy without odor emissions.

4. BIOLOGICAL RESOURCES

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game (DFG) or U.S. Fish and Wildlife Service (USFWS)?	☐	☒	☐	☐

Less Than Significant Impact With Mitigation Incorporated: The Development Area and surrounding lands are comprised of graded lands occupied primarily by weedy non-native annual grassland that is disked or mowed annually and more often as needed for fire prevention. The non-native grassland vegetation community is common throughout California especially in upland areas that have been disturbed by human activities. In the Development Area, the community is dominated by species such as wild oats (*Avena* spp.), ripgut brome (*Bromus diandrus*), Italian rye grass (*Festuca perennis*), and brome fescue (*Festuca bromoides*). Non-native herbaceous species are also common including stork's bill (*Erodium* spp.), prickly lettuce (*Lactuca serriola*), fennel (*Foeniculum vulgare*) and Italian thistle (*Carduus pycnocephalus*). The Development Area does not contain native habitat or critical habitat for wildlife listed as threatened or endangered by state or federal agencies. A man-made ditch is located outside the Development Area to the south with associated riparian habitat and patches of emergent wetlands. In addition, seasonal wetlands have been mapped in man-made features north of the Site. The Development Area is designed to avoid these sensitive areas and protect them from indirect impacts through stabilization of disturbed surfaces and other storm water best management practices required under the State General Permit for discharges of storm water from construction sites. A biological resource assessment for a 55- acre study area including the Site and adjacent lands is provided in Appendix C of this Initial Study.

No sensitive plant or animal species have been observed within the Development Area or surrounding lands. Furthermore, no sensitive species have been identified as having a high potential to occur onsite. The biological resources assessment concluded that sensitive species having a moderate potential to occur within the Development Area or surrounding lands include: burrowing owl (*Athene cunicularia*), northern harrier (Circus *cyaneus*), white-tailed kite (*Elanus leucurus*), loggerhead shrike (*Lanius ludovicianus*), tricolored blackbird (Agelaius tricolor), and western red bat (*Lasiurus blossevillii*).

Burrowing owl is considered a Species of Special Concern by CDFW. Typical burrowing owl habitat is flat or low-lying open and sparsely vegetated areas of California. They are often closely associated with ground squirrels and other burrowing mammals. The burrows of these animals are used for nesting and refuge. Individual owls often forage in open areas where they seek invertebrates and small mammals. Vegetation on and around the Site is mowed or disked

at least annually for fire protection and grasses are typically higher than 12 inches prior to mowing which is unsuitable for the burrowing owl. Based on grass height and regular disking, burrowing owl is unlikely to occur on the Site during nesting season (February 1 through August 31). Because squirrels and suitable burrows were observed near the Site the potential for occurrence is moderate. To limit impacts to burrowing owl, Mitigation Measure BIO-1 would require a pre-construction survey for burrowing owls and protection measures if burrowing owl are present. Mitigation Measure BIO-2 would prevent staged materials from being a potential attractant to burrowing owls during construction.

The northern harrier is considered a Species of Special Concern by CDFW. This species occurs as a resident and winter visitor in open habitats throughout most of California, including freshwater and brackish marshes, grasslands and fields, agricultural areas, and deserts. Harriers typically nest in treeless areas within patches of dense and relatively tall vegetation. Nests are placed on the ground and often located near water or within wetlands. The Development Area is mowed or disked regularly limiting the potential for nesting but this species could use Site grassland for foraging. Mitigation measure BIO-3 would ensure that the Project does not have a substantial adverse impact on this species.

White-tailed kite is considered a State Fully Protected species and is also protected under the MBTA. This species generally is a year-round resident of California coastal and valley lowlands with open habitat and is rarely found away from agricultural areas. This species preys primarily on voles and other small mammals and occasionally on birds, insects, reptiles and amphibians. Preferred foraging habitat consists of grasslands, meadows, farmland and emergent wetlands. This species nests at the top of dense oak, willow and other tree stands located near open foraging habitat. Trees offsite to the south may provide suitable nesting habitat for this species and the Site may provide foraging habitat. Mitigation measure BIO-3 would ensure that the Projects do not have a substantial adverse impact on this species.

Loggerhead shrike is considered a Species of Special Concern by CDFW. This species generally is a year-round resident and winter visitor of California lowlands and foothills. This species is associated with open habitat with short vegetation and scattered trees, shrubs, fences, utility lines and other perches. This species preys on a variety of invertebrates and vertebrates. Preferred foraging habitat consists of grasslands, meadows, farmland and emergent wetlands. This species nests in trees and large shrubs with nests usually placed three to ten feet off the ground. Trees south of the Development Area may provide suitable nesting habitat for this species and the Site may provide foraging habitat. Mitigation measure BIO-3 would ensure that the Projects do not have a substantial adverse impact on this species.

Tricolored blackbird is considered a Species of Special Concern by CDFW. Tricolored blackbird is a locally common resident of California's Central Valley and coast. It is a winter visitor to the Site area and most reside in the Central Valley March through August. This species breeds adjacent to fresh water, preferring emergent wetlands with tall, dense cattails or tules, thickets of willow or blackberry, and tall herbs. The riparian habitat offsite to the south may provide suitable nesting habitat for this species. Mitigation measure BIO-3 would ensure that the Projects do not have a substantial adverse impact on this species.

Western red bat is considered a Species of Special Concern by CDFW. This species is highly migratory and broadly distributed, ranging from southern Canada through much of the western United States. Day roosts are commonly in edge habitats adjacent to streams, open fields, or orchards. They are typically solitary, roosting primarily in the foliage of trees or shrubs. Trees and riparian habitat offsite to the south may provide suitable roosting habitat for this species. Because none of this habitat is present on the Site, no impact is expected.

The Site does not provide nesting habitat or critical habitat for any candidate, sensitive or special status species, as the site contains sparse vegetation and is routinely disked. No special status plants or wildlife species have been observed or have a high potential to occur onsite. Mitigation Measures BIO-1 and BIO-2 would provide contingency measures that are protective in the event that burrowing owl is present on or adjacent to the Site. Mitigation Measure BIO-3 would provide a buffer zone surrounding active bird nests to avoid impacting nesting success. With these measures, impacts to biological resources would be less than significant.

Mitigation Measure BIO-1:

A pre-construction burrowing owl survey shall be conducted within 14 days prior to initiation of construction activities. If an occupied burrow is observed within or adjacent to the Site during the nesting season (February 1- August 31) and is determined to contain an active nest, then a buffer shall be established surrounding the nest by a qualified biologist in accordance with CDFW guidelines (CDFW 2012). No work can occur in the buffer area until the nest is determined to be inactive by a qualified biologist. If occupied burrows are observed within or adjacent to the Site during the non-nesting season (September 1- January 31) or if an occupied burrow is determined to not be a nest burrow during the nesting season, then a buffer shall be established around the burrow by a qualified biologist in accordance with CDFW guidelines. If an occupied burrow cannot be avoided (i.e., is within the limits of disturbance), a burrowing owl exclusion plan shall be written and submitted to CDFW for approval of passive relocation procedures.

Mitigation Measure BIO-2:

To avoid a possible attractant to burrowing owls, ducting and other open-ended pipe materials three 3 inches in diameter or greater shall be capped.

Mitigation Measure BIO-3:

If construction is initiated during bird nesting season (February 1 – August 31), a preconstruction nesting bird survey shall be conducted by a qualified biologist within 14 days prior to ground disturbance. If an active nest protected by the Migratory Bird Treaty Act or federal or State Endangered Species Act is located, then a qualified biologist shall establish a nest buffer surrounding the active nest. Work shall not occur in the buffer area until the biologist determines the nest is inactive. The extent of the nest buffers shall be based on consideration of the anticipated levels of noise or disturbance, ambient levels of noise and other disturbances, and topographic or other barriers. If construction is halted for more than 14 days, then a nesting bird survey shall be completed within 14 days prior to re-initiating of construction work.

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 DFG or USFWS?	☐	☒	☐	☐

Less Than Significant Impact with Mitigation Incorporated: As described in Response 4a, no sensitive natural communities occur within the Development Area. The Site and surrounding area is completely disturbed due to past grading and fire prevention maintenance activities and consists of non-native grassland. The Development Area is designed to avoid the manmade ditch with emergent wetlands and riparian vegetation offsite to the south, and the seasonal wetlands offsite to the north. Exclusion of these areas would avoid direct impacts to these sensitive communities. The Projects are designed with a minimum 30-foot setback from the seasonal wetlands north of the Site, and a minimum 50 foot setback from the emergent wetlands and riparian vegetation south of the Site with the exception of the access road and fence that would follow the existing access road. Provided that the disturbance limits are adhered to, there would be no direct adverse effect to the wetland and riparian areas. Furthermore, stabilization of disturbed areas and implementation of storm water BMPs pursuant to requirements of the State General Permit for storm water discharges from construction sites would limit indirect impacts. Mitigation Measure BIO-4 would require a biological monitor when grading occurs in the vicinity of sensitive resources to ensure that setbacks are adhered to. Considering that no sensitive communities occur within the Development Area and that storm water BMPs would be implemented to protect the quality of storm water leaving the Development Area, Mitigation Measure BIO-4 would limit the impact to less than significant.

Mitigation Measure BIO-4:

Prior to ground disturbance, high-visibility exclusion fencing shall be installed at the Site perimeter to prevent disturbance outside the Site boundary. High-visibility exclusion fencing shall also be installed outside the limits of riparian vegetation on the south side of the Site access road. The exclusion fencing shall be located and installed under the supervision of a qualified biologist. A biological monitor shall be present during grading within 100-feet of wetlands or riparian vegetation with authority to discontinue grading in the vicinity if there is a threat of the design limits being exceeded.

c) Have a substantial adverse effect on federally protected wetlands (including marshes, vernal pools, and coastal wetlands) or waters of the United States, as defined by § 404 of the Clean Water Act through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒

No Impact: Wetlands, marshes, vernal pools, or coastal areas do not occur within the Development Area. As discussed in the response to 4b, a man-made ditch with emergent wetlands is present south of the Development Area and seasonal wetlands are present north of the development area. However, no activities would occur within the riparian or wetland areas; therefore, no impact would occur.

A wetland delineation has been prepared for the USACE (WRA Environmental Consultants, 2015). The delineation results were used to design the Site around wetlands or waters so there would be 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?	☐	☐	☒	☐

Less Than Significant Impact: There are no perennial surface waters on or adjacent to the Development Area. Therefore, no fish habitat would be affected.

The Development Area and adjacent lands have been completely disturbed due to past grading and fire prevention maintenance activities. The terrain is relatively featureless with no substantial natural geographic barriers or corridors. There are no identified wildlife migratory corridors on the Parcel, and surrounding lands are generally similar. The riparian corridor within the ditch south of the Development Area may be used for wildlife movement and may provide nesting habitat for sensitive species, but would not be impacted by the Projects. Furthermore, as described in Response 4a, above, the Applicant would be required to conduct pre-construction surveys that would include surveys for potential nest sites for burrowing owl and nesting birds. If determined present by pre-construction surveys, then avoidance and monitoring would be required as necessary to avoid substantially interfering with these resources. Considering these factors, the Projects would not interfere substantially with the movement of any wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites.

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

No Impact: The Parcel is outside the area of the East Contra Costa County Habitat Conservation Plan and Natural Community Conservation Plan. No trees would be removed. The proposed use would not conflict with any local biological policy or ordinance; therefore, no impacts would occur.

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?	☐	☐	☐	☒

No Impact: The Parcel is outside the area of the East Contra Costa County Habitat Conservation Plan and Natural Community Conservation Plan. The proposed use would not conflict with any adopted local, regional or state habitat conservation plan; therefore no impacts would occur.

5. CULTURAL RESOURCES

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines § 15064.5?	☐	☐	☐	☒

No Impact: There are no building or structures in the Development Area and a historic aerial map review did not identify previous structures. Therefore, there would be no impacts to historical resources.

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

Less than Significant Impact With Mitigation Incorporated: A cultural resource records search was conducted through the Northwest Information Center. The record search indicated that the Development Area was included in a cultural resource survey of a larger area conducted in 1985 that recorded no cultural resources within the Development Area (Woodward-Clyde Consultants, 1985). The record search additionally revealed that there are no known prehistoric archaeological sites within a one-half mile radius of the Site. A search of the Native American Heritage Commission (NAHC) Sacred Lands File failed to indicate the presence of Native American cultural resources in the Site area (NAHC, 2015). Tribal response has indicated they are unaware of any cultural resource sensitivity in the area. Appendix D, NAHC and Native American Responses, provides copies of correspondence. Considering the results of the records search, previous survey of the Developed Area, and Tribal contact to date, there are no archaeological resources known in the area. Furthermore, the Development Area has been graded and regularly maintained for weed control and much of the area has been filled. Considering these factors, no archaeological resources are known to occur. Mitigation Measure CUL-1 would ensure impacts are mitigated to a less than significant level in the event that unknown cultural resources are encountered during construction.

Mitigation Measure CUL-1: Construction shift foremen, excavation equipment operators and other construction workers with responsibility for observing construction excavations shall be instructed by a representative of the Owner or its contractor to be observant for the potential occurrence of archaeological resources in the geologic materials encountered, and shall be instructed and authorized to halt excavation in the area immediately and notify the Project Owner's representative if such resources are discovered. In the event of a discovery, the City shall be promptly notified and work in the area shall cease until the discovery is evaluated by a qualified cultural resource specialist. If evaluation by a qualified cultural resource specialist indicates that the discovery may be significant, then excavation in the area shall be continued only as directed by a qualified cultural resource specialist and in a manner allowing for collection of significant resources and information that may otherwise be affected by the Project, including development of a Research Design and Data Recovery Program if needed to mitigate impacts. If cultural artifacts are collected they shall be cataloged and curated with an appropriate institution. A final monitoring report shall be prepared if significant cultural resources are discovered.

c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	☒

No Impact: The area was once under water or marshland, and much of the Site has been filled. Native soil horizons that could contain significant paleontological resources are not anticipated to be encountered during construction as there would be minimal grading and fill occurs over the native soils over much of the site. Trenching and other excavations for construction generally would not exceed five feet. Soils that may be encountered would be too shallow to be old enough to contain important paleontological resources. There are no unique geologic features in the vicinity.

d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐

Less than Significant Impact With Mitigation Incorporated: A cultural resource records search was conducted through the California Historical Resources Information System (CHRIS) Northwest Information Center and did not indicate any known burials within one-half mile of the Site (CHRIS, 2015). A search of the Native American Heritage Commission (NAHC) Sacred Lands File failed to indicate the presence of Native American cultural resources in the area (NAHC, 2015). Tribal response has indicated they are unaware of any cultural resource sensitivity in the area. Given that there is no evidence of human remains at the site, no impact to human remains is anticipated. Mitigation Measure CUL-2 would ensure that impacts are mitigated to a less than significant level in the event that human remains are encountered unexpectedly during construction.

Mitigation Measure CUL-2: Construction shift foremen, excavation equipment operators and other construction workers shall be instructed by a representative of the Owner or its contractor to halt work immediately if human remains are observed in the geologic materials encountered. In the event of a discovery, the County coroner shall be notified immediately and work in the area shall cease until the discovery is evaluated and removed in accordance with applicable laws and requirements.

6. GEOLOGY AND SOILS

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the project:				
a) Expose people or structures to 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 Mine and Geology Special Publication 42.	☐	☐	☐	☒
No Impact: No active faults underlie the site; therefore, no impacts associated with the potential rupture of a known fault exist. The closest active fault is the Clayton segment of the Clayton-Marsh Creek-Greenville Fault, located approximately four miles southwest of the Site (Jennings and Bryant, 2010).				
ii) Strong seismic ground shaking?	☐	☐	☒	☐
Less than Significant Impact: The Coast Ranges mountains that occur west of the Site are dissected by a number of regional fault zones associated with the overall San Andreas fault system demarking the intersection of the North American and Pacific tectonic plates. As described in Response (a)(i) above, the closest active fault is the Clayton segment of Clayton-Marsh Creek-Greenville Fault, located approximately four miles southwest of the Site. Other major faults in the region include the Green Valley/Concord Fault (seven miles west), Calaveras Fault (14 miles west), Rogers Creek Fault Zone (24 miles west), Hayward Fault Zone (20 miles southwest), and the San Andreas Fault Zone (40 miles southwest). Strong ground motions could occur in the vicinity of the Projects from an earthquake on any of these regional faults. Strong seismic ground shaking would be a potentially substantial seismic hazard if structures are not appropriately designed. The potential for seismic ground motions to damage structures is typically mitigated through proper design and construction to withstand predicted ground motions. The California Building Code seismic standards are designed to mitigate the potential for people or structures to be exposed to substantial risks from seismically-induced ground motions. Conformance with this code would be assured through the Building Permit process of the City of Pittsburg. The proposed generation tie line would be subject to California Public Utilities Commission (CPUC) or California Building Code design standards. Adherence to City and California building code requirements and CPUC standards would limit the risk of damage or injury from seismic ground shaking to level that is less than significant.				

iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐

Less than Significant Impact: Liquefaction can occur when there is a loss of shear strength in saturated granular soils cause by seismically-induced pore water pressures. The loss of shear strength in soils can reduce the ability of the soil to support overlying loads, such as equipment foundations. If liquefaction occurs, the surface structures may settle into the ground or tilt. The liquefaction potential of a site is dependent on characteristics of ground shaking, soil type, soil density, and depth-to- groundwater. The Site is situated in the lowland zone of Pittsburg where shallow geology consists of young unconsolidated sediments. The U.S. Geological Survey has identified most of the Site area as having a high potential for liquefaction (Knudsen, et al., 2000). A geotechnical study identifies the liquefaction potential as moderate based on silt and clay content of the Site soils and available maps (Terracon Consultants, Inc. 2015) but soil testing for liquefaction potential was not completed.

The Projects do not propose occupied structures that could pose a significant risk to people in the event of a large earthquake. The types of facilities proposed including solar modules, inverters, transformers, switchgear and the generation tie line are not as susceptible to damage from liquefaction as buildings and other rigid structures. Considering that the proposed facilities would typically be unattended and have no occupied structures, the risk to people from liquefaction would be less than significant. Because project facilities would be unoccupied and not particularly susceptible to damage from liquefaction, the potential for liquefaction does not pose a significant risk to human health or the environment.

iv) Landslides?	☐	☐	☐	☒

No Impact: The area is nearly flat-lying. There are no substantial slopes on or adjacent to the Development Area that could result in a landslide hazard.

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

Less Than Significant Impact: The Development Area has been completely disturbed due to grading and fill placement and annual fire protection maintenance. There would be no new disturbance area. Construction would occur under the State General Permit with a SWPPP implementing BMPs for erosion control. The General Permit would require that construction SWPPP be prepared by a Qualified SWPPP Developer and implemented by a Qualified SWPPP Practitioner (QSP). Standard BMPs from the California Stormwater Quality Association (CASQA, 2012) or their equivalents would be required such as scheduling to minimize the term of disturbances (Standard BMP EC-1), Preservation of Existing Vegetation (Standard BMP EC-2), stabilization of disturbed surfaces (Standard BMPs EC-3 through -7), silt fences (Standard BMP SE-1). The SWPPP would be required to address erosion control until it is demonstrated to the Regional Water Quality Control Board that disturbed surfaces are stabilized and a Notice of Termination is accepted. With construction occurring in compliance with the State General Permit, erosion impacts would be less than significant.

c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☒	☐	☐

Less than Significant Impact With Mitigation Incorporated: There are no substantial slopes on or adjacent to the Development Area. Therefore, the Projects do not have the potential to result in landslides. Lateral spreading is a phenomenon that can occur from seismic shaking or other lateral loading when the ground surface is not laterally supported on one or more sides, for example, on ridge tops or near edges of terraces or cliff faces. The Site vicinity is mapped to have a high potential for liquefaction but laterally unsupported conditions susceptible to lateral spreading are not present. Soil collapse occurs when loosely compacted soils are disturbed by seismic shaking, rewetting, or other activities. Some soils at the Site may be loosely compacted so soil collapse is a potential hazard. A geotechnical study for the project (Terracon Consultants, Inc, 2015) recommends engineered fill beneath foundations for inverters, transformers and switchgear. Fill beneath foundations would need to be properly designed to reduce the risk of soil collapse to a less than significant level. Mitigation Measure GEO-1 would reduce the risk of impact from soil collapse to a less than significant level by requiring the fill and foundations to be design by a qualified engineer with experience in evaluating soil conditions. The Site does not include any structures that could pose a significant risk to people in the event of a large earthquake and liquefaction. Subsidence can occur when pore pressures are reduced in unconsolidated geologic materials below a valley floor due to the withdrawal of fluids. The Projects would not increase groundwater extraction or other withdrawal of fluids from unconsolidated geologic deposits. Therefore, the Projects do not have potential to create subsidence.

Mitigation Measure GEO-1: Project foundations and underlying engineered fill shall be designed by a qualified Professional Engineer with experience in evaluating soil conditions.

d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☒	☐	☐

Less Than Significant Impact With Mitigation Incorporated: Expansive soils are clayey soils that have a high plasticity index. Typical shallow reinforced concrete spread footing foundations, such as those for buildings and other foundations covering a considerable area of ground, can be affected by expansive soils if such soils are present close to the ground surface. The Projects would not result in large spread footing foundations that could be particularly susceptible to damage from expansive soils. Nevertheless, footings for inverter pads, transformers and switchgear would need to be properly designed to mitigate risk of damage from expansive soils to a less than significant level. Mitigation Measure GEO-1 would reduce the risk of impact from expansive soil to a less than significant level by requiring foundations and underlying engineered fill to be design by a qualified engineer with experience in evaluating soil conditions.

e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒
No Impact: Self-contained portable sanitary facilities would be used during construction and operation and would be pumped periodically by a licensed contractor. No septic tanks or other waste water disposal systems are planned.				

7. GREENHOUSE GAS EMISSIONS

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the project:				
a) Generate greenhouse gas (GhGs) emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
Less than Significant Impact: The proposed solar PV generating facilities would convert solar energy into electric energy without GhG emissions, with the primary exception being CO2 that would be generated from vehicle and equipment emissions for construction and maintenance activities. Once constructed, the electric energy produced by the Projects would reduce the dependency on fossil fuel-produced electric energy thereby providing a long-term GhG benefit. Considering that the proposed development would operate as an unmanned facility and would require little maintenance vehicle trips, and considering that limiting climate change is the focus of California's goals for implementing solar PV and other renewable energy technologies, GhG emissions would be less than significant both individually and cumulatively.				
b) Conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☐	☒
No Impact: The Projects would not conflict with any applicable plan, policy, or regulation adopted to reduce GHG emissions. The proposed solar PV generating facilities would convert solar energy into electric energy without GhG emissions. Once constructed, the electric energy produced by the Projects would reduce the dependency on fossil fuel-produced electric energy thereby providing a long-term GhG benefit.				

8. HAZARDS AND HAZARDOUS MATERIALS

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, storage, production, use, or disposal of hazardous materials?	☐	☐	☒	☐

Less than Significant Impact: Construction would require the short-term transport, use and disposal of hazardous materials such as fuels, lubricants, adhesives, solvents and paints. Storage and use of hazardous materials onsite during construction could create a significant hazard to construction workers, the public or the environment if such materials are not properly contained. Construction would be required to occur under a comprehensive hazard communication program in accordance with 29 CFR 1910 to ensure that construction workers are knowledgeable in the identification and proper handling of hazardous materials to prevent unsafe exposure and to avoid spills. Furthermore, the Site would not be open to the public. With these measures, the routine use of hazardous materials for construction would not create a significant hazard to the public or the environment.

Deliveries of bulk fuels, lubricants and other hazardous materials to the Site would be subject to Department of Transportation (DOT) regulations at 49 CFR 172 and 173 for hazardous materials transport. These regulations include requirements for hazardous material transport licensing, packaging and containment standards, labeling and other protection measures to prevent hazardous materials incidents during transport and to facilitate response in the event of a hazardous material accident. Hazardous wastes would be transported away from the Site in accordance with these same DOT regulations as well as requirements of California Code of Regulations Title 22 Division 4.5 for worker training, shipping and disposal of hazardous waste. With these existing regulations in place, and considering the short term of construction activities, the transport, production, and disposal of hazardous materials associated with facility construction would not create a significant hazard to the public or the environment.

The primary hazardous material that would be present at the Site for operations would be oil in oil-filled electrical equipment (e.g., transformers). This use of oil for dielectric in oil-filled electric equipment is not a consumptive use so there is no need for routine transport or handling of oil. The oil filled equipment is operated normally closed and sealed. On infrequent occasions, oil-filled equipment may require filtering or replacement of oil if it becomes contaminated. Used oil would be recycled. Transport and handling of used oil and any other hazardous waste generated would be subject to regulation under California Code of Regulations Title 22 (22 CCR) Division 4.5. Considering these factors this use would not create a significant hazard to the public.

b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials or waste into the environment?	☐	☐	☒	☐
Less than Significant Impact: Construction would require the short-term use of hazardous materials such as fuels, lubricants, adhesives, solvents and paints. Workers would be trained to properly identify hazardous materials and to handle them in accordance with applicable regulations to minimize the potential for a release. The general public would be excluded from the construction Site. Considering these factors, Construction would not create a significant hazard to the public or the environment due to reasonably foreseeable upset or accident conditions. The Projects would not require the storage of bulk fuels, lubricants, or chemical reagents. Hazardous waste would not be routinely generated or managed onsite. The primary hazardous material that would be present at the Site would be oil in oil-filled electrical equipment (e.g., transformers). The facility would be remotely monitored and periodically maintained during operations to minimize the risk of an upset. Considering the passive nature of solar energy conversion by PV technology, the risk of a reasonably foreseeable upset or accident scenario creating a hazard to the public or the environment during operations is less than significant.				
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
No Impact: There is no existing or proposed school within one-quarter mile of the Development Area.				
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code § 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☒	☐
Less than Significant Impact: The Parcel is not identified on the California Department of Toxic Substances Control (DTSC) list of hazardous materials sites nor the State Water Resources Control Board list of hazardous materials release sites compiled pursuant to Government Code Section 65962.5 (http://www.envirostor.dtsc.ca.gov/ and http://geotracker.waterboards.ca.gov/). The closest hazardous materials release site identified on either of these lists is more than 500 feet south of the Site at 1666 Willow Pass Road, where the DTSC Envirostor database indicates that soils were mitigated for metals under a cleanup overseen by DTSC. The Parcel has been evaluated for the possible presence of hazardous materials as part of a larger property encompassing existing and former electric generating facilities on adjacent parcels. The USEPA completed a Resource Conservation and Recovery Act (RCRA) Facility Assessment on the larger property in 1986 that did not identify any solid waste management units (SWMUs) on the Development Area. In 1991, a former owner, PG&E, completed a RCRA Facility Investigation of the larger property that concluded none of the SWMU identified on the larger property required further investigation or corrective actions. In 1997 and 1998, PG&E completed Phase I and Phase II investigations, respectively, which identified 31 issues within the larger property. The				

Development Area was identified as an Investigation Area in the Phase II investigation due to: (1) potential for impacts from offsite contributors; and (2) undocumented soil piles/potential landfill areas. Soils sampling was conducted as part of the Phase II assessment and subsequent recent work. One hundred soil samples were taken from the Site, the access road, and areas to the south to provide a basis for comprehensively characterizing site soils (CH2MHill, 2016). The samples were analyzed for metals, total petroleum hydrocarbons as diesel and as motor oil, and polycyclic aromatic hydrocarbons (PAHs). Results show all parameters analyzed to be below background concentrations or commercial/industrial health risk screening levels indicating that site soils are safe for the proposed use. Therefore, it would not create a significant hazard to the public or the environment.				
e) For a project located within an airport land use plan, or where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
No Impact: The Site is not located within an airport land use plan nor is it within two miles of a public airport or public use airport. The closest airport is located approximately 7 miles to the southwest; therefore, no impact would occur.				
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
No Impact: The Site is not located in the vicinity of a private airstrip. The closest airstrip is located approximately 7 miles to the southwest; therefore, no impact would occur.				
g) Impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
No Impact: The Projects would not affect emergency response planning or implementation. The Projects would occur on an existing undeveloped privately owned parcel and would not affect access on any existing public or private through-way. The Projects would not present a material hazard that could affect emergency response planning and Site access would adhere to CCCFPD requirements. Considering these factors, the Projects would not impact or physically interfere with emergency plans.				

h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☒	☐
Less than Significant Impact: The Development Area is not located in an identified Very High Fire Hazard Severity Zone (VHHSZ) as mapped by Cal Fire (2015). It consists of undeveloped grasslands that must be managed annually and as needed for fire prevention. Vegetation would be cleared for construction of the proposed facilities. Pursuant to California Fire Code Section 304.1.2, the owner would be required to maintain the Site free of vegetation capable of being ignited or endangering property. In addition, the facility would be designed for fire prevention and a fire water supply would be provided onsite. Considering these factors, the risk of wildland fire from the Projects would be less than significant.				

9. HYDROLOGY AND WATER QUALITY

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the project:				
a) Violate any water quality standards or waste discharge requirements?	☐	☐	☐	☒

No Impact: The northern portion of the Site slopes generally northward toward offsite seasonal wetland areas where shallow seasonal ponding occurs. The southern portion of the Site slopes generally southward toward the man-made ditch located south of the Site. As described in Section 2.3.5, Drainage, grading would be designed to continue to direct runoff along existing pathways so as not to change existing drainage. Construction excavations such as those for conduits and footings would not extend deeper than five feet; therefore, groundwater is not expected to be encountered. Operations of the Projects would not require storage of hazardous materials, with the exception of oil-filled equipment in transformers. These transformers would be designed to be compliant with the U.S. EPA 40 CFR 112 Spill Prevention, Control and Countermeasure regulations. Construction and operations workers would be trained to properly identify hazardous materials and to handle them in accordance with applicable regulations to minimize the potential for a release.

Construction would occur under the State General Permit with a SWPPP implementing BMPs for water quality. The General Permit would require that a construction SWPPP be prepared by a Qualified SWPPP Developer and implemented by a Qualified SWPPP Practitioner (QSP). Standard BMPs from the California Stormwater Quality Association (CASQA, 2012) or their equivalents would be required for sediment and other potential pollutants. The SWPPP would be required to address water quality BMPs until it is demonstrated to the Regional Water Quality Control Board that disturbed surfaces are stabilized and a Notice of Termination is accepted. The General Permit requires construction discharges to not violate water quality standards. With adherence to the permit and BMPs, no violation of any water quality standard or waste discharge requirement would be expected.

b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☐	☒

No Impact: The Projects would not deplete groundwater supplies or interfere with groundwater recharge. Construction water demand for dust control and soil compaction would be a short-term demand totaling approximately 12 acre-feet over the six month period of field construction. During operations, the Projects would not typically use any water except for deionized water purchased and trucked to the Site for panel washing. The proposed facilities would have a fire fighting water supply conforming to CCCFPD requirements, typically with no consumptive use except occasional flushing of lines to ensure proper reliability. Water for construction and fire protection system testing would be trucked to the Site from an existing fire hydrant located at the NRG Delta LLC power plant site on the adjacent parcel. The NRG Delta LLC water supply does not use ground water.

The Projects would not interfere with groundwater recharge. The Site is suitable for PV array construction with minimal grading required, and the impermeable area that would be created by facility construction would be negligible in comparison to the Site area. Considering these factors, the Projects would not be expected to have any measurable effect on groundwater level in the region.

c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☐	☒	☐

Less than Significant Impact: The Projects would not alter the course of a stream or river. A hydrology report is provided in Appendix E, Hydrology Report. The Site is on high ground relative to surrounding areas; thus, there is no run-on. Approximately half of the area planned for the proposed arrays flows northward toward seasonal wetlands and approximately half flows southward toward the manmade ditch south of the Site. The preliminary grading plan is designed to maintain these drainage conditions. The proposed facilities require minimal grading that would not concentrate drainage at any location. The final grading and drainage plan would be subject to approval by the City's Community Development Department. Considering existing and proposed drainage conditions, the Projects would not substantially alter the existing drainage pattern.

d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	☒	☐
Less than Significant Impact: As described in the Response to 9c, above, considering existing and proposed drainage conditions, the Projects would not substantially alter the existing drainage pattern. The impervious area that would be added by the Projects constitutes approximately 2,145 square feet which is approximately 0.2 percent of the Site area. The small amount of imperious area added would not substantially increase runoff from the Site. Considering these factors, the Projects would not substantially alter existing drainage patterns or substantially increase the rate or amount of surface runoff. Therefore, the impact would be less than significant.				
e) 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?	☐	☐	☒	☐
Less than Significant Impact: A hydrology report is provided in Appendix E, Hydrology Report. As described in the responses to c and d above, proposed grading would be designed to maintain existing drainage patterns. Therefore, the Projects would not create or contribute impacts to existing or planned Stormwater drainage capacity. The Projects also would not contribute substantial additional sources of polluted runoff because BMPs are required to be implemented during construction under the State General Permit. BMPs for erosion control and non-sediment pollutants would be required until construction disturbances are stabilized and an NOT is accepted by the RWQCB. Following construction, the facilities would operate passively. Operation and maintenance would not typically require hazardous materials other than oil-filled transformers. The oil-filled transformers would be sealed and would be subject to 40 CFR 112.7 requirements for Spill Prevention, Control and Countermeasure (SPCC) Plans including secondary containment for potential oil leaks or spills. Typical operation and maintenance would not be a source of polluted runoff.				
f) Otherwise substantially degrade water quality?	☐	☐	☒	☐
Less than Significant Impact: The potential to degrade water quality is addressed in Responses 9a and 9e, above. As described in those responses, the Projects would be required to comply with the General Permit including implementation of BMPs to prevent violation of any water quality standard. With BMPs to prevent violation of water quality standards, impacts to water quality would be less than significant.				
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
No Impact: The Projects do not involve placement of housing; therefore, no impact would occur.				

h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	☒
No Impact: The Projects do not propose placement of any habitable structure or any structure that could impede or redirect flow in the 100-year flood hazard area. Grading within the 100-year flood hazard area would consist of smoothing, ripping and compacting to facilitate module construction with negligible change to overall contours. Modules in the northernmost portions of the Site would be within the 100-year flood hazard area and their pile foundations would be extended above ground to provide a minimum panel rack elevation at least one foot higher than the 100-year flood elevation. The Preliminary Design Drawings show that these piles would be small in diameter compared to their spacing. The relatively flat topography in the Site area would limit flood flows to low velocities that would not be measurably affected by the piles. Considering anticipated low flood velocities, piles proposed in the 100-year flood zone would not be expected to measurably impede, redirect, or otherwise modify flood flows or elevations.				
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☒	☐
Less Than Significant Impact: Flooding is not a significant hazard for construction because most of the Site is upland and normally dry and if flood waters were present in low-lying areas they could be avoided. As described in Response 9.h, above, no structures are proposed in the 100-year flood zone except for piers that would support the northernmost portions of the arrays. The PV racks would be mounted on the piers such that they are a minimum of one feet above the 100-year flood elevation. Therefore, the piers would not be adversely affected by flooding. The facilities would generate electricity passively and would normally be unattended. Considering these factors, the risk to people or structures from flooding would be less than significant. The Site is not in a mapped dam inundation area. No impact on the Projects is anticipated from dam inundation. The Projects would not be reliant on protection from any levee for the 100-year flood.				
j) Place structures in areas subject to inundation by seiche, tsunami, or mudflow?	☐	☐	☐	☒
No Impact: The Development Area elevation ranges from approximately 6 to 20 feet above mean sea level. It is too high and far from Suisun Bay to be affected by seiche or tsunami. Tsunami inundation mapping performed at other locations to the west show that tsunami inundation at this distance from the ocean is not significant (CEMA et al., 2009). Furthermore, as described in Response d, the Site is on high ground compared to surrounding areas and, therefore, not susceptible to mudflows. No impacts are anticipated.				

10. LAND USE AND PLANNING

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the project:				
a) Physically divide an established community?	☐	☐	☐	☒
No Impact: The Projects occur on an existing private parcel that does not have public access. The Projects would not block any existing access or otherwise divide any established community. Therefore, there would be no impact from construction, operation, or maintenance of the Projects.				
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, local coastal program or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒

No Impact: The Development Area and the majority of the 231-acre Parcel is designated as Industrial in the General Plan and zoned as General Industrial (IG). The eastern end of the Parcel that has not been substantially graded is designated and zoned Open Space. No development is proposed in the Open Space area.

The Projects fall under the "Photovoltaic Array" use definition in Code Section 18.08.120(D). The Photovoltaic Array land use falls under the City's agricultural zoning regulations and is not identified in the Industrial District regulations (Code Section 18.54.005). Code Chapter 18.74 provides for the creation of a Limited Overlay District for a particular site in appropriate circumstances. The Project decisions being considered include consideration of a zoning amendment to establish a Limited Overlay District to authorize Photovoltaic Array use with Design Review. Pursuant to Code Section 18.74.040, the development regulations typically applicable for the IG zoning district would be adjusted to accommodate the Projects as set forth in the Project Description, which shall be deemed to constitute an "overlay plan" for the Site as contemplated by Code Section 18.74.030. Setback, landscaping and other requirements would be specified consistent with the Project Description, and would accommodate the Projects as designed. The Limited Overlay District would encompass the approximately 231-acre parcel. Any future solar array development proposal outside the 25-acre Development Area would be subject to its own Design Review.

Approval of an overlay plan requires the planning commission and the city council to find that the proposed overlay plan:

- is necessary because there are special or unique characteristics of the site or improvements that require land use and development regulations that cannot be adequately accommodated or controlled by the base zoning district;
- conforms to the general plan; and
- generally complies with the land use and development regulations of the base zoning district.

With the proposed adoption of the overlay zone and approval of the overlay plan supported by

findings, the Project would be consistent with the City zoning code.				
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒
No Impact: The Parcel is outside the area of the East Contra Costa County Habitat Conservation Plan and Natural Community Conservation Plan. The Parcel is not within any habitat conservation plan or natural community conservation plan. The Development Area consists of disturbed non-native annual grassland; therefore, no impact would occur.				

11. MINERAL RESOURCES

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
No Impact: The Parcel is located in an area classified by the California Department of Conservation as Mineral Resource Zone (MRZ)-1. This designation means that the State has determined adequate information exists to indicate "that no significant mineral deposits are present" or to judge that "little likelihood exists for their presence" (California Department of Conservation, 1996). Therefore, construction of the Projects would not result in the loss of availability of a known mineral resource.				
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?	☐	☐	☐	☒
No Impact: No locally-important mineral resources have been identified in the vicinity; therefore, no impact would occur.				

12. NOISE

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the project result in:				
a) Exposure of persons to, or generation of, noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☒	☐	☐

Less Than Significant Impact With Mitigation Incorporated: The closest existing substantial noise sources to the Site are the Union Pacific and BNSF railroads, located approximately 300 feet south of the Site at closest approach. According to the City of Pittsburg General Plan Noise Element, noise levels generated from trains as they travel south of the Site can reach up to 65 decibels (dB). A sound barrier wall separates the railroad ROWs from the residential neighborhood further to the south. The General Plan also identifies Willow Pass Road as a substantial noise source in the area, with buildout traffic projected to result in noise at up to 79 dB 100 feet from the road.

Applicable noise standards for the Projects consist of Cal OSHA regulations for worker and City General Plan Goals and ordinances related to noise control. OSHA standards require all facility noise levels be limited to 85 dBA to protect worker safety. If workers frequent areas of a facility that exceed 85 dBA, than a hearing conservation program must be implemented by the employer. The City General Plan Goals and City Ordinances include applicable provisions limiting noise for compatibility with land uses as follows:

- Policy 12-P-1 establishes standards for land use compatibility with various noise levels. The maximum exterior noise level considered to be "normally acceptable" for the industrial land use category is 75 dBA, and the maximum exterior noise level considered to be "conditionally acceptable" for the industrial land use category is 80 dBA. No limits are designated for solar array use.

- Policy 12-P-9 in the Noise Element of the General Plan requires that generation of loud noises on construction sites adjacent to development to be limited to normal business hours between 8 am and 5 pm.

- The City's Noise Ordinance (Section 9.44.010) makes it unlawful for any person to make, continue or cause to be made, or continue any noise which either unreasonably annoys, disturbs, injures or endangers the comfort, repose, health, peace or safety of others, within the limits of the City. Use of pile drivers, pneumatic hammers, and similar equipment with laud or unusual noise between the hours of 10 pm and 7 am is identified as a disturbing or endangering noise in accordance with this section. The noise ordinance does not establish numerical noise level limits related to fixed noise sources or construction noise.

- The City's Building and Construction Ordinance (Section 15.88.060.A.5) prohibits grading noise, including warming up equipment motors, within 1,000 feet of a residence between the hours of 5:30 p.m and 7 am weekdays, unless otherwise approved by the City Engineer.

Construction would generate noise on the Site consistent with typical construction activities. Most construction activities would occur within an approximately six month period of field work. Heavy equipment and other mechanized equipment and vehicles would be used. Internal combustion

engines, mechanized equipment, grading, material handling and other activities would generate noise. The noise levels from construction activities would vary during the different construction tasks, depending upon the activity locations and number and types of activities. Mitigation measure NOISE-1 would ensure that noise generated by construction onsite is controlled consistent with General Plan Policy 12-P-9. Policy 12-P-9 would apply where construction occurs adjacent to development, such as work on the access road driveway from Willow Pass Road. In addition, loud construction activities would be further limited to hours dictated by City ordinances. Considering these requirements, construction noise levels would be less than significant.

Operation of the Projects would generate minimal noise, primarily from fans used to cool electrical equipment and transformers. Noise is attenuated by distance and ground effects. Accounting only for distance attenuation in open air and ignoring ground effect attenuation, there is generally a 6 dB decrease in noise for every doubling of distance from the source. That is, a piece of equipment meeting the anticipated design specification of no more than 70 dBA at 5 feet distance, would generate a sound level of 64 dBA at 10 feet, 58 dBA at 20 feet, 52 dBA at 40 feet, and so on. The Site is approximately 500 feet from the closest residence. A 70 dBA noise level at 5 feet would be attenuated to a very low level at this distance and would not be discernible considering background noise. The distance to the nearest residences is far enough so that even the cumulative noise of the equipment at this sound level would not be expected to be noticeable at any residential neighborhood location. Furthermore, because the facility would only generate electricity during daylight hours, fans and transformers would not operate at night. Considering these factors, routine operations noise impacts would be less than significant.

The facility would typically be unmanned. Operations maintenance and monitoring would typically consist of crews of one or two people testing and monitoring equipment for proper performance. Over the long term, maintenance visits are anticipated to occur monthly or less. Occasionally, mobile equipment and power tools may be used. Noise generated by maintenance crews, when present, would have peak levels that would be short-term and consistent with typical building construction work. Maintenance staff would work under a hearing conservation program as required by CalOSHA. Most maintenance would occur within the array areas which are set back from the Parcel boundaries and adjacent occupied land uses. Access road grading or other maintenance outside of the array areas would be infrequent. Mitigation measure NOISE-1 would ensure that if noisy maintenance work is ever needed adjacent to development, is controlled consistent with Policy 12-P-9 so that the impact is less than significant.

Mitigation Measure NOISE-1:
Loud construction or maintenance work adjacent to development shall be limited to normal business hours between 8:00 am and 5:00 pm.

b) Exposure of persons to or generation of excessive ground-borne vibration or ground-borne noise levels?	☐	☐	☒	☐

Less Than Significant Impact: Construction activities (such as ground-disturbing activities, including movement of heavy construction equipment) may generate localized ground borne vibration and noise. Heavy equipment operation is not anticipated to result in excessive ground borne vibration and the majority of this activity would occur more than 500 feet away from sensitive receptors. In addition, ground-borne vibration generated by construction would be adjacent to undeveloped or industrial lands which are not sensitive to ground-borne vibration. The driven pile supports for the PV array would be relatively small and shallow (e.g., typically 0.5 foot in diameter and approximately 10 feet or less in depth), hence they would not require a large amount of energy to drive. Considering the setback of the arrays from the Parcel boundary, ground-borne vibration from pile driving is not anticipated to be noticeable at the closest land uses. Therefore, ground-borne vibration impacts would be less than significant.

c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐

Less than Significant Impact: Construction noise impacts would be short term and, therefore, would not result in a permanent increase of ambient noise. Operation of the facility would generate low noise levels during the daytime. Sources of potential operational noise from the Projects are anticipated to be primarily limited to the inverters and transformers, which would be de-energized at night. The voltage of the proposed grid interconnection line (21 kV) is not high enough to result in audible corona noise. Routine maintenance activities such as vegetation management and cleaning of the solar PV array are not expected to be significant sources of noise. Considering these factors, the Projects would not result in a substantial permanent increase in ambient noise levels.

d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☒	☐	☐

Less Than Significant Impact With Mitigation Incorporated: Construction would result in a temporary increase in ambient noise levels as described in Response 12a above. In addition, operations would result in periodic increases in ambient noise when maintenance crews are utilizing power tools or other noise-generating equipment as described in Response 12a above. Mitigation measures NOISE-1 would ensure that noise generated by construction and maintenance crews onsite is controlled consistent with Policy 12-P-9. In addition, facility construction, operations and maintenance would be required to comply with City noise protection ordinances. Because noise levels would be consistent with City standards, the impact would be less than significant.

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 expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

No Impact: The Projects are not located within an airport land use plan nor are they within two miles of a public airport or public use airport.

f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
No Impact: No private airstrips are located within 2 miles. Therefore, construction of the Projects would result in no impact.				

13. POPULATION AND HOUSING

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the project:				
a) Induce substantial 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)?	☐	☐	☐	☒
No Impact: The Projects are not expected to generate population growth, either directly or indirectly. The Projects do not propose any housing or commercial development, nor extension of roads or expansion of infrastructure. Construction jobs would be short term and are expected to be filled by the existing workforce without relocation. During operations, the facility would typically be unmanned. Maintenance operations are expected to require a crew of one or two persons once per month or less over the long term. It is expected that maintenance staff positions would be filled with the existing workforce without relocation. Therefore, no growth is anticipated.				
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
No Impact: Existing housing would not be displaced by the construction, operation, or maintenance of the Projects. The Site is on land that is currently vacant and undisturbed. Therefore, no impacts would occur.				
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
No Impact: No people would be displaced by the construction, operation, or maintenance of the Projects. The Site is on land that is currently vacant and undisturbed. Therefore, no impacts would occur.				

14. PUBLIC SERVICES

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:				
Fire protection?	☐	☐	☐	☒

No Impact: The Projects would be designed and constructed to follow CCCFPD requirements for access, fire water supply, and vegetation management. The final designs would be subject to CCCFPD review and approval. The presence of oil in transformers onsite would require submittal of a Hazardous Materials Business Plan on the California Environmental Reporting System with an emergency response plan with emergency coordinator contact information and mechanisms for emergency access to the unmanned Projects. Onsite roads would be constructed with a compacted subgrade and compacted gravel surface and would be maintained in a drivable condition for the duration of construction and operations. Access/egress gates would be constructed in compliance with specifications of Contra Costa County Fire Prevention Regulations. California Fire Code Section 304.1.2 would require the Projects to be maintained free of vegetation capable of being ignited or endangering property. All electrical systems for the Projects would be required to be constructed in accordance with applicable codes. With adherence to these requirements, the Projects pose a low fire hazard and are not expected to create a capacity or service level problem. No new or modified government facilities are needed to provide fire protection for the Project.

Police protection?	☐	☐	☐	☒

No Impact: The Site is located in the City of Pittsburg which provides police protection and public safety within the City limits. Construction and operation of the Projects would not generate a material demand on police services. The Site occurs on a parcel that is fenced with controlled access gates that would avoid the need for routine police protection services. Construction and operation of the Projects are not expected to generate population growth. The solar generation facility would be typically unmanned during operation. As such, the Projects are not expected to result in an adverse impact on City of Pittsburg Police Department response times, service ratios, or other performance objectives, nor would the Projects result in the need for new or modified police facilities to serve the site. No new or modified government facilities are needed to provide police protection for the Projects.

Schools?	☐	☐	☐	☒

No Impact: As described in Response 13a, above, the Projects are not expected to generate population growth. Therefore, no new demands on school facilities are expected. Therefore, there would be no impact on school capacities, service levels or performance objectives. The Projects would not require new or physically altered school facilities.

Parks?	☐	☐	☐	☒
No Impact: As described in Response 13a, above, the Projects is not expected to generate population growth. Therefore, no new demands on park facilities are expected. Therefore, there would be no impact on park capacities, service levels or performance objective. The Projects would not require new or physically altered park facilities.				
Other public facilities?	☐	☐	☐	☒
No Impact: As described in Response 13a, above, the Projects are not expected to generate population growth, extend roads, or increase the need for public infrastructure. The Projects would not require new or physically altered public facilities. The Projects would not create new demands on public facilities other than the less than significant demands for fire protection and protection services previously described.				

15. RECREATION

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
No Impact: As described in Response 13.a, above, the Projects are not expected to generate population growth. Therefore, no increase is expected in the use of any park or recreational facility. Therefore, there would be no impact on park capacities, service levels or performance objective. The Projects would not require new or physically altered park facilities.				
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒
No Impact: The Projects do not include recreational facilities. Furthermore, as described in Response 13.a, above, the Projects are not expected to generate population growth. Therefore, the Projects would not require the construction or expansion of any recreational facility.				

16. TRANSPORTATION/TRAFFIC

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the project:				
a) Exceed the capacity of the existing circulation system, based on an applicable measure of effectiveness (as designated in a general plan policy, ordinance, etc.), taking into account all relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☒	☐

Less Than Significant Impact: Vehicles would access the Site from Willow Pass Road. Willow Pass Road near the proposed access road is a two lane paved road with 12 foot travel lanes and 4-foot-wide paved shoulders within a 60-foot-wide ROW. There are multiple travel routes between Willow Pass Road and the State Route 4 freeway, which would tend to spread construction traffic and limit impact. Construction field work for the Projects would occur over a six month period during which the average number of construction workers is expected to be approximately 20. Average construction worker traffic is estimated to be approximately 20 or less trips in one hour inbound to the Site in the morning and 20 trips or less outbound during one hour in the afternoon. In addition, deliveries during construction would average approximately two per day, and a water truck would operate during construction hours hauling water from the power plant to the Site. Construction worker and delivery traffic would incrementally add to existing traffic congestion on State Route 4, Willow Pass Road, and other roads to the Site, but would be less than significant because of the relatively small number of trips generated and the short construction duration. Construction parking and staging would be off-street on private property where it would not affect access to any public transportation.

Facility operations would typically be unattended, with routine monitoring and maintenance by a crew of one to two people once per month or less over the long term. This would be a negligible traffic impact. The Projects would not involve new construction or realignment of any roads. The Projects would be developed in conformance with all applicable plans, policies, programs, and ordinances related to transportation.

b) Conflict with an applicable congestion management program, including, but not limited to, level of service standards and travel demand measures, or other standards established by the congestion management agency for designated roads or highways?	☐	☐	☐	☒

No Impact: As described in Response 16a above, the proposed Projects would have minimal impact on traffic circulation during construction and operation. Minimal traffic would occur during operations as a result of routine monitoring and maintenance consisting of a one to two people once a month or less over the long term. This traffic would be negligible and would not conflict with regional and local traffic management planning.

c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒

No Impact: The Projects would not affect any air traffic patterns or levels.

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

Less than Significant Impact: The Projects do not include any new construction or realignment of existing road facilities. The Development Area is within an existing parcel and the Projects would not require new or modified streets or intersections. Where the proposed generation tie line is adjacent to Willow Pass Road, construction in the ROW would occur within franchise with the City and PG&E. Additionally, work within the Willow Pass Road ROW at the access road entrance would require an encroachment permit from the City. Work within the ROW would require a traffic control plan to reduce the construction hazard to an acceptable level. Some construction deliveries to the Site could be oversized or overweight. Vehicles providing deliveries would be subject to size, weight, and load restrictions pursuant to the California Vehicle Code Division 15, including permits for oversize or overweight loads as required by the California Vehicle Code Section 35780 and California Code of Regulations Title 21 Section 1411.1 et seq. Considering existing laws and regulations for limiting hazards of oversize loads, oversize loads during the short duration of construction would not be an incompatible use.

During operations, the Site would typically be unattended. Considering the low volume of traffic that would be generated by site visits, and the location of the access road driveway on a straight segment of Willow Pass Road with good visibility, operations would not substantially increase hazards due to design features or incompatible uses.

Considering these factors, neither construction nor operation would substantially increase hazards due to a design feature or incompatible use.

e) Result in inadequate emergency access?	☐	☐	☐	☒
No Impact: The Projects would not result in inadequate emergency access. It would not obstruct existing access routes, and access roads would be provided in accordance with CCCFPD requirements. Pursuant to CCCFPD requirements, a secondary access gate would be provided at an existing road at the west end of the Site for emergency access.				
f) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	☐	☐	☐	☒
No Impact: Construction, including parking and staging, would be off-street on private property where it would not affect access to any public transportation. Development of the Projects would utilize the existing road network and would not impact or conflict with bike trails, pedestrian access, transit services, or other modes of alternative transportation. Traffic levels would be low and would not be anticipated to have any impact on pedestrian traffic on Willow Pass Road or other City streets. The Projects would not block or modify any existing pedestrian access. The Projects would not impact any transit service or transit oriented district development standards in any adopted policies, plans, or programs supporting alternative transportation.				

17. UTILITIES AND SERVICE SYSTEMS

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
No Impact: The Projects would not discharge wastewater. No wastewater treatment requirements are applicable. Portable sanitary facilities would be provided on the Site and maintained by a licensed contractor for the term of construction and operations.				
b) Create water or wastewater system capacity problems, or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐
Less than Significant Impact: The Projects would truck water to the Site utilizing an existing fire hydrant at the NRG Delta LLC power plant located on the adjacent parcel. The total water demand over the approximately 6 months of field construction is estimated to be 12 acre feet. This demand would be a short term use and would not require new or expanded facilities. Water required for operation and maintenance activities would be limited to deionized water that would be obtained from a reagent vendor, and water for fire protection system testing. Water for fire protection is not typically a consumptive use; only minor consumption would typically be required for occasional flushing of the system to ensure reliability. Considering the minimal and intermittent consumptive uses during operations, there would be no need for new or expanded water supply infrastructure. The Projects would not discharge wastewater. Portable sanitary facilities would be used onsite for construction and operations with regular pumping and maintenance by a licensed contractor. Considering these factors, the Projects would not create any capacity problems for water or wastewater or require expansion of existing water or wastewater facilities.				
c) Create drainage system capacity problems, or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
No Impact: The southern portion of the Site slopes southward toward an offsite manmade drainage ditch, and the northern portion slopes northward toward offsite graded shallow closed depressions that support seasonal wetlands. These existing drainage conditions would be maintained under the proposed grading plan with the proposed contours generally unchanged and grading limited to the general smoothing of the existing topography. The Projects would create little impermeable area compared to the Site area so there would not be a significant change in runoff. No drainage system capacity impact is anticipated.				

d) Have sufficient reliable water supplies available to serve the project demands from existing entitlements and resources, or are there new or expanded entitlements needed?	☐	☐	☐	☒
No Impact: As described in Response 17b, approximately 12 acre feet of water would be required during the 6 month construction period. Water for the Projects would be obtained from the existing NRG Delta LLC power plant water supply. Long term water demand from this source would be minimal, primarily for annual fire hydrant testing. De-ionized water for panel washing during operations would be obtained from a commercial purified water vendor. Considering the limited water use by the Projects, no new entitlements are anticipated to be needed.				
e) 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?	☐	☐	☐	☒
No Impact: The Projects would be unattended and would not need waste water services. Portable sanitary facilities would be used onsite for construction and operations with regular pumping and maintenance by a licensed contractor.				
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☒	☐
Less than Significant Impact: Most construction debris would consist of recyclable materials such as wood pallets, plastic and paper packaging and scrap metal that can be taken to a waste recycling center. Furthermore, construction would only generate waste for a short period of time. The generation facilities would convert solar energy into electric energy without substantial waste generation during operations. Quantities of non-hazardous and hazardous waste generated by routine operations would be negligible.				

18. MANDATORY FINDINGS OF SIGNIFICANCE

	Potentially Significant Impact	*Less Than Significant Impact with Mitigation Incorporated*	*Less Than Significant Impact*	*No Impact*
a) Does the project 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, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐

Less than Significant Impact With Mitigation Incorporated: The Development Area consists of disturbed non-native grassland surrounded by similar disturbed land. The Development Area does not contain any native plant communities or habitat (see Section 4, Biological Resources). The Site has been graded and filled and is regularly disked or mowed for fire prevention. The Development Area is designed to avoid impacts to wetlands and riparian habitat that occur north and south, respectively. Mitigation Measures BIO-1 through BIO-3 are proposed to avoid significant impacts to nesting birds including burrowing owl, if present. No fish habitat is present in the Development Area. Considering the absence of sensitive habitat, avoidance measures in the design, the Project would not have the potential to degrade the quality of the environment, substantially reduce the habitat of any fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, nor reduce the number of restrict the range or a rare or endangered plant or animal with incorporation of Mitigation Measures BIO-1 through BIO-3. There are no structures in the Development Area and no significant historic or prehistoric resources are known to occur onsite based on a records search and Tribal input (see Section 5 in this Initial Study checklist). Therefore, the Project would not eliminate any identified important example of the major periods of California history or prehistory. Mitigation Measures CUL-1 and CUL-2 would ensure that impacts to cultural resources would be less than significant in the event of an unexpected cultural resource discovery.

b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☒	☐	☐

Less Than Significant Impact With Mitigation Incorporated: As described in preceding sections of this Initial Study checklist, the Project would have no impact on agricultural or forest lands, mineral resources, growth, population, housing, schools, parks, libraries, recreation, public services, or utilities, and the Project would not conflict with biological resource conservation plans, air quality protection plans, traffic congestion management plans, or other established environmental plans or policies. The Project would be consistent with the City Zoning ordinance with the adoption of a limited overlay district to allow construction and operation of a solar array on the subject parcel with Design Review. Because the Project would have no impact or conflict in these topic areas, there is no potential for the Project to have a cumulative effect in these topic areas with other past, current or probable future projects.

The Project would not affect any designated scenic vista nor would it damage any scenic resources. The proposed Projects would be located on Industrial zoned land in an area of open space, industrial, commercial and residential land uses. Considering these factors, the cumulative impact on aesthetic resources would be less than significant.

Air quality cumulative impacts are addressed in Section 3 of this Initial Study checklist and are less than significant.

As described in Section 4 of this Initial Study checklist, impacts to biological resources would be limited due to the Development Area being disturbed non-native grassland habitat. The Development Area does not contain any native plant communities or sensitive habitat (see Section 4, Biological Resources, in this Initial Study checklist) and is maintained annually and as needed to control weeds for fire protection. The proposed generation tie line would be within the Development Area except for a short segment adjacent to Willow Pass Road where no native vegetation occurs. Mitigation measures BIO-1, BIO-2 and BIO-3 would prevent impacts to nesting birds and burrowing owl, thereby preventing cumulative impacts. BIO-4 would assure that there are no impacts to sensitive habitat and, therefore, no cumulative impacts. With these measures, there would be no cumulative impacts to sensitive habitat or protected species including nesting birds and burrowing owl.

No significant cultural resources are known to occur. Mitigation Measures CUL-1 and CUL-2 would ensure that impacts to cultural resources are mitigated in the event of an unexpected cultural resource discovery so that there are no cumulative impacts.

The Project would have no cumulative impact related to geology or soils. The Project would not impact important mineral resources or unique geologic features. Geologic hazards, by nature, are facility-specific and do not have the potential for cumulative effects. The Project would have no impact on seismic hazards at other locations, and no other reasonably foreseeable project could affect seismic hazards at the site. Therefore, there is no cumulative impact related to seismic shaking.

As described in Section 7 of this Initial Study checklist, once constructed, the electric energy produced by the Projects would reduce the dependency on fossil fuel-produced electric energy, thereby providing a long-term GhG benefit helping to reduce the rate of climate change impacts. Considering that the Projects would operate as unattended facilities and would require relatively minimal maintenance vehicle trips (monthly or less over the long term), and considering that limiting climate change is the focus of California's goals for implementing solar PV and other renewable energy technologies, Project GhG emissions would be less than significant both individually and cumulatively.

As described in Section 8 of this Initial Study checklist, impacts of the Projects related to hazards and hazardous materials would be less than significant. Construction of the Projects would require the use of fuels, lubricants and other hazardous materials typical of construction sites and would be short term. No cumulative impact is anticipated. Operations would require few hazardous materials, primarily insulating oil in electric equipment. No cumulative impact is anticipated.

The Project would not violate any water quality standard or waste discharge requirements or affect water quality. Therefore, there would be no cumulative effect in these areas. Impacts of the Projects related to hydrology would be less than significant and would be limited to impacts from alteration of surface drainage and placement of pile supports for solar array facilities within the 100-year flood zone. The grading plan would be subject to review by the City's Building Division and would be designed to smooth existing contours and avoid significant changes. The PV modules in the flood zone would be mounted on pile foundations that would not materially affect flood flows. Module panels would be designed with an elevation at least one foot above the 100-year flood elevation. Therefore, cumulative effects to flood conditions would be less than significant.

As described in Response 12a, construction noise from the Projects would be typical of construction work and would be limited to allowable daytime hours pursuant to mitigation measure NOISE-1. With loud construction noise only during allowable hours consistent with the City General Plan and applicable ordinances (See Response 12a), the noise impact of construction would be less than significant individually and cumulatively. Following construction, the facilities would be quiet at night when no power is being generated and would have low noise levels when operating during the day. Because the facilities would only generate noise during the daytime and would be relatively quiet, and because the closest sensitive receptors are located more than 500 feet distant, the cumulative noise impact would be less than significant.

As described in Section 16 of this Initial Study checklist, the Projects would generate insignificant long-term traffic. Operations would typically be unattended, with routine monitoring and maintenance by a crew of one to two staff once per month or less over the long term, which would be a negligible traffic impact. The Projects would not involve new construction or realignment of any roads. The Projects would be developed in conformance with all applicable plans, policies, programs, and ordinances related to transportation. Considering these factors, cumulative traffic impacts would be less than significant.

Considering the factors addressed above, the Project would not have significant cumulative impacts on the environment.

c) Does the project have environmental effects which would cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

Less Than Significant Impact With Mitigation Incorporated:

The Project does not have the potential for environmental effects that could cause substantial adverse effects on human beings, either directly or indirectly, other than those addressed in preceding sections of this Initial Study checklist. As described in preceding sections of this Initial Study checklist, the Project would have no impact on agricultural or forest lands, mineral resources, growth, population, housing, schools, parks, libraries, recreation, public services or utilities, and the Project would not conflict with zoning, land use, biological resource conservation plans, air quality protection plans, energy plans or policies, transportation, traffic and congestion management plans, or other established environmental plans or policies. The Project would not have substantial adverse effects related to aesthetics, air quality, cultural resources, energy consumption, greenhouse gasses, hazards or hazardous materials, hydrology, or transportation. With recommended mitigation measures BIO-1 through BIO-4, CUL 1 and CUL-2, GEO-1 and NOISE-1 identified in Sections 4, 5, and 12, respectively, of this Initial Study checklist, it would have less than significant impacts related to biological resources, cultural resources, geology and soils, and noise. There would be no significant direct, indirect or cumulative impacts with these mitigation measures. The Project involves development of renewable energy sources that would produce electric energy from solar energy without emissions to help to satisfy California's legislated goals to reduce greenhouse gas emissions to mitigate anthropogenic climate change. The Project is anticipated to provide an overall environmental benefit to human beings through reduction of direct and indirect effects of climate change.

3.4 REFERENCES

Bay Area Air Quality Management District (BAAQMD). 2012. *California Environmental Quality Act Air Quality Guidelines.* Updated May 2012.

Bonadiman & Associates, Inc. 2015. *Preliminary Hydrology Study and Drainage Analysis, NRG Renew Pittsburg Solar Site, City of Pittsburg, CA, APN 096-100-032*. October 2015.

Cal Fire. 2015. *Contra Costa County Very High Fire Hazard Severity Sones in LRA, As Recommended by Cal Fire*. www.fire.ca.gov. Site Visited October 9, 2015.

California Department of Conservation, Division of Mines and Geology. 1996. DMG Open File Report 96-03, *Update of Mineral Land Classification: Aggregate Materials in the South San Francisco Bay Production-Consumption Region*.

California Department of Fish and Game. 2012. Staff Report on Burrowing Owl Mitigation. Sacramento, California.

California Emergency Management Agency (CEMA), California Geological Survey and University of Southern California. 2009. *Tsunami Inundation Map for Emergency Planning, State of California, County of Contra Costa, Benicia Quadrangle*. July 1, 2009.

California Historical Resources Information System (CHRIS). *Re: NRG Solar 15-0164.* Results of record search for the Project area obtained by TRC from the CHRIS Northwest Information Center at Sonoma State University. August 27, 2015.

CH2M 2015. *NRG Solar Generation Facility Soil Characterization Work Plan, PG&E Pittsburg Power Plant, Pittsburg, California*. Prepared for Pacific Gas & Electric Company. October 2015.

CH2M 2016. Email from CH2MHill to NRG summarizing results of soil sampling conducted December 10 and 11, 2015. February 8, 2016.

City of Pittsburg. 2015. General Plan, *Pittsburg 2020: A Vision for the 21st Century*. Adopted 2001. Viewed at www.ci.pittsburg.ca.gov October 2015.

City of Pittsburg. 2013. *California Environmental Quality Act Initial Study, Columbia Solar Energy Project*. January 2013.

Contra Costa County, 2015a. *Contra* Costa County General Plan. Online at www.co.contra-costa.ca.us/4732/General-Plan. Site visited November 16, 2015.

Contra Costa County, 2015b. *Assessor's Map Book 96, Page 10* online at Contra Costa County Mapping Information Center www.ccmap.us. Site visited August 20, 2015.

East Contra Costa County Habitat Conservation Plan Association, 2006. *Final East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan*. Viewed at www.co.contra-costa.ca.gov October 14, 2015.

Helley, E. J. and Lajoie, K. R., 1979. U.S. Geologic Survey Professional Paper 943, *Flatland Deposits of the San Francisco Bay Region, California – their geology and engineering properties, and their importance to comprehensive planning*. U.S. Government Printing Office, Washington. 1979.

Jennings, Charles W. and Bryant, William A., 2010. California Geological Survey Geologic Data Map No. 6. *Fault Activity Map of California*.

Knudsen, Keith L., Sowers, Janet M., Witter, Robert C., Wentworth, Carl M., and Helley, Edward J. 2000. U.S. Geologic Survey Open-File Report 00-444, *Preliminary Maps of Quaternary Deposits and Liquefaction Susceptibility, Nine-County San Francisco Bay Region, California*.

Native American Heritage Commission. Re: *Proposed Solar Project, Contra Costa County*. Letter to TRC dated August 3, 2015.

Terracon Consultants, Inc. 2015. *Geotechnical Engineering Report, Pittsburg Solar Array, 911 Willow Pass Road, Pittsburg, California*. August 18, 2015.

Woodward-Clyde Consultants. 1985. *Cultural Resource Investigation of the Proposed Pittsburg Marina Expansion Project*. Prepared for City of Pittsburg. September 1985.

WRA Environmental Consultants. 2015. *Biological Resources Assessment, Pittsburg Power Plant Solar Generation Facility, Pittsburg, Contra Costa County, California*. August 2015.

3.5 PREPARERS

TRC Companies
9685 Research Drive
Irvine, CA 92618
(949) 727-9336

Joseph Stenger, PG, QSD, Project Director
Susan Underbrink, RPA, Senior Archaeologist
Mike Farmer, Senior Biologist
Joshua Taylor, Lead Planner
Tim Henggeler, Environmental Engineer

APPENDIX A
EXAMPLE METEOROLOGICAL STATIONS

APPENDIX A
EXAMPLE METEOROLOGICAL STATIONS
MALLARD SLOUGH 1 & 2 PROJECTS

APPENDIX B
CONSTRUCTION AIR EMISSIONS ESTIMATE

MALLARD SLOUGH 1 & 2 SOLAR PROJECTS
WORST-CASE PEAK DAILY CONSTRUCTION EMISSIONS

The Mallard Slough 1 & 2 Solar Projects (Projects) are solar energy developments proposed for construction on a 25-acre site located in Pittsburg, California. The site is located within the jurisdiction of the Bay Area Air Quality Management District (BAAQMD).

The Projects are expected to take 8 months to construct, which includes 2 months of final design followed by 6 months of construction. During construction, the Grading Phase will be the most worker and equipment intensive phase and expected to be the worst case phase in regards to construction emissions. Therefore, peak daily construction emissions have been estimated based upon construction activities during the Grading Phase.

The Grading Phase is expected to include approximately 15 total work days taking place over approximately three weeks. Diesel exhaust is assumed to emit no more than Tier 3 equipment. Disturbed surfaces that are not stabilized will be watered twice per day and ground cover will be replaced as soon as reasonably possible. The following equipment was included in the emission calculation:

- 1x Grader (174 Horsepower [HP]) @ 8 hours per day
- 1x Water Truck (400 HP) @ 8 hours per day
- 2x Dump trucks (400 HP each) @ 8 hours per day
- 1x Self- Propelled Compactor (80 HP) @ 8 hours per day
- 2x Bulldozers (255 HP each) @ 8 hours per day
- 1x Scraper (361 HP) @ 8 hours per day
- 2x Bobcats (64 HP) @ 8 hours per day
- 2x Quad Carts @ 8 hours per day

Emissions were calculated using the California Emissions Estimator Model (CalEEMod), version 2013.2.2 in accordance with BAAQMD guidance. The calculated peak daily emissions are provided below.

Peak Daily Emissions (pounds per day)

	ROG	CO	NOx	SO2	Fugitive PM10	Exhaust PM10	Fugitive PM2.5	Exhaust PM2.5
Emissions	3.0	58.3	51.4	0.1	6.7	1.8	3.1	1.8
Thresholds[1]	54	None	54	None	None	82	None	54
Significant?	No	NA	No	NA	NA	No	NA	No

[1] Source: BAAQMD, *CEQA Guidelines*, May 2010

APPENDIX C
BIOLOGICAL RESOURCES ASSESSMENT

Biological Resources Assessment
Pittsburg Power Plant Solar Generation Facility

PITTSBURG, CONTRA COSTA COUNTY
CALIFORNIA

Prepared For:

Ray Kelly

NRG Renew, LLC.

WRA Contact:

Dana Riggs

riggs@wra-ca.com

Date:

August 2015

ENVIRONMENTAL CONSULTANTS

2169-G East Francisco Blvd., San Rafael, CA 94901 (415) 454-8868 tel (415) 454-0129 fax info@wra-ca.com www.wra-ca.com

TABLE OF CONTENTS

LIST OF APPENDICES

LIST OF TABLES

LIST OF FIGURES

LIST OF ACRONYMS AND ABBREVIATIONS

BCDC	San Francisco Bay Conservation and Development Commission
CBR	California black rail
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CDFW	California Department of Fish and Wildlife
CFGC	California Fish and Game Code
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
Corps	U.S. Army Corps of Engineers
EFH	Essential Fish Habitat
ESA	Federal Endangered Species Act
JD	U.S. Army Corps of Engineers Jurisdictional Determination
Inventory	CNPS Inventory of Rare and Endangered Plants
MBTA	Migratory Bird Treaty Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
OWHM	Ordinary High Water Mark
Rank	California Rare Plant Rank
RWQCB	Regional Water Quality Control Board
SMHM	Salt marsh harvest mouse
TOB	Top-of-bank
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
WBWG	Western Bat Working Group
WRA	WRA, Inc.

EXECUTIVE SUMMARY

The purpose of this report is to provide an analysis of natural community and special-status species issues at the 55.5-acre proposed NRG Solar Array Area (Study Area) in Pittsburg, Contra Costa County, California.

On May 28 and July 7, 2015, WRA, Inc. (WRA) conducted a biological resources assessment and focused plant surveys within the Study Area. WRA observed four biological communities, 75 plant species and 20 wildlife species. No special-status wildlife or plant species were observed within the Study Area. Three sensitive biological community types covering 6.48 acres of the Study Area were identified. Six special-status wildlife species and no special-status plant species have a moderate or high potential to occur within the Study Area; focused surveys for special status plants yielded negative results. Recommendations to avoid and/or minimize impacts to sensitive communities and wildlife species are provided.

1.0 INTRODUCTION

On May 28 and July 7, 2015, WRA, Inc. (WRA) performed an assessment of biological resources at the 55.5-acre proposed NRG Solar Array Area (Study Area) in Pittsburg, Contra Costa County, California (Figure 1). The Study Area includes vacant land adjacent to the existing Pittsburg Power Plant, and would be accessed via Willow Pass Road. The purpose of the assessment was to examine potential biological constraints for a proposal to install solar panels and associated infrastructure within the Study Area (Project).

This report describes the results of the site visit, which assessed the Study Area for the (1) potential to support special-status species; and (2) presence of other sensitive biological resources protected by local, state, and federal laws and regulations. If special-status species were observed during the site visit, they were recorded. Specific findings on the habitat suitability or presence of special-status species or sensitive habitats may require that protocol-level surveys be conducted.

A biological resources assessment provides general information on the potential presence of sensitive species and habitats. The biological assessment is not an official protocol-level survey for listed species that may be required for project approval by local, state, or federal agencies. This assessment is based on information available at the time of the study and on site conditions that were observed on the date of the site visit.

1.1 Study Area Description

The Study Area is entirely located within the existing NRG Pittsburg Power Plant Generation Facility property at 690 West 10th Street, Pittsburg, California. The proposed solar array area consists of level, vacant, grassy fields separated by low slopes and a seasonal stream corridor, along with an existing unimproved access road (Figure 2). Areas to the north include vacant, disturbed fields and marshland adjacent to Suisun Bay; the NRG generation facility and associated infrastructure is to the northeast; and the areas to the south include urban/residential and industrial land uses.

Figure 1. Study Area Location Map

NRG Solar
Contra Costa County, California

0 0.25 0.5 1 Miles

wra
ENVIRONMENTAL CONSULTANTS

Map Prepared Date: 8/25/2015
Map Prepared By: MRochelle
Base Source: NAIP 2014
Data Source(s): WRA

Path: L:\Acad 2000 Files\15000\15024-6\GIS\ArcMap\Figure1_LocationMap.mxd

wra
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NRG Solar

Contra Costa County, California

Figure 2.

Study Area Site Map

N
W E
S

0 200 400 800

Feet

Map Prepared Date: 8/25/2015
Map Prepared By: MRochelle
Base Source: Contra Costa County 2014 Aerial
Data Source(s): WRA

Path: L:\Acad 2000 Files\15000\15024-6\GIS\ArcMap\Fig2_SiteMap.mxd

2.0 REGULATORY BACKGROUND

The following sections explain the regulatory context of the biological assessment, including applicable laws and regulations that were applied to the field investigations and analysis of potential project impacts.

2.1 Sensitive Biological Communities

Sensitive biological communities include habitats that fulfill special functions or have special values, such as wetlands, streams, or riparian habitat. These habitats are protected under federal regulations such as the Clean Water Act; state regulations such as the Porter-Cologne Act, the CDFW Streambed Alteration Program, and CEQA; or local ordinances or policies such as city or county tree ordinances, Special Habitat Management Areas, and General Plan Elements.

Waters of the United States

The U.S. Army Corps of Engineers (Corps) regulates "Waters of the United States" under Section 404 of the Clean Water Act. Waters of the U.S. are defined in the Code of Federal Regulations (CFR) as waters susceptible to use in commerce, including interstate waters and wetlands, all other waters (intrastate waterbodies, including wetlands), and their tributaries (33 CFR 328.3). Potential wetland areas, according to the three criteria used to delineate wetlands as defined in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987), are identified by the presence of (1) hydrophytic vegetation, (2) hydric soils, and (3) wetland hydrology. Areas that are inundated at a sufficient depth and for a sufficient duration to exclude growth of hydrophytic vegetation are subject to Section 404 jurisdiction as "other waters" and are often characterized by an ordinary high water mark (OHWM). Other waters, for example, generally include lakes, rivers, and streams. The placement of fill material into Waters of the U.S generally requires an individual or nationwide permit from the Corps under Section 404 of the Clean Water Act.

Waters of the State

The term "Waters of the State" is defined by the Porter-Cologne Act as "any surface water or groundwater, including saline waters, within the boundaries of the state." The Regional Water Quality Control Board (RWQCB) protects all waters in its regulatory scope and has special responsibility for wetlands, riparian areas, and headwaters. These waterbodies have high resource value, are vulnerable to filling, and are not systematically protected by other programs. RWQCB jurisdiction includes "isolated" wetlands and waters that may not be regulated by the Corps under Section 404. Waters of the State are regulated by the RWQCB under the State Water Quality Certification Program which regulates discharges of fill and dredged material under Section 401 of the Clean Water Act and the Porter-Cologne Water Quality Control Act. Projects that require a Corps permit, or fall under other federal jurisdiction, and have the potential to impact Waters of the State, are required to comply with the terms of the Water Quality Certification determination. If a proposed project does not require a federal permit, but does involve dredge or fill activities that may result in a discharge to Waters of the State, the RWQCB has the option to regulate the dredge and fill activities under its state authority in the form of Waste Discharge Requirements.

Streams, Lakes, and Riparian Habitat

Streams and lakes, as habitat for fish and wildlife species, are subject to jurisdiction by CDFW under Sections 1600-1616 of California Fish and Game Code. Alterations to or work within or adjacent to streambeds or lakes generally require a 1602 Lake and Streambed Alteration Agreement. The term “stream”, which includes creeks and rivers, is defined in the California Code of Regulations (CCR) as “a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life [including] watercourses having a surface or subsurface flow that supports or has supported riparian vegetation” (14 CCR 1.72). In addition, the term “stream” can include ephemeral streams, dry washes, watercourses with subsurface flows, canals, aqueducts, irrigation ditches, and other means of water conveyance if they support aquatic life, riparian vegetation, or stream-dependent terrestrial wildlife (CDFG 1994). “Riparian” is defined as “on, or pertaining to, the banks of a stream.” Riparian vegetation is defined as “vegetation which occurs in and/or adjacent to a stream and is dependent on, and occurs because of, the stream itself” (CDFG 1994). Removal of riparian vegetation also requires a Section 1602 Lake and Streambed Alteration Agreement from CDFW.

San Francisco Bay and Shoreline

The San Francisco Bay Conservation and Development Commission (BCDC) has regulatory jurisdiction, as defined by the McAteer-Petris Act, over the Bay and its shoreline, which generally consists of the area between the shoreline and a line 100 feet landward of and parallel to the shoreline. BCDC jurisdiction in the northeastern portion of the Bay extends to “a line between Stake Point and Simmons Point, extending northeasterly to the mouth of Marshall Cut.” The NRG Pittsburg Power Plant, including the Study Area, is located to the east of this line; therefore, it is not within BCDC jurisdiction, and special BCDC regulations do not apply to the Study Area.

Other Sensitive Biological Communities

Other sensitive biological communities not discussed above include habitats that fulfill special functions or have special values. Natural communities considered sensitive are those identified in local or regional plans, policies, regulations, or by the CDFW. CDFW ranks sensitive communities as "threatened" or "very threatened" and keeps records of their occurrences in its California Natural Diversity Database (CNDDB; CDFW 2013). Sensitive plant communities are also identified by CDFW (2010). CNDDB vegetation alliances are ranked 1 through 5 based on NatureServe's (2010) methodology, with those alliances ranked globally (G) or statewide (S) as 1 through 3 considered sensitive. Impacts to sensitive natural communities identified in local or regional plans, policies, or regulations or those identified by the CDFW or USFWS must be considered and evaluated under CEQA (CCR Title 14, Div. 6, Chap. 3, Appendix G). Specific habitats may also be identified as sensitive in city or county general plans or ordinances.

East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan

East Contra Costa County Habitat Conservation Plan / Natural Community Conservation Plan (Plan) is a regional conservation plan intended to protect natural resources and promote connectivity of habitats while streamlining regulatory requirements for continued economic development and growth in the area. Approved in August 2007, the Plan provides specific conditions and conservation measures for covered activities to mitigate for incidental take of sensitive species associated with those activities. The Plan also provides a U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW) Incidental Take Permits for covered projects.

The Study Area is adjacent to, but is not within, the Plan area; thus, regulatory and procedural guidelines established in the Plan are not considered in this report.

Contra Costa County General Plan and Zoning Ordinances

Conservation Element of the Contra Costa County General Plan (2005) has policies regarding new development along natural watercourses. The General Plan recommends setbacks of 50 feet on each side of the centerline of the creek for new development (General Plan Policy 8-89). The County Zoning Ordinances also require minimum setbacks to meet water quality and erosion control goals through a stream ordinance for unimproved earthen channels. This ordinance requires a "structure setback line" that varies between 30 feet and 50 feet from the top-of-bank (TOB), depending on the height of the TOB above the channel invert (County Code Title 9, Division 914-14.012).

2.2 Sensitive Special-Status Species

Special-status species include those plants and wildlife species that have been formally listed, are proposed as endangered or threatened, or are candidates for such listing under the Federal Endangered Species Act (ESA) or California Endangered Species Act (CESA). These acts afford protection to both listed species and those that are formal candidates for listing. In addition, California Department of Fish and Wildlife (CDFW) Species of Special Concern, which are species that face extirpation in California if current population and habitat trends continue; U.S. Fish and Wildlife Service (USFWS) Birds of Conservation Concern; and CDFW special-status invertebrates. Although CDFW Species of Special Concern generally have no special legal status, they are given special consideration under the California Environmental Quality Act (CEQA). Bat species are also evaluated for conservation status by the Western Bat Working Group (WBWG), a non-governmental entity; bats named as a "High Priority" species for conservation by the WBWG are typically considered special-status. In addition to regulations for special-status species, most birds in the United States, including non-special-status native species, are protected by the Migratory Bird Treaty Act of 1918 (MBTA) and the California Fish and Game Code (CFGC), i.e., sections 3503, 3503.5 and 3513. Under these laws, destroying active bird nests, eggs, and/or young is illegal.

Plant species on the California Native Plant Society (CNPS) Rare and Endangered Plant status plant species and must be considered under CEQA. Rank 3 and Rank 4 species are afforded little or no protection under CEQA, but are included in this analysis for completeness. A description of the CNPS Ranks is provided below in Table 1.

Table 1. Description of CNPS Ranks and Threat Codes

California Rare Plant Ranks (formerly known as CNPS Lists)	
Rank 1A	Presumed extirpated in California and either rare or extinct elsewhere
Rank 1B	Rare, threatened, or endangered in California and elsewhere
Rank 2A	Presumed extirpated in California, but more common elsewhere
Rank 2B	Rare, threatened, or endangered in California, but more common elsewhere
Rank 3	Plants about which more information is needed - A review list
Rank 4	Plants of limited distribution - A watch list
Threat Ranks	
0.1	Seriously threatened in California
0.2	Moderately threatened in California
0.3	Not very threatened in California

Critical Habitat

Critical habitat is a term defined in the ESA as a specific geographic area that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection. The ESA requires federal agencies to consult with the USFWS to conserve listed species on their lands and to ensure that any activities or projects they fund, authorize, or carry out will not jeopardize the survival of a threatened or endangered species. In consultation for those species with critical habitat, federal agencies must also ensure that their activities or projects do not adversely modify critical habitat to the point that it will no longer aid in the species' recovery. In many cases, this level of protection is similar to that already provided to species by the ESA jeopardy standard. However, areas that are currently unoccupied by the species but which are needed for the species' recovery are protected by the prohibition against adverse modification of critical habitat.

3.0 METHODS

On May 28 and July 7, 2015 the Study Area was traversed on foot to determine (1) plant communities present within the Study Area, (2) if existing conditions provided suitable habitat for any special-status plant or wildlife species, and (3) if sensitive habitats are present. All plant and wildlife species encountered were recorded, and are summarized in Appendix A. Plant nomenclature follows Baldwin et al. (2012) and subsequent revisions by the Jepson Flora Project (2015), except where noted. For cases in which regulatory agencies, CNPS, or other entities base rarity on older taxonomic treatments, precedence was given to the treatment used by those entities.

3.1 Biological Communities

Prior to the site visit, aerial photographs, web soil survey (Natural Resources Conservation Service, United States Department of Agriculture 2015), the *List of Vegetation Alliances* (CDFG 2010), and *A Manual of California Vegetation* (Sawyer et al. 2009) were reviewed to assess the potential for sensitive biological communities to occur in the Study Area. Natural communities considered sensitive are those identified in local or regional plans, policies, regulations, or by the CDFW. CDFW ranks sensitive communities as "threatened" or "very threatened" and keeps records of their occurrences in its California Natural Diversity Database (CNDDB; CDFW 2015). CNDDB vegetation alliances are ranked 1 through 5 based on NatureServe's (2015) methodology, with those alliances ranked globally (G) or statewide (S) with 1 through 3 considered sensitive.

Natural communities were mapped in the Study Area by using aerial imagery of the Study Area in the field while gathering ground level information such as percent cover of dominant species and associated species. The information gathered was used to visually delineate the different communities on the aerial imagery in the field and in GIS. Community types mapped within the Study Area and described in this report do not strictly follow vegetation alliances, but were chosen to best represent biological constraints within the Study Area.

3.1.1 Non-sensitive Biological Communities

Non-sensitive biological communities are those communities that are not afforded special protection under CEQA, and other state, federal, and local laws, regulations and ordinances. These communities may, however, provide suitable habitat for some special-status plant or wildlife species and are identified or described in Section 4.1.1 below.

3.1.2 Sensitive Biological Communities

Sensitive biological communities are defined as those communities that are given special protection under CEQA and other applicable federal, state, and local laws, regulations and ordinances. Applicable laws and ordinances are discussed above in Section 2.0. Special methods used to identify sensitive biological communities are discussed below.

Wetlands and Waters

The Study Area has previously been surveyed to determine if any wetlands and waters subject to jurisdiction by the Corps and RWQCB are present. Wetland delineations following standard Corps guidance (Environmental Laboratory 1987; Corps 2008) were performed by WRA biologists is 2005 and 2012-2013. The extent of jurisdictional features within the Study Area was subsequently verified by the Corps in 2006, and again in 2013[1]. Therefore, the presence and extent of jurisdictional features within the Study Area, as well as areas that lack jurisdictional features, have been confirmed. The confirmed jurisdictional areas are depicted and described in this report, and are valid for planning purposes[2].

Riparian/Section 1602 Areas

Field guidance for CDFW Section 1600 jurisdiction (CDFG 1994) is typically understood to include all streams and to extend laterally to the TOB. If riparian vegetation is present within the TOB, then CDFW jurisdiction extends to the outer dripline of such vegetation. Thus, all streams within or adjacent to the Study Area were assumed to fall within CDFW jurisdiction, and in some cases the area of CDFW jurisdiction extended beyond the edges of the stream in order to encompass the area below TOB and any riparian vegetation. Any additional areas of CDFW jurisdiction were mapped during the 2015 site visits.

Other Sensitive Biological Communities

The Study Area was evaluated for the presence of other sensitive biological communities, including sensitive plant communities recognized by CDFW and areas protected under Contra Costa County General Plan and Zoning Ordinances (Section 2.1). Prior to the site visit, aerial photographs, local soil maps, the *List of Vegetation Alliances* (CDFG 2009), and *A Manual of California Vegetation* (Sawyer et al. 2009) were reviewed to assess the potential for sensitive biological communities to occur in the Study Area.

---

[1] The Corps issued a Jurisdictional Determination (JD) on May 15, 2006 that formally confirmed the extent of Waters of the U.S. within the Study Area (based on WRA's 2005 wetland delineation). The JD expired on May 15, 2011. WRA performed another wetland delineation in 2013 which examined the Study Area and determined that the extent of wetlands in this area was mostly unchanged from the 2006 JD. WRA performed a verification site visit with a Corps staff member on March 12, 2013, during which the Corps agreed that the JD could be re-issued with very few changes to the mapping of wetlands within the Study Area. Thus, the extent of Waters of the U.S. within the Study Area as shown in this report has been recently verified, although at the time of publication of this report, the Corps had not yet issued a new JD.

[2] A JD is typically valid for a period of 5 years. As described in footnote #1, the Corps verified the extent of wetlands within the Study Area on March 12, 2013. Since less than 5 years has passed since the verification visit, and since a new Corps JD is forthcoming, it is assumed that the mapping of wetlands within the Study Area as shown and described in this report is valid and would continue to be valid for at least 3-5 years from the date of this report.

3.2 Special-Status Species

3.2.1 Literature Review

Potential occurrence of special-status species in the Study Area was evaluated by first determining which special-status species occur in the vicinity of the Study Area through a literature and database search. Database searches for known occurrences of special-status species focused on the Honker Bay 7.5 minute USGS quadrangle and the eight surrounding USGS quadrangles. The following sources were reviewed to determine which special-status plant and wildlife species have been documented to occur in the vicinity of the Study Area:

- California Natural Diversity Database (CNDDB) records (CDFW 2015)
- CNPS Inventory records (CNPS 2015)
- CDFG publication "California's Wildlife, Volumes I-III" (Zeiner et al. 1990)
- CDFG publication "California Bird Species of Special Concern" (Shuford and Gardali 2008)
- CDFG publication "Amphibians and Reptile Species of Special Concern in California" (Jennings 1994)
- A Field Guide to Western Reptiles and Amphibians (Stebbins 2003)
- Breeding Bird Atlas of Contra Costa County (Glover 2009)
- USGS 7.5-Minute Quadrangle Map (USGS 1980)

3.2.2 Site Assessment

Two site visits were made to the Study Area to search for suitable habitats for special-status species. Habitat conditions observed at the Project Site were used to evaluate the potential for presence of special-status species based on these searches and the professional expertise of the investigating biologists. The potential for each special-status species to occur in the Study Area was then evaluated according to the following criteria:

- No Potential. Habitat on and adjacent to the site is clearly unsuitable for the species requirements (foraging, breeding, cover, substrate, elevation, hydrology, plant community, site history, disturbance regime).
- Unlikely. Few of the habitat components meeting the species requirements are present, and/or the majority of habitat on and adjacent to the site is unsuitable or of very poor quality. The species is not likely to be found on the site.
- Moderate Potential. Some of the habitat components meeting the species requirements are present, and/or only some of the habitat on or adjacent to the site is unsuitable. The species has a moderate probability of being found on the site.
- High Potential. All of the habitat components meeting the species requirements are present and/or most of the habitat on or adjacent to the site is highly suitable. The species has a high probability of being found on the site.
- Present. Species is observed on the site or has been recorded (i.e. CNDDB, other reports) on the site recently.

The site assessment is intended to identify the presence or absence of suitable habitat for each special-status species known to occur in the vicinity in order to determine its potential to occur in the Study Area. In cases where little information is known about species occurrences and

habitat requirements, the species evaluation was based on best professional judgment of WRA biologists with experience working with the species and habitats. If necessary, recognized experts in individual species biology were contacted to obtain the most up to date information regarding species biology and ecology.

If a special-status species was observed during the site visit, its presence is recorded and discussed below in Section 4.2. For some species, a site assessment visit at the level conducted for this report may not be sufficient to determine presence or absence of a species to the specifications of regulatory agencies. In these cases, a species may be assumed to be present or further protocol-level special-status species surveys may be necessary. Special-status species for which further protocol-level surveys may be necessary are described below in Section 5.0.

4.0 RESULTS

The Study Area is located on vacant, undeveloped portions of the Pittsburg Power Plant property, southwest of the existing power plant. It is bounded by the Southern Pacific Railroad, West 10th St and Willow Pass Road to the south. Contra Costa County Water District lands are located to the west, while additional undeveloped lands adjacent to the Pittsburg Power Plant are located to the north and east. Elevations within the Study Area range from about 5 to 15 feet (USGS 1980).

The majority of the Study Area is characterized by weedy non-native annual grasslands. A stream corridor passes through the center of the Study Area, but will be avoided by work activities.

The Study Area is on a mostly-flat terrace which appears to have been highly modified by human activities. Especially in the area north of the stream, the substrate appears to be imported fill material. The fill material was distributed and shaped to form a broad, mostly-flat area at slightly higher elevation than the low-lying fields, wetlands, and marshland to the north. The stream channel that passes through the Study Area has been re-routed and straightened from its original course, and flows within an excavated trench or is contained by banks of earthen fill material in some areas. The eastern portion of the Study Area includes an existing, unimproved access road that travels along a man-made embankment adjacent to the stream. Along the northwestern edge of the Study Area, a steep embankment marks the edge of the man-made terrace, and the land drops down to the level of the adjacent low-lying field, some of which is within the Study Area. A pile of apparent fill material can still be seen in the north-central portion of the Study Area, and includes both soil and concrete rubble.

In addition to the historic disturbance that shaped the Study Area, regular land management activities appear to reduce the habitat suitability for most special-status plants and wildlife. Site managers report that the property (outside of the stream corridor) is disked and/or mowed at a frequency of one or more times per year. While tall grasses and weeds were observed in the area during the May 28, 2015 site visit, the site had recently been disked prior to the July 7, 2015 site visit.

Although all soils within the Study Area appear to have been modified as described above, the soils in this area are officially mapped as Antioch loam, 0-2 percent slopes, Sycamore silty clay loam, and Joice muck (USDA 2015). The latter two soil types reflect the Study Area's proximity to low-lying areas adjacent to Suisun Bay; however, human modifications have largely isolated the Study Area from the Bay.

The following sections present the results and discussion of the biological assessment within the Study Area.

4.1 Biological Communities

Biological communities observed within the Study Area are summarized in Table 2 and depicted in Figure 3. Descriptions of each biological community are contained in the following sections.

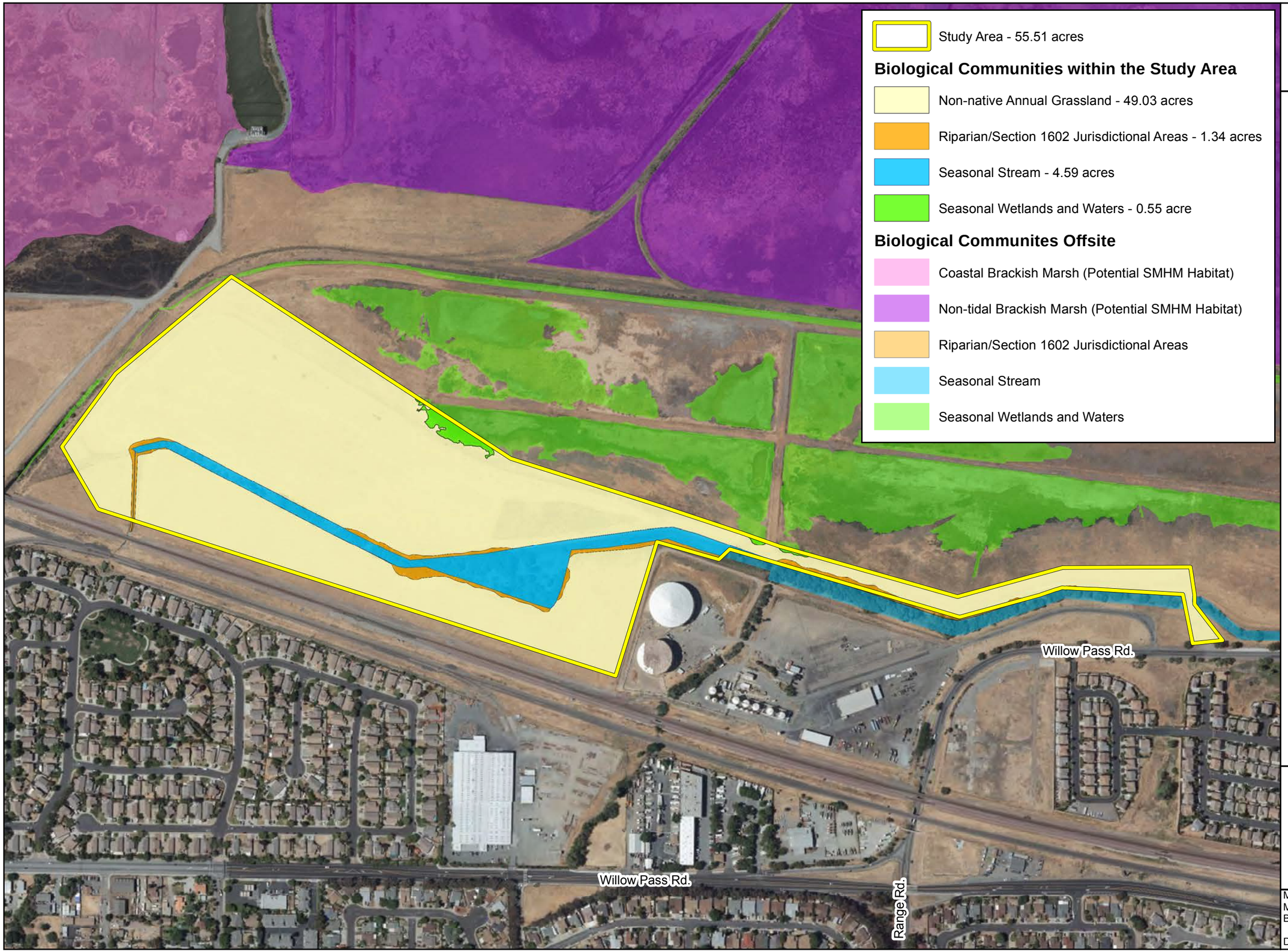
Table 2. Summary of Biological Communities within the Study Area.

Biological Community Type	**Acres**
Non-Sensitive Biological Communities	
Non-native Annual Grassland	49.03
Sensitive Biological Communities	
Seasonal Stream	4.59
Riparian/Section 1602 Jurisdictional Areas	1.34
Seasonal Wetlands and Waters	0.55
Total	**55.51**

4.1.1 Non-Sensitive Biological Communities

Non-native Annual Grassland

The majority of the Study Area is composed of non-native annual grassland. This community type is common throughout California, especially in upland areas that have been disturbed by human activities. The community is dominated by non-native annual grasses, which in the case of the Study Area included such species as wild oats (*Avena* spp.), ripgut brome (*Bromus diandrus*), Italian rye grass (*Festuca perennis*), and brome fescue (*Festuca bromoides*). Non-native herbaceous species are also common within this community, and include such species as stork's bill (*Erodium* spp.), prickly lettuce (*Lactuca serriola*), fennel (*Foeniculum vulgare*), and Italian thistle (*Carduus pycnocephalus*). Stands of black mustard (*Brassica nigra*) and wild radish (*Raphanus sativus*) were also observed within areas mapped as non-native annual grassland. Although far less prevalent than non-native species, common native grasses and herbs can also be found in this community. Within the Study Area, such species included alkali heath (*Frankenia salina*), alkali mallow (*Malva leprosa*), Mexican milkweed (*Asclepias fascicularis*), and fringed willowherb (*Epilobium ciliatum* ssp. *ciliatum*).



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Contra Costa County, California

Figure 3.

Biological Communities within the Study Area

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Map Prepared Date: 8/25/2015
Map Prepared By: MRochelle
Base Source: Contra Costa County 2014 Aerial
Data Source(s): WRA

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Wildlife species observed in this plant community included such species as common raven (*Corvus corax*), house finch (*Haemorhous mexicanus*), black-tailed jackrabbit (*Lepus californicus*), and Botta's pocket gopher (*Thomomys bottae*).

4.1.2 Sensitive Biological Communities

While sensitive biological communities do occur in the Study Area, they will be almost entirely avoided by the project footprint. In addition, protective buffers will be established around these areas, and with limited exceptions, all work will occur outside of the buffered areas in order to further avoid the possibility of impact.

Seasonal Stream

A stream corridor bisects the western portion of the Study Area, and also follows immediately adjacent to the path of the access road in the eastern portion of the Study Area. The seasonal stream, as shown on Figure 3, constitutes both "Waters of the U.S." and "Waters of the State" as described in Section 2.1. This feature was mapped within the Study Area during previous studies (WRA 2005; WRA 2013), and its regulatory status has been confirmed by the U.S. Army Corps of Engineers[1].

The stream is a man-made channel that conveys the flow of a drainage historically mapped as Willow Creek. A 1938 image (Google Earth 2015) shows the natural stream located slightly north of the Study Area, while the channel's present-day location appears to be an open field; the stream was apparently diverted into the man-made channel sometime after 1938.

The stream varies in width from just 2 feet wide on its western end to approximately 280 feet at its widest point. With the exception of its western end, it is almost entirely vegetated. The vegetation includes patches of emergent plants such as California bulrush (*Schoenoplectus californicus*) and common cattail (*Typha latifolia*), and riparian trees such as Fremont cottonwood (*Populus fremontii* ssp. *fremontii*) and willow (*Salix exigua* var. *exigua, S. laevigata, S. lasiolepis*). Flow within the stream continues east into a levied channel of open water, then travels north adjacent to a non-tidal brackish marsh. Water in the channel ultimately flows into Suisun Bay through one-way duckbill valves.

The stream appears to flow or contain standing water only seasonally, although its hydrology is likely influenced by downstream management. The stream with the Study Area was dry during both site visits in 2015, and did not appear to have had large flows in some time. While the site visits were performed during a drought, these observations suggest that the stream goes dry for some portion of the year (likely summer and fall) during most years. In addition, human modifications to prevent backflow of water from Suisun Bay and/or control water levels in the nearby marsh may currently reduce the amount of standing water in the stream.

Wildlife species observed in this community include red-winged blackbird (*Agelaius phoeniceus*) and common yellowthroat (*Geothlypis trichas*).

Riparian/Section 1602 Areas

The “seasonal stream” (described above) is protected under Section 1602 of CDFW code in addition to the CWA; however, the area protected by CDFW extends beyond the mapped edges of the seasonal stream in many places to account for riparian vegetation and areas below TOB. These additional areas were mapped as Riparian/Section 1602 Areas (as described in Section 3.1.2).

The riparian community type present within the Study Area includes upland areas below the TOB, which are largely vegetated by nonnative upland grasses, similar to the nonnative annual grassland community described in Section 4.1.1. In addition, Riparian/Section 1602 Areas also include upland areas adjacent to the seasonal stream which are within the dripline of large trees such as Fremont cottonwood, willow, and Coast live oak (*Quercus agrifolia*).

Wildlife species observed in this plant community include western scrub jay (*Aphelocoma californica*), mourning dove (*Zenaida macroura*), and northern mockingbird (*Mimus polyglottos*).

Seasonal Wetlands and Waters

Jurisdictional seasonal wetlands and non-wetland waters have been mapped in close proximity to the Study Area, and wetlands also extend a short distance into the Study Area along its northern edge. These areas have previously been confirmed to be jurisdictional features, although they are disturbed, and in some cases man-made features that do not represent high-value habitat in comparison to other wetland types such as streams or tidal marshes.

The wetlands that extend into the Study Area are seasonal depressional wetlands with no direct connection to streams or tidal areas. They are vegetated by a mix of native and non-native species such as Mediterranean barley (*Hordeum marinum*), fivehook Bassia (*Bassia hyssopifolia*), salt grass (*Distichlis spicata*), and alkali heath (*Frankenia salina*). The area where the wetlands are located is mowed and/or disked on a regular basis to manage vegetation and reduce fuel for potential wildfires. Thus, jurisdictional wetlands within the Study Area are highly disturbed and have minimal vegetative development, reducing their habitat suitability for special-status plants and wildlife.

4.1.2.1 Sensitive Biological Communities Located Outside the Study Area

Two additional sensitive biological communities are located in close proximity to the Study Area, and may present constraints that affect work within the Study Area. These communities include coastal brackish marsh and non-tidal brackish marsh.

Coastal Brackish Marsh and Non-tidal Brackish Marsh

Two expanses of marshland exist to the north and northwest of the Study Area, as shown in Figure 3. These sensitive areas will not be impacted by the Project; however, they are relevant because they may provide habitat for the Federal and State Endangered salt marsh harvest mouse (SMHM; *Reithrodontomys raviventris*), which is known to be present in the area (CDFW 2015). Although SMHM typically resides in marshes, it is known to occasionally utilize vegetated habitats adjacent to marshes. For this reason, some vegetated habitats in close proximity to the marshland may be protected as potential SMHM habitat. SMHM is further discussed in Sections 4.2.2 and 5.1.

4.2 Special-Status Species

4.2.1 Plants

Based upon a review of the resources and databases given in Section 3.2.1, 84 special-status plant species have been documented in the vicinity of the Study Area (Figure 4). Appendix B summarizes the potential for each of these species to occur in the Study Area. WRA biologists conducted focused surveys of the Study Area where work is likely to occur twice in preparation of this BRA, and the site visits were within the blooming period of all 84 species with potential to occur, save two (discussed below). Thus, the remaining 82 species should have been recognizable during the site visits if they were present. However, no special status plant species were observed within the Study Area. The 75 plant species observed within the Study Area were non-native species frequently found in disturbed habitats, or were common native species without a special protective status.

The site visits occurred outside of the blooming period of two special-status plant species determined unlikely to occur in the Study Area. Caper-fruited tropidocarpum (*Tropidocarpum capparideum*) blooms from March to April; the last recorded occurrence of this species in the vicinity was in 1895, suggesting it is locally extirpated. Carquinez goldenbush (*Isacoma arguta*) blooms from August to December; however, plants of the genus *Isacoma* would have been identifiable through vegetative characteristics at the time of the July site visit, and none were observed. In addition, most portions of the Study Area where these species could potentially occur include fill soil that is disked regularly, making their occurrence unlikely.

The Study Area has a limited potential to support most special-status plant species documented in the vicinity of the Study Area. Most special status plants are likely only to occur in specific habitat types such as wetlands, which would be completely avoided by Project activities. Furthermore, the fact that none of these species were observed within the Study Area during two surveys within the species' blooming periods provides strong evidence that they are not extant within the Study Area. The majority of the Study Area, including almost all areas where work is proposed, consists of non-native annual grassland on imported fill soil or otherwise disturbed soil, and these areas are regularly disturbed during site management activities, rendering them unsuitable for most special-status plant species. Thus, the Project is unlikely or has no potential to impact special-status plant species.

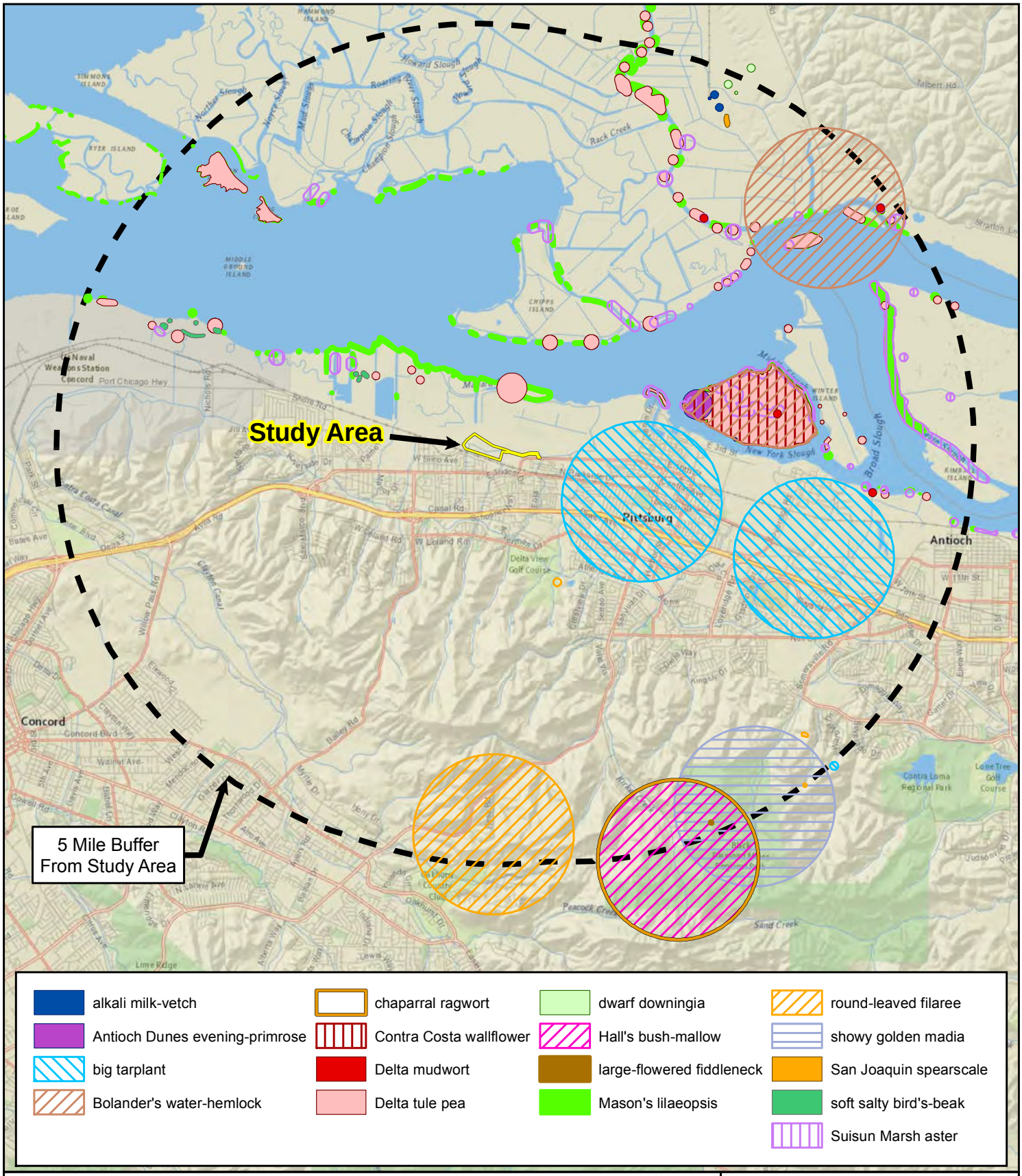

Figure 4. Special Status Plant Species Occurrences in the Vicinity of the Study Area

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NRG Solar
Contra Costa County, California

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Map Prepared Date: 8/25/2015
Map Prepared By: MRochelle
Base Source: National Geographic
Data Source(s): CNDDB (August 2015)

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4.2.2 Wildlife

Fifty-four special-status wildlife species have been recorded in the vicinity of the Study Area. Figure 5 depicts the special-status wildlife species documented in the vicinity based on CNDDB data (CDFW 2015). Appendix B summarizes the potential for each of these species to occur in the Study Area. Twenty wildlife species were observed in the Study Area during the site visits, all of which were common species without a special protective status. No special-status wildlife species have a high potential to occur in the Study Area, and six special-status wildlife species have a moderate potential to occur in the Study Area. No trees are to be removed during Project activities, and most work activities will be set back 50 feet from the seasonal stream and riparian habitats; therefore, the Project is anticipated to avoid impacts to bats and with implementation of additional measures will also avoid birds. Special-status wildlife species that were determined to have a moderate potential to occur in the Study Area are discussed below.

Wildlife species with a moderate potential for occurrence within the Study Area

Burrowing owl (*Athene cunicularia*), CDFW Species of Special Concern; USFWS Bird of Conservation Concern. The burrowing owl typically favors flat, open grassland or gentle slopes and sparse shrub-land ecosystems. These owls prefer annual or perennial grasslands, typically with sparse or nonexistent tree or shrub canopies; however, they also colonize debris piles and old pipes. Burrowing owls exhibit high site fidelity and usually nest in abandoned burrows of ground squirrels or pocket gophers. Site managers have stated that the Study Area is disked annually for fire prevention; the Study Area had been recently disked prior to the July 7, 2015 site visit. Prior to disking, grasses are likely greater than 12 inches in height and unsuitable for burrowing owl. Based on grass height and regular disking, burrowing owl is unlikely to occur within the Study Area during the nesting season (February 1 through August 31). However, ground squirrels and suitable burrows were observed within 20 feet of the Study Area. Therefore, burrowing owl could occupy areas immediately adjacent to the Study Area, and could forage within the Study Area. If disking of the site were to cease, ground squirrels may create new burrows and the Study Area could potentially have greater value for owls. Burrowing owl was assessed as having a moderate potential for occurrence though was not observed during either the May or July site visits, which occurred during the species' nesting period.

Northern harrier (*Circus cyaneus*). CDFW Species of Special Concern. The northern harrier occurs as a resident and winter visitor in open habitats throughout most of California, including freshwater and brackish marshes, grasslands and fields, agricultural areas, and deserts. Harriers typically nest in treeless areas within patches of dense, relatively tall, vegetation, the composition of which is highly variable; nests are placed on the ground and often located near water or within wetlands (Davis and Niemala 2008). Harriers are birds of prey and subsist on a variety of small mammals and other vertebrates. The Study Area is disked annually for fire prevention, which reduces the potential for northern harrier to nest within the Study Area. However, the northern harrier may nest adjacent to the Study Area and forage in grassland portions of the Study Area. Northern harrier was assessed as having a moderate potential for occurrence.

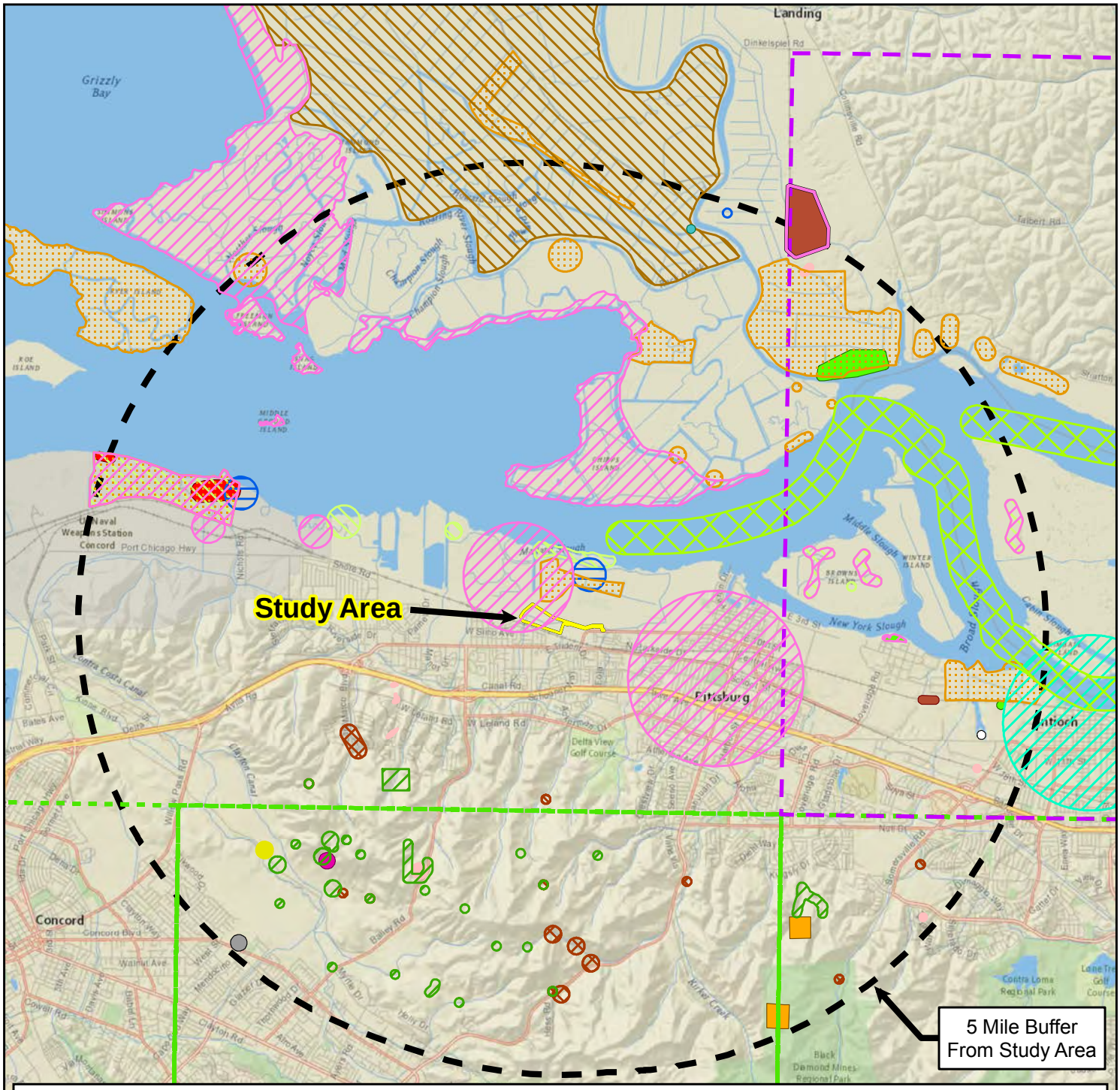

Figure 5. Special Status Wildlife Species Occurrences in the Vicinity of the Study Area

NRG Solar
Contra Costa County, California

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Map Prepared Date: 8/25/2015
Map Prepared By: MRochelle
Base Source: National Geographic
Data Source(s): CNDDB (August 2015)

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White-tailed kite (*Elanus leucurus*). CDFW Fully Protected Species. The white-tailed kite is resident in open to semi-open habitats throughout the lower elevations of California, including grasslands, savannahs, woodlands, agricultural areas and wetlands. Vegetative structure and prey availability seem to be more important habitat elements than associations with specific plants or vegetative communities (Dunk 1995). Nests are constructed mostly of twigs and placed in trees, often at habitat edges. Nest trees are highly variable in size, structure, and immediate surroundings, ranging from shrubs to trees greater than 150 feet tall (Dunk 1995). This species preys upon a variety of small mammals, as well as other vertebrates and invertebrates. Trees within the Study Area provide suitable nesting habitat for white-tailed kite, and the grasslands provide suitable foraging habitat for this species. Habitat within the Study Area is suitable for white-tailed kite, although this species was not observed during either the May or July site visits. White-tailed kite was assessed as having a moderate potential for occurrence. However, preliminary project plans indicate that these areas will be avoided and buffered to prevent indirect or inadvertent impacts.

Loggerhead shrike (*Lanius ludovicianus*). CDFW Species of Special Concern, USFWS Bird of Conservation Concern. The loggerhead shrike is a year-round resident and winter visitor in lowlands and foothills throughout California. This species is associated with open country with short vegetation and scattered trees, shrubs, fences, utility lines and/or other perches. Although they are songbirds, shrikes are predatory and forage on a variety of invertebrates and small vertebrates. Captured prey items are often impaled for storage purposes on suitable substrates, including thorns or spikes on vegetation, and barbed wire fences. This species nests in trees and large shrubs; nests are usually placed three to ten feet off the ground (Shuford and Gardali 2008). Although outside the Project's limit of disturbance, trees and shrubs within the Study Area provide suitable nesting habitat for white-tailed kite, and grasslands provide suitable foraging habitat for this species. Habitat within the Study Area is suitable for loggerhead shrike, although this species was not observed during either the May or July site visits. Loggerhead shrike was assessed as having a moderate potential for occurrence. However, preliminary project plans indicate that these areas will be avoided and buffered to prevent indirect or inadvertent impacts.

Tricolored blackbird (*Agelaius tricolor*). CDFW Species of Special Concern, USFWS Bird of Conservation Concern. The tricolored blackbird is a locally common resident in the Central Valley and along coastal California. Most tricolored blackbirds reside in the Central Valley March through August, then moving into the Sacramento-San Joaquin Delta and east to Merced County and coastal locations during winter (Meese et al. 2014). This species breeds adjacent to fresh water, preferring emergent wetlands with tall, dense cattails or tules, thickets of willow or blackberry, and/or tall herbs. Flooded agricultural fields with dense vegetation are also used (Shuford and Gardali 2008). This species is highly colonial; nesting habitat must be large enough to support a minimum of 30 pairs, and colonies are commonly substantially larger (up to thousands of pairs). The tricolored blackbird often intermingles with other blackbird species during the non-breeding season. Although tricolored blackbirds typically prefer to nest in dense vegetation, the tules and willows within the seasonal stream and riparian habitats may provide suitable nesting habitat. Tricolored blackbird was assessed to have a moderate potential to occur within the Study Area, though this species was not observed during the May or July site visits, which occurred during this species' nesting period. However, preliminary project plans indicate that these areas will be avoided and buffered to prevent indirect or inadvertent impacts.

Western red bat (*Lasiurus blossevillii*), CDFW Species of Special Concern, WBWG High Priority. This species is highly migratory and broadly distributed, ranging from southern Canada through much of the western United States. They are typically solitary, roosting primarily in the foliage of trees or shrubs. Day roosts are commonly in edge habitats adjacent to streams or open fields, in orchards, and sometimes in urban areas possibly in association with riparian habitat (particularly willows, cottonwoods, and sycamores; WBWG 2015). It is believed that males and females maintain different distributions during pupping, where females take advantage of warmer inland areas and males occur in cooler areas along the coast. The trees within the seasonal stream and riparian habitats in the Study Area may provide suitable roost habitat for western red bat, and this species has a moderate potential to occur in these areas. However, preliminary project plans indicate that these areas will be avoided and buffered to prevent indirect or inadvertent impacts.

Selected wildlife species unlikely to occur within the Study Area but documented in the vicinity

Several special-status wildlife species are of note due to their documented occurrence in the vicinity of Suisun Bay, although they were determined to be unlikely to occur within the Study Area or to have no potential for occurrence. These species include SMHM,, California black rail (CBR; *Laterallus jamaicensis*), Pacific pond turtle (*Actinemys marmorata*), and Suisun song sparrow (*Melospiza melodia maxillaris*). These species are discussed below. The site is outside the historic range of the California Ridgway's (clapper) rail (*Rallus obsoletus [longirostris).*

The SMHM is a relatively small rodent found only in suitable salt- and brackish-marsh habitat in the greater San Francisco Bay, San Pablo Bay, and Suisun Bay areas. The habitat associated with the SMHM is pickleweed-dominated vegetation and mixed vegetation including native and non-native salt- and brackish-marsh species (Sustaita et al. 2005, Sustaita et al. 2011). The SMHM prefers deep, dense vegetative cover at least 6 inches in height (Fisler 1965; Shellhammer et al. 1982; USFWS 2013). Persistent, low numbers of the SMHM are also found in grasslands with suitable cover at least 330 feet (100 meters) from the edge of marsh habitat, though their presence in grasslands may be seasonal and opportunistic (USFWS 2013). The Study Area does not contain brackish marsh or seasonal wetland habitats capable of supporting the SMHM. Seasonal wetlands and waters located within the Study Area and within 400 feet north of the Study Area were assessed for potential SMHM habitat, and were found not to contain vegetation of suitable height or cover to be occupied by SMHM (vegetation in this area is generally sparse and less than 6 inches in height due to regular vegetation management). Although the extreme northwest corner of the Study Area is 200 feet from potentially suitable marsh habitat, the gravel maintenance road separating the Study Area from the adjacent marshland is unvegetated and may act as a barrier to SMHM dispersal. In addition, the Study Area is mowed and/or disked, resulting in low vegetation (generally less than 6 inches in height) for most of the year. SMHM are unlikely to enter or occupy areas with low or no vegetation. Therefore, it is unlikely that the SMHM would occur within the Study Area, including the grasslands in the northwest portion of the Study Area closest to marsh habitats.

The CBR is the resident black subspecies that occurs in California coastal salt and brackish marshes from Bodega Bay to Morro Bay, with additional populations known from freshwater marshes near or in the northern Sierra Nevada foothills (Eddleman et al. 1994, Richmond et al. 2008). Black rails are extremely secretive and very difficult to glimpse or flush; identification typically relies on voice. Nests are placed on the ground in dense wetland vegetation. The

CBR is known to occur within the marsh habitat located north of the Study Area (CDFW 2015, WRA unpubl. data). The Study Area does not contain marsh habitat and the nearest suitable nesting habitat within the adjacent marsh is greater than 600 feet from the Study Area. Based upon distance from suitable nesting habitat, the Study Area does not have potential to create disturbance including noise disturbance during the nesting season for the CBR.

Pacific pond turtle is an obligate aquatic species. Although upland habitat is utilized for refuge during short dry periods, during winter, and for nesting, this species preferentially utilizes aquatic and riparian corridors for movement and dispersal. Females nest in suitable upland habitat away from water in the spring (Rathbun et al. 2002). The seasonal stream within the Study Area appears to remain dry for most of the year (Section 4.1.2), and there is no suitable freshwater habitat within 1,000 feet of the Study Area. No turtles were observed in the Study Area or adjacent drainages during the July 2015 site visit. It is unlikely Pacific pond turtle would occur within the Study Area, including during the nesting season.

Suisun song sparrow nests in tidal marsh vegetation and adjacent weedy vegetation on levees. The Study Area is greater than 200 feet from suitable nesting habitat and tidal marsh vegetation (coastal brackish marsh and possibly non-tidal brackish marsh, as shown on Figure 3). This subspecies of song sparrow does not nest in upland habitats beyond the immediate edge of marsh vegetation. Song sparrows observed within the Study Area are unlikely to be the Suisun song sparrow subspecies and it is unlikely the Suisun song sparrow subspecies would occur within the Study Area based upon distance from suitable habitat.

5.0 SUMMARY AND RECOMMENDATIONS

Three sensitive biological communities were identified within the Study Area. No special-status plant or wildlife species were observed within the Study Area, and none have a high potential for occurrence within the Study Area. Six special-status wildlife species have a moderate potential to occur within the Study Area; no special-status plant species have a moderate or high potential for occurrence. The following sections present recommendations for future studies and/or measures to avoid or reduce impacts to these sensitive habitats and species. Development constraints within the Study Area with regard to sensitive biological resources are depicted in Figure 6.

5.1 Biological Communities

As described in Section 4.1, three sensitive biological communities occur within the Study Area, including a seasonal stream, riparian/Section 1602 jurisdictional areas, and seasonal wetlands and waters. Preliminary plans indicate that these areas would be avoided by work activities related to the proposed Project. In addition, it is recommended that a buffer be maintained around these areas to prevent indirect impacts. Sensitive areas and recommended buffers are depicted in Figure 6. The three sensitive biological community types cover 6.48 acres within the Study Area; recommended no-work buffers cover an additional 12.25 acres within the Study Area (including some areas of overlap).

Study Area - 55.51 acres

Biological Constraints within the Study Area

Riparian/Section 1602 Jurisdictional Areas - 1.34 acres

Seasonal Stream - 4.59 acres

Seasonal Wetlands and Waters - 0.54 acre

30 ft. Wetland buffer - 1.06 acres within the Study Area

50 ft. Stream/Riparian buffer - 10.75 acres within the Study Area

328 ft. (100m) SMHM buffer - 0.44 acre within the Study Area

Biological Communites Offsite

Coastal Brackish Marsh (Potential SMHM Habitat)

Non-tidal Brackish Marsh (Potential SMHM Habitat)

Riparian/Section 1602 Jurisdictional Areas

Seasonal Stream

Seasonal Wetlands and Waters

Willow Pass Rd.

Willow Pass Rd.

Range Rd.

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Contra Costa County, California

Figure 6.

Potential Biological Constraints within the Study Area

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Map Prepared Date: 8/25/2015
Map Prepared By: MRochelle
Base Source: Contra Costa County 2014 Aerial
Data Source(s): WRA

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The recommended buffer for the seasonal stream and/or Section 1602 jurisdictional areas is 50 feet. This buffer would prevent work activities from disturbing soils, wildlife, or vegetation in and around the stream and riparian area. The buffer would also keep the project in compliance with County regulations protecting streams and trees described in Section 2.1.

The recommended buffer for the seasonal wetlands and waters is 30 feet. This distance should be adequate to prevent any indirect impacts to the wetlands caused by shading as a result of solar panels and related infrastructure that would be installed as a component of the Project. The buffer would also serve to prevent soil runoff into the wetlands from the limited soil disturbance that will occur as a component of the Project.

As depicted in Figure 6, a large portion of the Study Area does not contain sensitive biological communities or buffers, and the preliminary plans indicate that almost all work activities would occur within these areas.

One exception is the proposed entry road in the eastern portion of the Study Area. The road is in close proximity to the seasonal stream, and is overlapped by riparian/Section 1602 jurisdictional areas in some places; seasonal wetlands and waters come close to the road in other areas. It is recommended that all work along the proposed access road completely avoid these sensitive biological communities. However, it should be acceptable to work within the buffer area, since road improvements will include only limited impacts.

The following precautionary measures are recommended to avoid impacts:

- Do not perform any work in areas mapped as sensitive biological communities during both implementation and operational phases of the Project. If work is necessary within these areas, additional precautionary measures and/or federal and state regulatory permits may be required.
- A biologist should oversee placement of orange construction fencing to demarcate sensitive communities and their associated buffer zones to prevent entry into these areas.
- While vegetation removal is not anticipated, no vegetation within any the exclusion zone should be removed, including trimming without a Streambed Alteration Agreement (1602 permit).
- In areas where buffers cannot be avoided, e.g. the future alignment and/or improvement of the existing access road, pole placement, or other minor impact, a Stormwater Pollution Prevention Plan (SWPPP) and Best Management Practices (BMPs) are recommended to prevent accidental discharge of sediment or other materials into sensitive habitats. Additionally a biologist should be present during activities performed within any buffer zone.
- No work should occur within the SMHM buffer area. Although SMHM are not anticipated to occur in the Study Area, avoidance of this buffer area will ensure take of this species does not occur. It is assumed that this area can and will be avoided by Project activities. If work is necessary in this area, additional review and mitigation may be required.
- During implementation and operational phases of the Project, any access roads within buffer areas should be used for transit only or planned improvements; they should not be used for staging materials, parking or fueling vehicles, or other activities.

5.2 Special-Status Plant Species

As described in Section 4.2.1, the Project is unlikely or has no potential to impact special status plant species. Assuming that sensitive habitats will be completely avoided, and assuming that the precautionary measures outlined in Section 5.1 are followed, no additional precautionary measures should be necessary with regard to special-status plant species. However, if Project work does not proceed within 5 years, or if management activities change before work is initiated (e.g. if disking of the site is halted for more than 1 year), an additional survey for special-status plant species is recommended prior to the start of work.

5.3 Special-Status Wildlife Species

Of the 54 special-status wildlife species known to occur in the vicinity of the Study Area, only six were determined to have the potential to occur in the Study Area. Most of the species found in the review of background literature occur in habitats not found in the Study Area or the Study Area is out of the species' range. The lack of aquatic habitat within and in the vicinity of Study Area eliminates the potential for Pacific pond turtles to occur, including nesting pond turtles. Habitat suitability for grassland-associated species in the Study Area is reduced because of disking within site and adjacent development. The Study Area is also outside of disturbance buffers for marsh-related species, and no impacts are anticipated to marsh species such as CBR, and Suisun song sparrow. It is assumed that no work will occur within the SMHM buffer area shown in Figure 6 and, as such, no impacts are anticipated to SMHM.

<u>Burrowing Owl</u>

Habitat conditions within the Study Area reduce the potential for burrowing owl to occur within the Study Area during the nesting season (February 1 through August 1). However, burrowing owl has potential to occur within the Study Area during the non-nesting season and in adjacent habitats throughout the year. Burrows occupied by burrowing owl are protected in both the nesting and non-nesting seasons (CDFG 2012). The following measures are recommended to avoid impacts to burrowing owl.

- Pre-construction surveys shall be conducted within 14 days prior to initiation of construction activities.
    - o If an occupied burrow is observed within or adjacent to the Study Area during the nesting season (February 1 through August 31) and is determined to contain an active nest, then a buffer will be established surrounding the nest burrow by a qualified biologist dependent upon nest location, baseline disturbance levels, and in accordance with CDFW guidelines (CDFG 2012). No work will occur within the buffer until the nest is determined to be inactive by the biologist.
    - o If occupied burrows are observed within or adjacent to the Study Area during the non-nesting season (September 1 through January 31) or if an occupied burrow is determined to not be a nest burrow during the nesting season, then a buffer will be established surrounding the nest burrow by a qualified biologist

dependent upon location, baseline disturbance levels, and in accordance with CDFW guidelines (CDFG 2012).

- o If an occupied burrow cannot be avoided by Project activities (i.e., the burrow is within the limit of disturbance), a burrowing owl exclusion plan will be written and submitted to CDFW. The plan will be in accordance with CDFW guidelines and no exclusion activities will occur during the nesting season or until it has been determined all chicks have fledged.

- During Project activities, all pipes between 3 inches and 10 inches stored on-site shall be capped to prevent burrowing owl from establishing within the Study Area.

Special-Status and Non-Special-Status Nesting Birds

This assessment determined that four additional special-status bird species may use the Study Area or immediately adjacent habitats for breeding and foraging. The four special-status bird species in addition to burrowing owl discussed above are white-tailed kite, northern harrier, loggerhead shrike, and tricolored blackbird. In addition, active nests of most native birds are protected under the MBTA. No trees are to be removed during this Project. The following measures are recommended to avoid impacts to active nests of special-status and non-special-status bird species.

- It is recommended that Project activities be initiated during the non-nesting season (September 1 through January 31).
- If Project activities are initiated during the nesting season (February 1 through August 31), a pre-construction nesting bird survey shall be conducted within 14 days of ground disturbance to avoid disturbance to active nests, eggs, and/or young of ground-nesting birds.
    - o If active nests are observed, then a qualified biologist will establish a no-disturbance buffer surrounding the active nest to be determined by species and nest location. No work shall occur within the buffer until the biologist determines the nest is inactive. Standard buffers for raptors and other special status birds (including white-tailed kite, northern harrier, and loggerhead shrike) are typically 250 feet, while buffers for other common migratory birds is typically 50 feet. The biologist may reduce the no-disturbance buffer in consultation with CDFW, if topography or other site conditions warrant such a reduction.
    - o If Project activities are halted for more than 14 days within the nesting season, then nesting bird surveys shall be conducted within 14 days prior to re-initiation of Project activities.

Western Red Bat

Western red bat has potential to roost in trees within the seasonal stream and riparian habitats, though no maternity roost are likely to be present. The proposed Project does not include tree removal and is to avoid the stream and riparian habitats. Work in close proximity to the stream and riparian habitats will be buffered, and these buffers should prevent indirect impacts to species occurring within these sensitive areas. In the few places where work may be done within the buffers, the work is only expected to entail relatively brief and low-impact road improvements, using precautionary measures outlined in Section 5.1. Therefore, the proposed Project is not anticipated to result in impacts to western red bats or non-special-status roosting bats provided no tree removal or trimming occurs. In addition, the following precautionary measures are recommended to avoid impacts. If work is necessary within these areas, additional avoidance measures such as work windows or roost surveys may be required.

6.0 CONCLUSION

Based on the results of the site assessment, it is not anticipated that the Project will result in impacts to sensitive biological communities, special-status plant species, or special-status wildlife species, assuming that certain precautions are observed. No special-status plants were observed during the site visits, and none are expected to occur within the Study Area; accordingly, no avoidance measures for special-status plants are required. No special-status wildlife species were observed during the site visits. Six special-status wildlife species have a moderate potential to occur. Avoidance measures include nesting bird surveys and pre-construction burrowing owl surveys. Accordingly, all potential impacts to sensitive biological resources will be avoided for the proposed Project.

7.0 REFERENCES

Baldwin, BG, DH Goldman, DJ Keil, R Patterson, TJ Rosatti, and DH Wilken (eds.). 2012. The Jepson Manual: Vascular Plants of California, second edition. University of California Press, Berkeley, CA.

California Department of Fish and Game (CDFG). 1994. A Field Guide to Lake and Streambed Alteration Agreements, Sections 1600-1607, California Fish and Game Code. Environmental Services Division, Sacramento, CA.

California Department of Fish and Game (CDFG). 2010. List of Vegetation Alliances and Associations. Vegetation Classification and Mapping Program, Sacramento, CA.

California Department of Fish and Game (CDFG). 2012. Staff Report on Burrowing Owl Mitigation. State of California Natural Resources Agency, Department of Fish and Game.

California Department of Fish and Wildlife (CDFW). 2015. California Natural Diversity Database. Wildlife and Habitat Data Analysis Branch, Sacramento, CA.

California Native Plant Society (CNPS). 2015. Inventory of Rare and Endangered Plants of California. California Native Plant Society, Sacramento, California. Online at: http://www.rareplants.cnps.org; most recently accessed: July 2015.

Davis, JN and CA Niemala. 2008. Northern Harrier (*Circus cyaneus*). In: Shuford, WD and T Gardali, eds. 2008. California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.

Dunk, JR. 1995. White-tailed Kite (*Elanus leucurus*), The Birds of North America Online (A Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/178.

Eddleman, WR, RE Flores and M Legare. 1994. Black Rail (*Laterallus jamaicensis*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; The Birds of North America Online: http://bna.birds.cornell.edu/bna/species/123.

Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual. Department of the Army, Waterways Experiment Station, Vicksburg, Mississippi 39180-0631.

Fisler, GF. 1965. Adaptations and speciation in harvest mice of the marshes of San Francisco Bay. University of California Publications in Zoology 77: 1-108.

Glover, S. 2009. Breeding Bird Atlas of Contra Costa County. Mount Diablo Audubon Society, Walnut Creek, CA.

Google Earth. 2015. Aerial Imagery 1938-2014. Accessed: July-August 2015.

Harvey, T. E. 1988. Breeding biology of the California clapper rail in South San Francisco Bay. Transactions of the Western Section of the Wildlife Society 24: 98-104.

Harvey, T. E. 1980. A breeding season survey of the California clapper rail (*Rallus longirostns obsoletus*) in South San Francisco Bay. San Francisco Bay National Wildlife Refuge, Newark, California.

Holland, RF. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. Prepared for the California Department of Fish and Game, Sacramento, CA.

Jennings, MR. 2004. An Annotated Check List of Amphibians and Reptile Species of California and Adjacent Waters, third revised edition. California Department of Fish and Game, Sacramento, CA.

Jepson Flora Project (eds.). 2015. Jepson eFlora. Online at: http://ucjeps.berkeley.edu/IJM.html; most recently accessed July 2015.

Meese, RJ, EC Beedy and WJ Hamilton, III. 2014. Tricolored Blackbird (*Agelaius tricolor*), The Birds of North America Online (A Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/423.

Natural Resources Conservation Service (NRCS). 2010. Field Indicators of Hydric Soils in the United States, version 7.0. In cooperation with the National Technical Committee for Hydric Soils, Fort Worth, TX.

NatureServe. 2010. NatureServe Conservation Status. Available online at: http://explorer.natureserve.org/ranking.htm

Rathbun, GB, NJ Scott, Jr., and TG Murphey. 2002. Terrestrial habitat use by Pacific pond turtles in a Mediterranean climate. The Southwestern Naturalist 47: 225-235.

Richmond, O.M., J. Tecklin, and S.R. Beissinger. 2008. Distribution of California Black Rails in the Sierra Nevada Foothills. J. of Field Ornithology 79(4): 381-390.

Sawyer, J, T Keeler-Wolf and J Evens. 2009. A Manual of California Vegetation. California Native Plant Society, Berkeley, CA.

Shellhammer, H.S., Jackson, R., Davilla, W., Gilroy, A.M., Harvey, H.T., and Simons, L. 1982. Habitat Preferences of Salt Marsh Harvest Mice (*Reithrodontomys raviventris*). The Wasmann Journal of Biology. Vol: 40(1-2). pp. 102-144.

Shuford, WD, and T Gardali (eds). 2008. California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and CDFG, Sacramento.

Stebbins, RC. 2003. A Field Guide to Western Reptiles and Amphibians, third edition. The Peterson Field Guide Series, Houghton Mifflin Company, NY.

Sustaita, D, L Barthman-Thompson, P Quickert, L Patterson, and S Estrella. 2005. Annual Salt Marsh Harvest Mouse Demography and Habitat Use in Suisun Marsh Conservation Areas. Presentation at the CALFED Science Conference.

Sustaita, D, PF Quickert, L Patterson, L Barthman-Thompson, S Estrella. 2011. Salt Marsh Harvest Mouse Demography and Habitat Use in the Suisun Marsh, California. The Journal of Wildlife Management 75(6): 1498-1507.

U.S. Army Corps of Engineers (Corps). 2008. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region.

U.S. Department of Agriculture (USDA), Natural Resources Conservation Service. 2015. Web Soil Survey. Online at http://websoilsurvey.nrcs.usda.gov; most recently accessed: July 2015.

United States Fish and Wildlife Service (USFWS). 2013. Recovery Plan for Tidal Marsh Ecosystems of Northern and Central California. Sacramento, California. xviii + 605 pp.

U.S. Geological Survey (USGS). 1980. Honker Bay, California. 7.5-minute quadrangle topographic map. Originally published in 1953; photorevised in 1980.

Western Bat Working Group (WBWG). 2015. Species Accounts. Available online at: http://wbwg.org/western-bat-species/; Accessed July 2015

WRA, Inc. (WRA). 2005. Delineation of Potential Jurisdictional Wetlands and "Other Waters" Under Section 404 of the Clean Water Act Mirant Delta Facility, Pittsburg, Contra Costa County, California. 89pp. plus map.

WRA, Inc. (WRA). 2013. Wetland Delineation Data Sheets and Map ("Map of Section 404 Wetlands and Non-wetland Waters, GenOn/nrg Generating Station, Pittsburg, California"). 34pp. plus map.

Zeiner, DC, WF Laudenslayer, Jr., KE Mayer, and M White. 1990. California's Wildlife, Volume I-III: Amphibians and Reptiles, Birds, Mammals. California Statewide Wildlife Habitat Relationships System, California Department of Fish and Game, Sacramento, CA.

APPENDIX A

LIST OF OBSERVED PLANT AND WILDLIFE SPECIES

Appendix A1. Wildlife species observed by WRA biologists during the May 28, 2015 and July 7, 2015 site visits at the NRG Solar Array Area.

SCIENTIFIC NAME	COMMON NAME
Birds	
Mimus polyglottos	northern mockingbird
Haemorhous mexicanus	house finch
Corvus brachyrhynchos	American crow
Corvus corax	common raven
Falco sparverius	American kestrel
Buteo jamaicensis	red-tailed hawk
Zenaida macroura	mourning dove
Tachycineta thalassina	violet-green swallow
Hirundo rustica	barn swallow
Cathartes aura	turkey vulture
Sayornis nigricans	black phoebe
Aphelocoma californica	western scrub jay
Agelaius phoeniceus	red-winged blackbird
Geothlypis trichas	common yellowthroat
Charadrius vociferus	killdeer
Melospiza melodia	song sparrow
Mammals	
Thomomys bottae	Botta's pocket gopher (mounds)
Lepus californicus	black-tailed jackrabbit
Otospermophilus beecheyi	California ground squirrel
Canis latrans	coyote (scat)

Appendix A2. Plant species observed by WRA biologists during the May 28, 2015 and July 7, 2015 site visits at the NRG Solar Array Area.

Family	Scientific name	Common name	Life form	Origin	Rare Status[1]	Invasive Status[2]	Wetland indicator[3]
Apiaceae	*Foeniculum vulgare*	fennel	forb	non-native	--	high	NL
Arecaceae	*Washingtonia robusta*	Washington fan palm	tree	non-native	--	moderate	NL
Asclepiadaceae	*Asclepias fascicularis*	Mexican milkweed	forb	native	--	--	FAC
Asteraceae	*Baccharis pilularis ssp. pilularis*	coyote brush	shrub	native	--	--	NL
Asteraceae	*Carduus pycnocephalus*	Italian thistle	forb	non-native	--	moderate	NL
Asteraceae	*Centaurea solstitialis*	yellow star thistle	forb	non-native	--	high	NL
Asteraceae	*Centromadia pungens ssp. pungens*	common tarweed	forb	native	--	--	FAC
Asteraceae	*Cynara cardunculus ssp. cardunculus*	artichoke	forb	non-native	--	moderate	NL
Asteraceae	*Dittrichia graveolens*	stinkwort	forb	non-native	--	moderate	NL
Asteraceae	*Erigeron canadensis*	Canadian horseweed	forb	native	--	--	FACU
Asteraceae	*Helminthotheca echioides*	bristly ox-tongue	forb	non-native	--	limited	FACU
Asteraceae	*Lactuca serriola*	prickly lettuce	forb	non-native	--	assessed	FACU
Asteraceae	*Silybum marianum*	milk thistle	forb	non-native	--	limited	NL
Asteraceae	*Sonchus asper ssp. asper*	prickly sow thistle	forb	non-native	--	assessed	FAC
Asteraceae	*Sonchus oleraceus*	common sow thistle	forb	non-native	--	--	NL
Asteraceae	*Xanthium strumarium*	rough cocklebur	forb	native	--	--	FAC
Boraginaceae	*Amsinckia intermedia*	common fiddleneck	forb	native	--	--	NL
Brassicaceae	*Brassica nigra*	black mustard	forb	non-native	--	moderate	NL
Brassicaceae	*Lepidium latifolium*	perennial pepperweed	forb	non-native	--	high	FAC
Brassicaceae	*Raphanus sativus*	wild radish	forb	non-native	--	limited	NL
Caryophyllaceae	*Spergularia rubra*	red sandspurry	forb	non-native	--	--	FAC
Chenopodiaceae	*Atriplex prostrata*	fat hen	forb	non-native	--	--	FACW
Chenopodiaceae	*Bassia hyssopifolia*	fivehook bassia	forb	non-native	--	limited	FAC
Chenopodiaceae	*Beta vulgaris*	common beet	forb	non-native	--	--	NL
Chenopodiaceae	*Salicornia pacifica*	Pacific swampfire	forb	native	--	--	OBL
Convolvulaceae	*Convolvulus arvensis*	field bindweed	forb	non-native	--	assessed	NL
Convolvulaceae	*Cressa truxillensis*	spreading alkaliweed	forb	native	--	--	FACW
Cyperaceae	*Cyperus eragrostis*	tall flatsedge	graminoid	native	--	--	FACW
Cyperaceae	*Schoenoplectus californicus*	California bulrush	graminoid	native	--	--	OBL
Euphorbiaceae	*Croton setiger*	turkey mullein	forb	native	--	--	NL
Fabaceae	*Medicago polymorpha*	bur medic	forb	non-native	--	limited	FACU
Fabaceae	*Melilotus indicus*	yellow annual sweetclover	forb	non-native	--	--	FACU
Fabaceae	*Vicia sativa ssp. sativa*	pubescent common vetch	forb	non-native	--	--	FACU

Family	Scientific name	Common name	Life form	Origin	Rare Status[1]	Invasive Status[2]	Wetland indicator[3]
Fabaceae	*Vicia villosa ssp. villosa*	winter vetch	forb	non-native	--	assessed	NL
Fagaceae	*Quercus agrifolia var. agrifolia*	coast live oak	tree	native	--	--	NL
Frankeniaceae	*Frankenia salina*	alkali heath	forb	native	--	--	FACW
Geraniaceae	*Erodium botrys*	longbeak stork's bill	forb	non-native	--	assessed	FACU
Geraniaceae	*Erodium cicutarium*	redstem stork's bill	forb	non-native	--	limited	NL
Geraniaceae	*Erodium moschatum*	musky stork's bill	forb	non-native	--	assessed	NL
Geraniaceae	*Geranium dissectum*	cutleaf geranium	forb	non-native	--	moderate	NL
Malvaceae	*Malva nicaeensis*	bull mallow	forb	non-native	--	--	NL
Malvaceae	*Malvella leprosa*	alkali mallow	forb	native	--	--	FACU
Moraceae	*Ficus carica*	common fig	tree	non-native	--	moderate	FACU
Oleaceae	*Fraxinus latifolia*	Oregon ash	tree	native	--	--	FACW
Onagraceae	*Epilobium ciliatum ssp. ciliatum*	fringed willowherb	forb	native	--	--	FACW
Poaceae	*Avena barbata*	slender oat	graminoid	non-native	--	moderate	NL
Poaceae	*Avena fatua*	wild oat	graminoid	non-native	--	moderate	NL
Poaceae	*Bromus diandrus*	ripgut brome	graminoid	non-native	--	moderate	NL
Poaceae	*Bromus hordeaceus*	soft chess	graminoid	non-native	--	limited	FACU
Poaceae	*Crypsis schoenoides*	swamp pricklegrass	graminoid	non-native	--	--	OBL
Poaceae	*Cynodon dactylon*	Bermuda grass	graminoid	non-native	--	moderate	FACU
Poaceae	*Distichlis spicata*	saltgrass	graminoid	native	--	--	FAC
Poaceae	*Festuca arundinacea*	tall fescue	graminoid	non-native	--	moderate	FACU
Poaceae	*Festuca bromoides*	brome fescue	graminoid	non-native	--	--	FAC
Poaceae	*Festuca perennis*	Italian rye grass	graminoid	non-native	--	moderate	FAC
Poaceae	*Hordeum marinum ssp. gussoneanum*	Mediterranean barley	graminoid	non-native	--	moderate	FAC
Poaceae	*Hordeum murinum ssp. murinum*	wall barley	graminoid	non-native	--	moderate	FACU
Poaceae	*Paspalum dilatatum*	dallis grass	graminoid	non-native	--	--	FAC
Poaceae	*Bromus madritensis ssp. madritensis*	foxtail chess	graminoid	non-native	--	--	NL
Poaceae	*Piptatherum miliaceum*	smilo grass	graminoid	non-native	--	--	NL
Polygonaceae	*Polygonum aviculare ssp. aviculare*	dooryard knotweed	forb	non-native	--	--	FACW
Polygonaceae	*Rumex crispus*	curly dock	forb	non-native	--	limited	FAC
Portulacaceae	*Portulaca oleracea*	little hogweed	forb	non-native	--	--	FAC
Primulaceae	*Anagallis arvensis*	scarlet pimpernel	forb	non-native	--	--	NL
Rosaceae	*Rosa californica*	California rose	shrub	native	--	--	FAC
Rosaceae	*Rubus armeniacus*	Himalayan blackberry	shrub	non-native	--	high	FACU
Rubiaceae	*Galium aparine*	common bedstraw	forb	native	--	--	FACU

Family	Scientific name	Common name	Life form	Origin	Rare Status[1]	Invasive Status[2]	Wetland indicator[3]
Salicaceae	*Populus fremontii ssp. fremontii*	Fremont cottonwood	tree	native	--	--	FACW
Salicaceae	*Salix exigua var. exigua*	sandbar willow	tree	native	--	--	FACW
Salicaceae	*Salix laevigata*	red willow	tree	native	--	--	FACW
Salicaceae	*Salix lasiolepis*	arroyo willow	tree	native	--	--	FACW
Solanaceae	*Solanum furcatum*	forked nightshade	forb	non-native	--	--	NL
Typhaceae	*Typha latifolia*	common cattail	forb	native	--	--	OBL
Vitaceae	*Vitis californica*	California wild grape	vine	native	--	--	FACU

All species identified using the *Jepson Manual, 2nd Edition* (Baldwin et al. 2012) and *A Flora of Sonoma County* (Best et al. 1996); nomenclature follows Baldwin et al. 2012

[1]Rare Status: The CNPS Inventory of Rare and Endangered Plants (CNPS 2014)

FE:	Federal Endangered
FT:	Federal Threatened
SE:	State Endangered
ST:	State Threatened
SR:	State Rare
Rank 1A:	Plants presumed extirpated in California and either rare or extinct elsewhere
Rank 1B:	Plants rare, threatened, or endangered in California and elsewhere
Rank 2A:	Plants presumed extirpated in California, but more common elsewhere
Rank 2B:	Plants rare, threatened, or endangered in California, but more common elsewhere
Rank 3:	Plants about which we need more information – a review list
Rank 4:	Plants of limited distribution – a watch list

[2]Invasive Status: California Invasive Plant Inventory (Cal-IPC 2006)

High:	Severe ecological impacts; high rates of dispersal and establishment; most are widely distributed ecologically.
Moderate:	Substantial and apparent ecological impacts; moderate-high rates of dispersal, establishment dependent on disturbance; limited-moderate distribution ecologically
Limited:	Minor or not well documented ecological impacts; low-moderate rate of invasiveness; limited distribution ecologically
Assessed:	Assessed by Cal-IPC and determined to not be an existing current threat

[3]Wetland Status: National List of Plant Species that Occur in Wetlands, California – Region 10 (Lichvar 2012)

OBL:	Almost always a hydrophyte, rarely in uplands
FACW:	Usually a hydrophyte, but occasionally found in uplands
FAC:	Commonly either a hydrophyte or non-hydrophyte
FACU:	Occasionally a hydrophyte, but usually found in uplands
UPL:	Rarely a hydrophyte, almost always in uplands
NL:	Rarely a hydrophyte, almost always in uplands
NI:	No information; not factored during wetland delineation

APPENDIX B

POTENTIAL FOR SPECIAL-STATUS SPECIES TO OCCUR IN THE STUDY AREA

Appendix B. Potential for special-status species to occur in the Study Area. List compiled from the California Department of Fish and Wildlife (CDFW) Natural Diversity Database (CDFW 2015), U.S. Fish and Wildlife Service (USFWS) Species Lists, and California Native Plant Society (CNPS) Electronic Inventory search of the Antioch North, Antioch South, Birds Landing, Clayton, Denverton, Fairfield South, Honker Bay, Vine Hill, and Walnut Creek USGS 7.5-minute quadrangles and a review of other CDFW lists and publications (Jennings and Hayes 1994, Zeiner et al. 1990).

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Mammals				
pallid bat *Antrozous pallidus*	SSC, WBWG	Found in deserts, grasslands, shrublands, woodlands, and forests. Most common in open, forages along river channels. Roost sites include crevices in rocky outcrops and cliffs, caves, mines, trees and various human structures such as bridges, barns, and human-occupied as well as vacant buildings. Roosts must protect bats from high temperatures. Very sensitive to disturbance of roosting sites.	**Unlikely.** Tree roosting sites are typically large cavities in conifer snags (ponderosa or redwoods) or boles in large oak trees (WBWG 2015). These roost site characteristics and tree species are not present within or near the Study Area.	No further recommendations.
Townsend's big-eared bat *Corynorhinus townsendii*	SC, SSC, WBWG	This species is associated with a wide variety of habitats from deserts to mid-elevation mixed coniferous-deciduous forest. Females form maternity colonies in buildings, caves and mines and males roost singly or in small groups. Foraging occurs in open forest habitats where they glean moths from vegetation.	**Unlikely.** No caves, mines, or other suitable roost habitat is present in the Study Area or vicinity.	No further recommendations.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
western red bat *Lasiurus blossevillii*	SSC, WBWG	This species is typically solitary, roosting primarily in the foliage of trees or shrubs. Day roosts are commonly in edge habitats adjacent to streams or open fields, in orchards, and sometimes in urban areas. There may be an association with intact riparian habitat (particularly willows, cottonwoods, and sycamores).	**Moderate Potential.** Potential roost habitat is present in trees within the seasonal stream and immediately adjacent areas within the Study Area. The proposed Project avoids these habitats.	Avoidance of stream and riparian habitats, or additional avoidance measures (e.g. work windows).
big free-tailed bat *Nyctinomops macrotis*	SSC, WBWG	Occurs rarely in low-lying arid areas. Requires high cliffs or rocky outcrops for roosting sites.	**Unlikely.** No cliffs or other suitable roost habitat are present in the Study Area or vicinity.	No further recommendations.
salt-marsh harvest mouse *Reithrodontomys raviventris*	FE, SE, CFP, RP	Found only in the saline emergent wetlands of San Francisco Bay and its tributaries. Pickleweed is the primary habitat. Does not burrow, but builds loosely organized nests and requires higher areas for flood escape.	**Unlikely.** Suitable marsh habitat is greater than 200 feet from the Study Area, and no marsh habitat is present within the Study Area.	Avoid areas within 328 feet of suitable marsh habitat.
San Joaquin kit fox *Vulpes macrotis mutica*	FE, ST	Annual grasslands or grassy open stages with scattered shrubby vegetation. Need loose-textured sandy soils for burrowing, and suitable prey base.	**No Potential.** The Study Area is outside of the species' known range.	No further recommendations.
American badger *Taxidea taxus*	SSC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Requires friable soils and open, uncultivated ground. Preys on burrowing rodents.	**No Potential.** The Study Area is a disked and maintained Valley and Foothill Grasslands with no connectivity to occupied or suitable habitats.	No further recommendations.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Birds				
golden eagle *Aquila chrysaetos*	CFP, BCC	Occurs year-round in rolling foothills, mountain areas, sage-juniper flats, and deserts. Cliff-walled canyons provide nesting habitat in most parts of range; also nests in large trees, usually within otherwise open areas.	**Unlikely.** The Study Area and vicinity do not contain suitable nesting habitat. This species may be observed foraging or flying over the Study Area.	No further recommendations.
burrowing owl *Athene cunicularia*	SSC, BCC	Year-round resident and winter visitor. Occurs in open, dry grasslands and scrub habitats with low-growing vegetation, perches and abundant mammal burrows. Preys upon insects and small vertebrates. Nests and roosts in old mammal burrows, most commonly those of ground squirrels.	**Moderate Potential.** The Study Area is predominantly a disked grassland with few suitable burrows and tall vegetation in undisked habitat. However, suitable burrows are present in immediately adjacent habitats.	Pre-construction survey within 14 days of ground disturbance regardless of time of year.
short-eared owl *Asio flammeus*	SSC	Occurs year-round, but primarily as a winter visitor; breeding very restricted in most of California. Found in open, treeless areas (e.g., marshes, grasslands) with elevated sites for foraging perches and dense herbaceous vegetation for roosting and nesting. Preys mostly on small mammals, particularly voles.	**Unlikely.** This species is rare in the region, and mowing and disking regimes within the Study Area reduce the potential for nesting by this species.	No further recommendations.
long-eared owl *Asio otus*	SSC	Occurs year-round in California. Nests in trees in a variety of woodland habitats, including oak and riparian, as well as tree groves. Requires adjacent open land with rodents for foraging, and the presence of old nests of larger birds (hawks, crows, magpies) for breeding.	**Unlikely.** This species is extremely rare in the region, and has not been documented in the vicinity (Glover 2009, CDFW 2015). In addition, no trees are to be removed by the proposed Project.	No further recommendations.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
ferruginous hawk *Buteo regalis*	BCC	Winter visitor to open habitats, including grasslands, sagebrush flats, scrub, and low foothills surrounding valleys. Preys on mammals. Does not breed in California.	**Unlikely.** The species does not breed in the region, but may be observed foraging within the Study Area during the non-breeding season.	No further recommendations.
Swainson's hawk *Buteo swainsoni*	ST	Summer resident in California's Central Valley and limited portions of interior southern California. Nests in tree groves and isolated trees in riparian and agricultural areas, including near buildings. Forages in grasslands and scrub habitats as well as agricultural fields, especially alfalfa.	**Unlikely.** This species is typically found further east in the Delta and Central Valley. The nearest nesting occurrence is over 5 miles from the Study Area.	No further recommendations.
northern harrier *Circus cyaneus*	SSC	Year-round resident and winter visitor. Found in open habitats including grasslands, prairies, marshes and agricultural areas. Nests on the ground in dense vegetation, typically near water or otherwise moist areas. Preys on small vertebrates.	**Moderate Potential.** Grasslands within the Study Area provide suitable foraging habitat; however, mowing and disking regimes within the Study Area reduce the potential for nesting by this species.	Pre-construction survey within 14 days of ground disturbance during the nesting season (February 1-August 31).
white-tailed kite *Elanus leucurus*	CFP	Year-round resident in coastal and valley lowlands with scattered trees and large shrubs, including grasslands, marshes and agricultural areas. Nests in trees, of which the type and setting are highly variable. Preys on small mammals and other vertebrates.	**Moderate Potential.** Trees within the seasonal stream and riparian habitat adjacent to the Study Area provide suitable nesting habitat.	Pre-construction survey within 14 days of ground disturbance during the nesting season (February 1-August 31).

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
loggerhead shrike *Lanius ludovicianus*	SSC, BCC	Year-round resident in open woodland, grassland, savannah and scrub. Prefers areas with sparse shrubs, trees, posts, and other suitable perches for foraging. Preys upon large insects and small vertebrates. Nests are well-concealed in densely-foliaged shrubs or trees.	**Moderate Potential.** Trees and shrubs within a portion of the seasonal stream and riparian habitat adjacent to the Study Area provide suitable nesting habitat.	Pre-construction survey within 14 days of ground disturbance during the nesting season (February 1-August 31).
California black rail *Laterallus jamaicensis coturniculus*	ST, CFP, BCC	Resident in marshes (saline to freshwater) with dense vegetation within four inches of the ground. Prefers larger, undisturbed marshes close to a major water source. Extremely secretive and cryptic.	**Unlikely.** The Study Area does not contain suitable marsh habitat for this species. The nearest suitable marsh habitat is greater than 200 feet from the Study Area.	No further recommendations.
California Ridgway's (clapper) rail *Rallus obsoletus obsoletus*	FE, SE, CFP	Year-round resident in tidal marshes of the San Francisco Bay estuary. Requires tidal sloughs and intertidal mud flats for foraging, and dense marsh vegetation for nesting and cover. Typical habitat features abundant growth of cordgrass and pickleweed. Feeds primarily on molluscs and crustaceans.	**No Potential.** Salt marsh and wetland habitats are not present in the Study Area. The nearest suitable salt marsh habitat is over 700 feet from the Study Area.	No further recommendations.
California least tern *Sternula antillarum browni*	FE, SE, CFP	(Nesting colony) nests along the coast from San Francisco Bay south to northern Baja California. Breeding colonies in San Francisco Bay found in abandoned salt ponds and along estuarine shores. Colonial breeder on barren or sparsely vegetated, flat substrates near water.	**Unlikely.** The Study Area does not contain nesting or foraging habitat for this species. The nearest nesting habitat is greater than 0.5 mile northeast.	No further recommendations.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
bank swallow *Riparia riparia*	ST	Migrant in riparian and other lowland habitats in western California. Colonial nester in riparian areas with vertical cliffs and bands with fine-textured or fine-textured sandy soils near streams, rivers, lakes or the ocean. Currently is known to breed in Siskiyou, Shasta, and Lassen Cos., and along Sacramento River from Shasta Co. south to Yolo Co.	**No Potential.** The Study Area and vicinity do not contain suitable riparian bank habitat for this species. The Study Area is outside the known breeding range.	No further recommendations.
San Francisco (saltmarsh) common yellowthroat *Geothlypis trichas sinuosa*	SSC, BCC	Resident of the San Francisco Bay region, in fresh and salt water marshes. Requires thick, continuous cover down to water surface for foraging; tall grasses, tule patches, willows for nesting.	**No Potential.** This subspecies does not occur east of the Carquinez Strait (Shuford and Gardali 2008). Although common yellowthroat was observed during a site visit, the Study Area is out of the range of the protected subspecies.	No further recommendations.
Grasshopper sparrow *Ammodramus savannarum*	SSC	Summer resident. Breeds in open grasslands, generally with low- to moderate-height grasses and scattered shrubs. Well-hidden nests are placed on the ground.	**Unlikely.** The Study Area contains tall grasses or is disked, and is not near suitable habitat for this species. This species is known in the open space preserves to the south of Pittsburg.	No further recommendations.
song sparrow, Modesto population *Melospiza melodia*	SSC, BCC	Restricted to the Sacramento and extreme northern San Joaquin Valleys from Colusa County south to Stanislaus County. Associated with woody riparian habitat and freshwater marshes.	**No Potential.** The Study Area is outside of the species' known range.	No further recommendations.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Suisun song sparrow *Melospiza melodia maxillaris*	BCC, SSC	Resident of brackish-water marshes surrounding Suisun Bay. Inhabits cattails, tules and other sedges, and *Salicornia*; also known to frequent tangles bordering sloughs.	**Unlikely.** The Study Area does not contain suitable marsh habitat or vegetation for nesting. Although this subspecies is known in nearby marshes, it is unlikely to nest or forage in the Study Area.	No further recommendations.
San Pablo song sparrow *Melospiza melodia samuelis*	BCC, SSC	Resident of salt marshes along the north side of San Francisco and San Pablo Bays. Inhabits tidal sloughs in the *Salicornia* marshes; nests in Grindelia bordering slough channels.	**No Potential.** The Study Area is outside of the subspecies known range.	No further recommendations.
tricolored blackbird *Agelaius tricolor*	SSC, BCC	Nearly endemic to California, where it is most numerous in the Central Valley and vicinity. Highly colonial, nesting in dense aggregations over or near freshwater in emergent growth or riparian thickets. Also uses flooded agricultural fields. Abundant insect prey near breeding areas essential.	**Moderate Potential.** The Study Area contains tules and willows within the seasonal stream and riparian habitats. These habitats may provide suitable nesting habitat.	Avoid the seasonal stream and riparian areas; Pre-construction survey within 14 days of ground disturbance during the nesting season (February 1-August 31).
Reptiles and Amphibians				
California tiger salamander *Ambystoma californiense*	FT, ST	Inhabits grassland, oak woodland, ruderal and seasonal pool habitats. Seasonal ponds and vernal pools are crucial to breeding. Adults utilize mammal burrows as estivation habitat.	**No Potential.** No suitable breeding habitat is present in the Study Area or vicinity. The nearest occupied location is over 2 miles south and is separated from the Study Area by urban barriers.	No further recommendations.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
California red-legged frog *Rana draytonii*	FT, SSC	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. Requires 11 to 20 weeks of permanent water for larval development. Must have access to estivation habitat.	**No Potential.** No suitable breeding habitat is present in the Study Area or vicinity. The nearest occupied location is over 2 miles south and is separated from the Study Area by urban barriers.	No further recommendations.
Alameda whipsnake *Masticophis lateralis euryxanthus*	FT, ST	Inhabits chaparral and foothill-hardwood habitats in the eastern Bay Area. Prefers south-facing slopes and ravines with rock outcroppings where shrubs form a vegetative mosaic with oak trees and grasses and small mammal burrows provide basking and refuge.	**No Potential.** The Study Area is outside of the species' known range and does not contain suitable habitat.	No further recommendations.
giant gartersnake *Thamnophis gigas*	FT, ST	Prefers freshwater marsh and low gradient streams. Has adapted to drainage canals and irrigation ditches. This is the most aquatic of the garter snakes in California.	**No Potential.** The Study Area is outside of the species' known range and does not contain suitable habitat.	No further recommendations.
Pacific pond turtle *Actinemys marmorata*	SSC	A thoroughly aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches with aquatic vegetation. Require basking sites such as partially submerged logs, vegetation mats, or open mud banks, and suitable upland habitat (sandy banks or grassy open fields) for egg-laying.	**Unlikely.** The Study Area and vicinity do not contain suitable aquatic habitat capable of supporting pond turtle. In addition, the substantial distance to suitable aquatic habitat results in a reduced likelihood for turtles to use the Study Area for nesting.	No further recommendations.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Blainville's (coast) horned lizard *Phrynosoma blainvillii (coronatum)*	SSC	Frequents a wide variety of habitats, most common in lowlands along sandy washes with scattered low bushes. Prefers friable, rocky, or shallow sandy soils for burial; open areas for sunning; bushes for cover; and an abundant supply of ants and other insects.	**Unlikely.** The Study Area and vicinity do not contain suitable habitat. Annual disking also reduces potential for this species to occur.	No further recommendations.
Silvery legless lizard *Anniella pulchra pulchra*	SSC	Sandy or loose loamy soils under sparse vegetation. Soil moisture is essential. They prefer soils with a high moisture content.	**Unlikely.** The Study Area and vicinity do not contain suitable sandy habitat. Annual disking also reduces potential for this species to occur.	No further recommendations.
Fishes				
green sturgeon *Acipenser medirostris*	FT, SSC (NMFS)	Anadromous. Spawns in the Sacramento and Klamath River systems. Lingering transients may be found throughout the San Francisco Bay Estuary, particularly juveniles.	**No Potential.** The Study Area does not contain aquatic habitat.	No further recommendations.
Delta smelt *Hypomesus transpacificus*	FT, SE, RP	Lives in the Sacramento-San Joaquin estuary in areas where salt and freshwater systems meet. Occurs seasonally in Suisun Bay, Carquinez Strait and San Pablo Bay. Seldom found at salinities > 10 ppt; most often at salinities < 2 ppt.	**No Potential.** The Study Area does not contain aquatic habitat.	No further recommendations.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Sacramento perch *Archoplites interruptus*	SSC	Historically found in the sloughs, slow-moving rivers, and lakes of the Central Valley. Prefer warm water. Aquatic vegetation is essential for young. Tolerate wide range of physio-chemical water conditions.	**No Potential.** The Study Area does not contain aquatic habitat.	No further recommendations.
steelhead - Central Valley ESU *Oncorhynchus mykiss irideus*	FT (NMFS)	The Central Valley ESU includes all naturally spawned populations (and their progeny) in the Sacramento and San Joaquin Rivers and their tributaries, excluding San Francisco and San Pablo bays and their tributaries. Preferred spawning habitat for steelhead is in cool to cold perennial streams with high dissolved oxygen levels and fast flowing water.	**No Potential.** The Study Area does not contain aquatic habitat.	No further recommendations.
Chinook salmon - Central Valley Spring-run ESU *Oncorhynchus tshawytscha*	FT,ST	Occurs in the Feather River and the Sacramento River and its tributaries, including Butte, Mill, Deer, Antelope and Beegum Creeks. Adults enter the Sacramento River from late March through September. Adults migrate upstream to spawn in cool, clear, well-oxygenated streams from mid-August through early October.	**No Potential.** The Study Area does not contain aquatic habitat.	No further recommendations.
Chinook salmon - Central Valley Fall/late fall-run ESU *Oncorhynchus tshawytscha*	SSC, RP, FS sensitive (NMFS)	Populations spawning in the Sacramento and San Joaquin Rivers and their tributaries. Adults migrate upstream to spawn in cool, clear, well-oxygenated streams.	**No Potential.** The Study Area does not contain aquatic habitat.	No further recommendations.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Chinook salmon - Sacramento River Winter-run ESU *Oncorhynchus tshawytscha*	FE, SE, RP, (NMFS)	Occurs in the Sacramento River below Keswick Dam. Spawns in the Sacramento River but not in tributary streams. Adults migrate upstream to spawn in cool, clear, well-oxygenated streams.	**No Potential.** The Study Area does not contain aquatic habitat.	No further recommendations.
Sacramento splittail *Pogonichthys macrolepidotus*	SSC, RP	Endemic to the lakes and rivers of the Central Valley, but now confined to the Sacramento Delta, Suisun Bay and associated marshes. Occurs in slow moving river sections and dead end sloughs. Requires flooded vegetation for spawning and foraging for young.	**No Potential.** The Study Area does not contain aquatic or marsh habitats and is not contiguous with marsh habitat.	No further recommendations.
longfin smelt *Spirinchus thaleichthys*	ST, SSC, RP	Euryhaline, nektonic and anadromous. Found in open waters of estuaries, mostly in middle or bottom of water column. Prefer salinities of 15 to 30 ppt, but can be found in completely freshwater to almost pure seawater.	**No Potential.** The Study Area does not contain aquatic or estuarine habitats.	No further recommendations.
Invertebrates				
vernal pool fairy shrimp *Branchinecta lynchi*	FT, SSI	Endemic to the grasslands of the Central Valley, central coast mountains, and south coast mountains, in astatic rain-filled pools. Inhabit small, clear-water sandstone-depression pools and grassed swale, earth slump, or basalt-flow depression pools.	**Unlikely.** The Study Area and vicinity do not contain vernal pool habitat.	No further recommendations.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
vernal pool tadpole shrimp *Lepidurus packardi*	FE, SSI	Inhabits vernal pools and swales in the Sacramento Valley containing clear to highly turbid water. Pools commonly found in grass bottomed swales of unplowed grasslands. Some pools are mud-bottomed and highly turbid.	**No Potential.** The Study Area and vicinity do not contain vernal pool habitat.	No further recommendations.
vernal pool andrenid bee *Andrena blennospermatis*	SSI	A solitary, ground-nesting bee found in upland areas near vernal pools. Its host plant is *Blennosperma* spp. and does not forage far from the host plant. Range is Contra Costa, El Dorado, Lake, Placer, Sacramento, San Joaquin, Solano, Sonoma, Tehama, and Yolo counties.	**Unlikely.** The Study Area is outside the known range of this species and does not contain vernal pool habitat or host plant species.	No further recommendations.
Antioch andrenid bee *Perdita scitula antiochensis*	SSI	Antioch dunes. Visits flowers of *Eriogonum*, *Gutierrezia californica*, *Heterotheca grandiflora*, *Lessingia glandulifera*.	**Unlikely.** The Study Area is outside the known range of this species and does not contain dune habitat or associated flowering plants.	No further recommendations.
Antioch Dunes halcitid bee *Sphecodogastra antiochensis*	SSI	A rare, specialist foraging bee with a very restricted distribution—the Antioch Dunes of Contra Costa County, California.	**Unlikely.** The Study Area is outside the known range of this species and does not contain dune habitat.	No further recommendations.
Antioch specid wasp *Philanthus nasalis*	SSI	Known only from the Antioch dunes of the Sacramento-San Joaquin Delta area, in the vicinity of Antioch, Contra Costa County. Also collected in Santa Cruz County.	**Unlikely.** The Study Area is outside the known range of this species and does not contain dune habitat.	No further recommendations.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Antioch Dunes anthicid beetle *Anthicus antiochensis*	SSI	*Anthicus antiochensis* is apparently extirpated from the type locality at Antioch Dunes (CDFW 2015). Stabilization of the dunes in the 1950s may have eliminated suitable habitat.It is also known at several sites along the Sacramento River in Glenn, Tehama, Shasta, and Solano Counties, and from one site at Nicolas on the Feather River in Sutter County.	**No Potential.** The Study Area is outside the known range of this species and does not contain dune habitat.	No further recommendations.
molestan blister beetle *Lytta molesta*	SSI	Inhabits the Central Valley of California, from Contra Costa to Kern and Tulare counties. Lytta molesta has been collected on *Lupinus, Trifolium wormskioldii* in dried vernal pools, and on *Eriodium*. Appears to be absent in nearby areas with nonvernal pool vegetation, but a lack of detailed collecting information makes it unclear whether the species is always or usually associated with dried vernal pools.	**No Potential.** The Study Area is outside the known range of this species and does not contain vernal pool habitat.	No further recommendations.
Antioch efferian robberfly *Efferia antiochi*	SSI	Known only from Antioch, Fresno, and Scout Island in the San Joaquin River.	**No Potential.** The Study Area is outside the known range of this species.	No further recommendations.
Lange's metalmark *Apodemia mormo langei*	FE, SSI	Inhabits stabilized dunes along the San Joaquin River. Endemic to Antioch Dunes, Contra Costa County. Primary host plant is *Eriogonum nudum* var. *auriculatum*; feeds on nectar of other wildflowers, as well as host plant.	**No Potential.** The Study Area does not contain dune habitat or the primary host plant. Study Area is outside of the known range of this species.	No further recommendations.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
San Bruno elfin butterfly *Callophrys mossii bayensis*	FE, SSI	Limited to the vicinity of San Bruno Mountain, San Mateo County. Colonies are located on in rocky outcrops and cliffs in coastal scrub habitat on steep, north-facing slopes within the fog belt. Species range is tied to the distribution of the larval host plant, *Sedum spathulifolium*.	**No Potential.** The Study Area does not contain the larval host plant or suitable habitat of the host plant. Study Area is outside of the known range of this species.	No further recommendations.
San Joaquin dune beetle *Coelus gracilis*	SSI	Inhabits fossil dunes along the western edge of San Joaquin Valley; extirpated from Antioch Dunes (type locality). Inhabits sites containing sandy substrates.	**No Potential.** The occurrence of this species previously recorded in the vicinity of the Study Area is considered extirpated (CDFW 2015).	No further recommendations.
Plants				
slender silver moss *Anomobryum julaceum*	Rank 4.2	Broadleafed upland forest, lower montane coniferous forest, north coast coniferous forest/damp rock and soil on outcrops, usually on roadcuts. Elevation ranges from 330 to 3280 feet (100 to 1000 meters).	**No potential.** Typical habitat is not present within the Study Area; species is known from higher elevations.	No further recommendations.
soft bird's-beak *Chloropyron molle* ssp. *molle*	FE, SR, Rank 1B.2	Marshes and swamps (coastal salt). Elevation ranges from 0 to 10 feet (0 to 3 meters). Blooms July-November.	**Unlikely.** Wetlands within the Study Area are fresh water to brackish, are disturbed, and do not represent typical habitat for this species.	No further recommendations.
Delta tule pea *Lathyrus jepsonii* var. *jepsonii*	Rank 1B.2	Marshes and swamps (freshwater and brackish). Elevation ranges from 0 to 20 feet (0 to 5 meters). Blooms May-July (August), (September).	**Unlikely.** Wetlands within the Study Area are disturbed, mostly isolated from Suisun Bay, and do not represent typical habitat for this species.	No further recommendations.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Suisun Marsh aster *Symphyotrichum lentum*	Rank 1B.2	Marshes and swamps (brackish and freshwater). Elevation ranges from 0 to 10 feet (0 to 3 meters). Blooms May-November.	**Unlikely.** Wetlands within the Study Area are disturbed, mostly isolated from Suisun Bay, and do not represent typical habitat for this species.	No further recommendations.
Bolander's Water Hemlock *Cicuta maculata* var. *bolanderi*	Rank 2B.1	Marshes and swamps, coastal, fresh or brackish water. Elevation ranges from 0 to 660 feet (0 to 200 meters). Blooms July-September.	**Unlikely.** Wetlands within the Study Area are disturbed, mostly isolated from Suisun Bay, and do not represent typical habitat for this species.	No further recommendations.
Delta mudwort *Limosella australis*	Rank 2B.1	Marshes and swamps (freshwater or brackish), riparian scrub/usually mud banks. Elevation ranges from 0 to 10 feet (0 to 3 meters). Blooms May-August.	**Unlikely.** Wetlands within the Study Area are disturbed, mostly isolated from Suisun Bay, and do not represent typical habitat for this species.	No further recommendations.
dwarf Downingia *Downingia pusilla*	Rank 2B.2	Valley and foothill grassland (mesic), vernal pools. Elevation ranges from 0 to 1460 feet (1 to 445 meters). Blooms March-May.	**Unlikely.** Vernal pools are not present; wetlands within the Study Area are disturbed, and do not represent typical habitat for this species.	No further recommendations.
Ferris' goldfields *Lasthenia ferrisiae*	Rank 4.2	Vernal pools (alkaline, clay). Elevation ranges from 70 to 2300 feet (20 to 700 meters). Blooms February-May.	**No potential.** Vernal pools are not present within the Study Area; species is known from higher elevations.	No further recommendations.
Lobb's aquatic buttercup *Ranunculus lobbii*	Rank 4.2	Cismontane woodland, north coast coniferous forest, valley and foothill grassland, vernal pools/mesic. Elevation ranges from 50 to 1540 feet (15 to 470 meters). Blooms February-May.	**Unlikely.** Wetlands within the Study Area are disturbed and do not represent typical habitat for this species; species known from higher elevations.	No further recommendations.
small spikerush *Eleocharis parvula*	Rank 4.3	Marshes and swamps. Elevation ranges from 0 to 9910 feet (1 to 3020 meters). Blooms (April), June-August (September).	**Unlikely.** Wetlands within the Study Area are disturbed and do not represent typical habitat for this species.	No further recommendations.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Tehama Navarretia *Navarretia heterandra*	Rank 4.3	Valley and foothill grassland (mesic), vernal pools. Elevation ranges from 100 to 3310 feet (30 to 1010 meters). Blooms April-June.	**No potential.** Wetlands within the Study Area are disturbed and do not represent typical habitat for this species; species known from higher elevations.	No further recommendations.
Mason's Lilaeopsis *Lilaeopsis masonii*	SR, Rank 1B.1	Marshes and swamps (brackish or freshwater), riparian scrub. Elevation ranges from 0 to 30 feet (0 to 10 meters). Blooms April-November.	**Unlikely.** Wetlands within the Study Area are disturbed, mostly isolated from Suisun Bay, and do not represent typical habitat for this species.	No further recommendations.
Mt. Diablo cottonweed *Micropus amphibolus*	Rank 3.2	Broadleafed upland forest, chaparral, cismontane woodland, valley and foothill grassland/rocky. Elevation ranges from 150 to 2710 feet (45 to 825 meters). Blooms March-May.	**No Potential.** Typical habitat is not present within the Study Area; species is known from higher elevations than the Study Area.	No further recommendations.
California Androsace *Androsace elongata* ssp *acuta*	Rank 4.2	Chaparral, cismontane woodland, coastal scrub, meadows and seeps, pinyon and juniper woodland, valley and foothill grassland. Elevation ranges from 490 to 3940 feet (150 to 1200 meters). Blooms March-June.	**No Potential.** Typical habitat is not present within the Study Area; species is known from higher elevations than the Study Area.	No further recommendations.
phlox-leaf serpentine bedstraw *Galium andrewsii* ssp. *gatense*	Rank 4.2	Chaparral, cismontane woodland, lower montane coniferous forest/serpentine, rocky. Elevation ranges from 490 to 4760 feet (150 to 1450 meters). Blooms April-July.	**No Potential.** Typical habitat is not present within the Study Area; species is known from higher elevations than the Study Area.	No further recommendations.
adobe Navarretia *Navarretia nigelliformis* ssp *nigelliformis*	Rank 4.2	Valley and foothill grassland vernally mesic, vernal pools sometimes/clay, sometimes serpentine. Elevation ranges from 330 to 3280 feet (100 to 1000 meters). Blooms April-June.	**No Potential.** Typical habitat is not present within the Study Area; species is known from higher elevations than the Study Area.	No further recommendations.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Oakland star-tulip *Calochortus umbellatus*	Rank 4.2	Broadleafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest, valley and foothill grassland/often serpentine. Elevation ranges from 330 to 2300 feet (100 to 700 meters). Blooms March-May.	**No Potential.** Typical habitat is not present within the Study Area; species is known from higher elevations than the Study Area.	No further recommendations.
serpentine Collomia *Collomia diversifolia*	Rank 4.3	Chaparral, cismontane woodland/ serpentine, rocky or gravelly. Elevation ranges from 980 to 1970 feet (300 to 600 meters). Blooms May-June.	**No Potential.** Typical habitat is not present within the Study Area; species is known from higher elevations than the Study Area.	No further recommendations.
Jepson's woolly sunflower *Eriophyllum jepsonii*	Rank 4.3	Chaparral, cismontane woodland, coastal scrub/sometimes serpentine. Elevation ranges from 660 to 3360 feet (200 to 1025 meters). Blooms April-June.	**No Potential.** Typical habitat is not present within the Study Area; species is known from higher elevations than the Study Area.	No further recommendations.
Hall's bush-mallow *Malacothamnus hallii*	Rank 1B.2	Chaparral, coastal scrub. Elevation ranges from 30 to 2490 feet (10 to 760 meters). Blooms May-September (October).	**Unlikely.** Typical habitat is not present within the Study Area; species is known from higher elevations than the Study Area.	No further recommendations.
chaparral ragwort *Senecio aphanactis*	Rank 2B.2	Chaparral, cismontane woodland, coastal scrub/sometimes alkaline. Elevation ranges from 50 to 2620 feet (15 to 800 meters). Blooms January-April.	**No Potential.** Typical habitat is not present within the Study Area; species is known from higher elevations than the Study Area.	No further recommendations.
little mousetail *Myosurus minimus* ssp. *apus*	Rank 3.1	Valley and foothill grassland, vernal pools (alkaline). Elevation ranges from 70 to 2100 feet (20 to 640 meters). Blooms March-June.	**Unlikely.** Typical habitat is not present within the Study Area; species is known from higher elevations than the Study Area.	No further recommendations.
sweet marsh ragwort *Senecio hydrophiloides*	Rank 4.2	Lower montane coniferous forest, meadows and seeps/mesic. Elevation ranges from 0 to 9190 feet (0 to 2800 meters). Blooms May-August.	**No Potential.** Typical habitat is not present within the Study Area.	No further recommendations.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Contra Costa wallflower *Erysimum capitatum* var. *angustatum*	FE, SE, Rank 1B.1	Inland dunes. Elevation ranges from 10 to 70 feet (3 to 20 meters). Blooms March-July.	**Unlikely.** Typical dune habitat is not present within the Study Area.	No further recommendations.
Antioch Dunes evening-primrose *Oenothera deltoides* ssp. *howellii*	FE, SE, Rank 1B.1	Inland dunes. Elevation ranges from 0 to 100 feet (0 to 30 meters). Blooms March-September.	**Unlikely.** Typical dune habitat is not present within the Study Area.	No further recommendations.
big tarplant *Blepharizonia plumosa*	Rank 1B.1	Valley and foothill grassland/usually clay. Elevation ranges from 100 to 1660 feet (30 to 505 meters). Blooms July-October.	**Unlikely.** Typical habitat is not present within the Study Area; species is known from higher elevations than the Study Area.	No further recommendations.
round-leaved filaree *California macrophylla*	Rank 1B.1	Cismontane woodland, valley and foothill grassland/clay. Elevation ranges from 50 to 3940 feet (15 to 1200 meters). Blooms March-May.	**Unlikely.** Typical habitat is not present within the Study Area; species is known from higher elevations than the Study Area.	No further recommendations.
showy golden madia *Madia radiata*	Rank 1B.1	Cismontane woodland, valley and foothill grassland. Elevation ranges from 80 to 3990 feet (25 to 1215 meters). Blooms March-May.	**Unlikely.** Typical habitat is not present within the Study Area; species is known from higher elevations than the Study Area.	No further recommendations.
alkali milk-vetch *Astragalus tener* var *tener*	Rank 1B.2	Playas, valley and foothill grassland (adobe clay), vernal pools/alkaline. Elevation ranges from 0 to 200 feet (1 to 60 meters). Blooms March-June.	**Unlikely.** Vernal pools are not present; wetlands within the Study Area are disturbed, and do not represent typical habitat for this species.	No further recommendations.
San Joaquin spearscale *Extriplex joaquinana*	Rank 1B.2	Valley and foothill grassland (alkaline, clay). Elevation ranges from 0 to 3200 feet (0 to 975 meters). Blooms April-October.	**Unlikely.** Grassland portions of the Study Area largely consist of fill soil and have an ongoing history of disturbance such as disking, making this species unlikely to occur.	No further recommendations.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
woolly-headed Lessingia *Lessingia hololeuca*	Rank 3	Broadleafed upland forest, coastal scrub, lower montane coniferous forest, valley and foothill grassland/clay, serpentine. Elevation ranges from 50 to 1000 feet (15 to 305 meters). Blooms June-October.	**Unlikely.** Typical habitat is not present within the Study Area; species is known from higher elevations than the Study Area.	No further recommendations.
crownscale *Atriplex coronata* var. *coronata*	Rank 4.2	Chenopod scrub, valley and foothill grassland, vernal pools/alkaline, often clay. Elevation ranges from 0 to 1940 feet (1 to 590 meters). Blooms March-October.	**Unlikely.** Grassland portions of the Study Area largely consist of fill soil and have an ongoing history of disturbance such as disking, making this species unlikely to occur. Vernal pools are not present.	No further recommendations.
Brewer's Calandrinia *Calandrinia breweri*	Rank 4.2	Chaparral, coastal scrub/sandy or loamy, disturbed sites and burns. Elevation ranges from 30 to 4000 feet (10 to 1220 meters). Blooms March-June.	**Unlikely.** Typical habitat is not present within the Study Area; species is known from higher elevations than the Study Area.	No further recommendations.
johnny-nip *Castellija ambigua* var. *ambigua*	Rank 4.2	Coastal bluff scrub, coastal prairie, coastal scrub, marshes and swamps, valley and foothill grassland, vernal pools margins. Elevation ranges from 0 to 1430 feet (0 to 435 meters). Blooms March-August.	**Unlikely.** Wetlands and grasslands within the Study Area are disturbed and do not represent typical habitat for this species. Vernal pools are not present.	No further recommendations.
Parry's rough tarplant *Centromadia parryi* spp. *rudis*	Rank 4.2	Valley and foothill grassland, vernal pools/alkaline, vernally mesic, seeps, sometimes roadsides. Elevation ranges from 0 to 330 feet (0 to 100 meters). Blooms May-October.	**Unlikely.** Wetlands and grasslands within the Study Area are disturbed and do not represent typical habitat for this species. Vernal pools are not present.	No further recommendations.
small-flowered morning-glory *Convolvulus simulans*	Rank 4.2	Chaparral (openings), coastal scrub, valley and foothill grassland/clay, serpentine seeps. Elevation ranges from 100 to 2300 feet (30 to 700 meters). Blooms March-July.	**Unlikely.** Typical habitat is not present within the Study Area; species is known from higher elevations than the Study Area.	No further recommendations.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
stinkbells *Fritillaria agrestis*	Rank 4.2	Chaparral, cismontane woodland, pinyon and juniper woodland, valley and foothill grassland/clay, sometimes serpentine. Elevation ranges from 30 to 5100 feet (10 to 1555 meters). Blooms March-June.	**Unlikely.** Typical habitat is not present within the Study Area; species is known from higher elevations than the Study Area.	No further recommendations.
coast rockcress *Arabis blepharophylla*	Rank 4.3	Broadleafed upland forest, coastal bluff scrub, coastal prairie, coastal scrub/rocky. Elevation ranges from 10 to 3610 feet (3 to 1100 meters). Blooms February-May.	**No Potential.** The Study Area does not contain potential habitat for this species.	No further recommendations.
large-flowered fiddleneck *Amsinckia grandiflora*	FE, SE, Rank 1B.1	Cismontane woodland, valley and foothill grassland. Elevation ranges from 900 to 1800 feet (275 to 550 meters). Blooms April-May.	**Unlikely.** Typical habitat is not present within the Study Area; species is known from higher elevations than the Study Area.	No further recommendations.
bent-flowered fiddleneck *Amsinckia lunaris*	Rank 1B.2	Coastal bluff scrub, cismontane woodland, valley and foothill grassland. Elevation ranges from 10 to 1640 feet (3 to 500 meters). Blooms March-June.	**Unlikely.** Typical habitat is not present within the Study Area.	No further recommendations.
Mt. Diablo manzanita *Arctostaphylos auriculata*	Rank 1B.3	Chaparral (sandstone), cismontane woodland. Elevation ranges from 440 to 2130 feet (135 to 650 meters). Blooms January-March.	**No Potential.** The Study Area does not contain potential habitat for this species.	No further recommendations.
Contra Costa manzanita *Arctostaphylos manzanita* ssp. *laevigata*	Rank 1B.2	Chaparral (rocky). Elevation ranges from 1410 to 3610 feet (430 to 1100 meters). Blooms January-March (April).	**No Potential.** The Study Area does not contain potential habitat for this species.	No further recommendations.
heartscale *Atriplex cordulata* var. *cordulata*	Rank 1B.2	Chenopod scrub, meadows and seeps, valley and foothill grassland (sandy)/saline or alkaline. Elevation ranges from 0 to 1840 feet (0 to 560 meters). Blooms April-October.	**Unlikely.** Wetlands and grasslands within the Study Area are disturbed and do not represent typical habitat for this species. Vernal pools are not present.	No further recommendations.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
brittlescale *Atriplex depressa*	Rank 1B.2	Chenopod scrub, meadows and seeps, playas, valley and foothill grassland, vernal pools/alkaline, clay. Elevation ranges from 0 to 1050 feet (1 to 320 meters). Blooms April-October.	**Unlikely.** Wetlands and grasslands within the Study Area are disturbed and do not represent typical habitat for this species. Vernal pools are not present.	No further recommendations.
vernal pool smallscale *Atriplex persistens*	Rank 1B.2	Vernal pools (alkaline). Elevation ranges from 30 to 380 feet (10 to 115 meters). Blooms June-October.	**Unlikely.** Wetlands and grasslands within the Study Area are disturbed and do not represent typical habitat for this species. Vernal pools are not present.	No further recommendations.
Mt. Diablo fairy-lantern *Calochortus pulchellus*	Rank 1B.2	Chaparral, cismontane woodland, riparian woodland, valley and foothill grassland. Elevation ranges from 100 to 2760 feet (30 to 840 meters). Blooms April-June.	**Unlikely.** Typical habitat is not present within the Study Area; species is known from higher elevations than the Study Area.	No further recommendations.
chaparral harebell *Campanula exigua*	Rank 1B.2	Chaparral (rocky, usually serpentine). Elevation ranges from 900 to 4100 feet (275 to 1250 meters). Blooms May-June.	**No Potential.** The Study Area does not contain potential habitat for this species.	No further recommendations.
Congdon's tarplant *Centromadia parryi* ssp. *congdonii*	Rank 1B.1	Valley and foothill grassland (alkaline). Elevation ranges from 0 to 750 feet (0 to 230 meters). Blooms May-October (November).	**Unlikely.** Grassland portions of the Study Area largely consist of fill soil and have an ongoing history of disturbance such as disking, making this species unlikely to occur.	No further recommendations.
pappose tarplant *Centromadia parryi* ssp. *parryi*	Rank 1B.2	Chaparral, coastal prairie, meadows and seeps, marshes and swamps (coastal salt), valley and foothill grassland (vernally mesic)/often alkaline. Elevation ranges from 0 to 1380 feet (0 to 420 meters). Blooms May-November.	**Unlikely.** Wetlands and grasslands within the Study Area are disturbed and do not represent typical habitat for this species.	No further recommendations.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
hispid bird's-beak *Chloropyron molle ssp. hispidum*	Rank 1B.1	Meadows and seeps, playas, valley and foothill grassland/alkaline. Elevation ranges from 0 to 510 feet (1 to 155 meters). Blooms June-September.	**Unlikely.** Wetlands and grasslands within the Study Area are disturbed and do not represent typical habitat for this species.	No further recommendations.
Suisun thistle *Cirsium hydrophilum* var. *hydrophilum*	FE, Rank 1B.1	Marshes and swamps (salt). Elevation ranges from 0 to 0 feet (0 to 1 meters). Blooms June-September.	**Unlikely.** Wetlands within the Study Area are disturbed, mostly isolated from Suisun Bay, and do not represent typical habitat for this species.	No further recommendations.
Mt. Diablo bird's-beak *Cordylanthus nidularius*	SR, Rank 1B.1	Chaparral (serpentine). Elevation ranges from 1970 to 2620 feet (600 to 800 meters). Blooms June-August.	**No Potential.** The Study Area does not contain potential habitat for this species.	No further recommendations.
Hoover's cryptantha *Cryptantha hooveri*	Rank 1A	Inland dunes, valley and foothill grassland (sandy). Elevation ranges from 30 to 490 feet (9 to 150 meters). Blooms April-May.	**Unlikely.** Typical habitat is not present within the Study Area; species is known from higher elevations than the Study Area.	No further recommendations.
Hospital Canyon larkspur *Delphinium californicum* ssp. *interius*	Rank 1B.2	Chaparral (openings), cismontane woodland (mesic), coastal scrub. Elevation ranges from 640 to 3590 feet (195 to 1095 meters). Blooms April-June.	**No Potential.** The Study Area does not contain potential habitat for this species.	No further recommendations.
Lime Ridge Eriastrum *Eriastrum ertterae*	Rank 1B.1	Chaparral (openings or edges)/alkaline or semi-alkaline, sandy.. Elevation ranges from 660 to 950 feet (200 to 290 meters). Blooms June-July.	**No Potential.** The Study Area does not contain potential habitat for this species.	No further recommendations.
Antioch Dunes buckwheat *Eriogonum nudum* var. *psychicola*	Rank 1B.1	Inland dunes. Elevation ranges from 0 to 70 feet (0 to 20 meters). Blooms July-October.	**No Potential.** The Study Area does not contain potential habitat for this species.	No further recommendations.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Mt. Diablo buckwheat *Eriogonum truncatum*	Rank 1B.1	Chaparral, coastal scrub, valley and foothill grassland/sandy. Elevation ranges from 10 to 1150 feet (3 to 350 meters). Blooms April-September (November), (December).	**Unlikely.** Grassland portions of the Study Area largely consist of fill soil and have an ongoing history of disturbance such as disking, making this species unlikely to occur.	No further recommendations.
diamond-petaled California poppy *Eschscholzia rhombipetala*	Rank 1B.1	Valley and foothill grassland (alkaline, clay). Elevation ranges from 0 to 3200 feet (0 to 975 meters). Blooms March-April.	**Unlikely.** Grassland portions of the Study Area largely consist of fill soil and have an ongoing history of disturbance such as disking, making this species unlikely to occur.	No further recommendations.
fragrant fritillary *Fritillaria liliacea*	Rank 1B.2	Cismontane woodland, coastal prairie, coastal scrub, valley and foothill grassland/often serpentine. Elevation ranges from 10 to 1350 feet (3 to 410 meters). Blooms February-April.	**No Potential.** The Study Area does not contain potential habitat for this species.	No further recommendations.
Toren's grimmia *Grimmia torenii*	Rank 1B.3	Chaparral, cismontane woodland, lower montane coniferous forest/openings, rocky, boulder and rock walls, carbonate, volcanic. Elevation ranges from 1070 to 3810 feet (325 to 1160 meters).	**No Potential.** The Study Area does not contain potential habitat for this species.	No further recommendations.
Diablo Helianthella *Helianthella castanea*	Rank 1B.2	Broadleafed upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, valley and foothill grassland. Elevation ranges from 200 to 4270 feet (60 to 1300 meters). Blooms March-June.	**Unlikely.** Typical habitat is not present within the Study Area; species is known from higher elevations than the Study Area.	No further recommendations.
Brewer's western flax *Hesperolinon breweri*	Rank 1B.2	Chaparral, cismontane woodland, valley and foothill grassland/usually serpentine. Elevation ranges from 100 to 3100 feet (30 to 945 meters). Blooms May-July.	**No Potential.** The Study Area does not contain potential habitat for this species.	No further recommendations.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Carquinez goldenbush *Isocoma arguta*	Rank 1B.1	Valley and foothill grassland (alkaline). Elevation ranges from 0 to 70 feet (1 to 20 meters). Blooms August-December.	**Unlikely.** Grassland portions of the Study Area largely consist of fill soil and have an ongoing history of disturbance such as disking, making this species unlikely to occur. Nearest documented population is in a mima mound area, which is lacking in Study Area (CDFW 2015).	No further recommendations.
Contra Costa goldfields *Lasthenia conjugens*	FE, Rank 1B.1	Cismontane woodland, playas (alkaline), valley and foothill grassland, vernal pools/mesic. Elevation ranges from 0 to 1540 feet (0 to 470 meters). Blooms March-June.	**Unlikely.** Wetlands and grasslands within the Study Area are disturbed and do not represent typical habitat for this species.	No further recommendations.
Legenere *Legenere limosa*	Rank 1B.1	Vernal pools. Elevation ranges from 0 to 2890 feet (1 to 880 meters). Blooms April-June.	**Unlikely.** Vernal pools are not present; wetlands within the Study Area are disturbed, and do not represent typical habitat for this species.	No further recommendations.
marsh Microseris *Microseris paludosa*	Rank 1B.2	Closed-cone coniferous forest, cismontane woodland, coastal scrub, valley and foothill grassland. Elevation ranges from 20 to 980 feet (5 to 300 meters). Blooms April-June (July).	**Unlikely.** Typical habitat is not present within the Study Area; species is known from higher elevations than the Study Area.	No further recommendations.
woodland woolythreads *Monolopia gracilens*	Rank 1B.2	Broadleafed upland forest (openings), chaparral (openings), cismontane woodland, north coast coniferous forest (openings), valley and foothill grassland/serpentine. Elevation ranges from 330 to 3940 feet (100 to 1200 meters). Blooms (February), March-July.	**No Potential.** The Study Area does not contain potential habitat for this species.	No further recommendations.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Lime Ridge Navarretia *Navarretia gowenii*	Rank 1B.1	Chaparral. Elevation ranges from 590 to 1000 feet (180 to 305 meters). Blooms May-June.	**No Potential.** The Study Area does not contain potential habitat for this species.	No further recommendations.
Baker's Navarretia *Navarretia leucocephala* subsp.. *bakeri*	Rank 1B.1	Cismontane woodland, lower montane coniferous forest, meadows and seeps, valley and foothill grassland, vernal pools/mesic. Elevation ranges from 20 to 5710 feet (5 to 1740 meters). Blooms April-July.	**Unlikely.** Typical habitat is not present within the Study Area; There are no known populations of this species south of Suisun Bay (CDFW 2015).	No further recommendations.
shining Navarretia *Navarretia nigelliformis* ssp. *radians*	Rank 1B.2	Cismontane woodland, valley and foothill grassland, vernal pools/sometimes clay. Elevation ranges from 250 to 3280 feet (76 to 1000 meters). Blooms April-July.	**Unlikely.** Typical habitat is not present within the Study Area; species is known from higher elevations than the Study Area.	No further recommendations.
Colusa grass *Neostapfia colusana*	FT, SE, Rank 1B.1	Vernal pools (adobe, large). Elevation ranges from 20 to 660 feet (5 to 200 meters). Blooms May-August.	**Unlikely.** Vernal pools are not present; wetlands within the Study Area are disturbed, and do not represent typical habitat for this species.	No further recommendations.
Mt. Diablo Phacelia *Phacelia phaceliodies*	Rank 1B.2	Chaparral, cismontane woodland/rocky. Elevation ranges from 1640 to 4490 feet (500 to 1370 meters). Blooms April-May.	**No Potential.** The Study Area does not contain potential habitat for this species.	No further recommendations.
bearded popcorn-flower *Plagiobothrys hystriculus*	Rank 1B.1	Valley and foothill grassland (mesic), vernal pools margins/often vernal swales. Elevation ranges from 0 to 900 feet (0 to 274 meters). Blooms April-May.	**Unlikely.** Vernal pools are not present; wetlands within the Study Area are disturbed, and do not represent typical habitat for this species.	No further recommendations.
rock sanicle *Sanicula saxatilis*	SR, Rank 1B.2	Broadleaved upland forest, chaparral, valley and foothill grassland/rocky. Elevation ranges from 2030 to 3850 feet (620 to 1175 meters). Blooms April-May.	**No Potential.** The Study Area does not contain potential habitat for this species.	No further recommendations.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Keck's checkerbloom *Sidalcea keckii*	FE, Rank 1B.1	Cismontane woodland, valley and foothill grassland/serpentine, clay. Elevation ranges from 250 to 2130 feet (75 to 650 meters). Blooms April-May (June).	**No Potential.** The Study Area does not contain potential habitat for this species.	No further recommendations.
most beautiful jewel-flower *Streptanthus albidus* ssp. *peramoenus*	Rank 1B.2	Chaparral, cismontane woodland, valley and foothill grassland/serpentine. Elevation ranges from 310 to 3280 feet (95 to 1000 meters). Blooms (March), April-September (October).	**No Potential.** The Study Area does not contain potential habitat for this species.	No further recommendations.
Mt. Diablo jewel-flower *Streptanthus hispidus*	Rank 1B.3	Chaparral, valley and foothill grassland/rocky. Elevation ranges from 1200 to 3940 feet (365 to 1200 meters). Blooms March-June.	**No Potential.** The Study Area does not contain potential habitat for this species.	No further recommendations.
slender-leaved pondweed *Stuckenia filiformis* ssp. *alpina*	Rank 2B.2	Marshes and swamps (assorted shallow freshwater). Elevation ranges from 980 to 7050 feet (300 to 2150 meters). Blooms May-July.	**Unlikely.** Wetlands within the Study Area are disturbed and do not represent typical habitat for this species; species is known from higher elevations than the Study Area.	No further recommendations.
saline clover *Trifolium hydrophilum*	Rank 1B.2	Marshes and swamps, valley and foothill grassland (mesic, alkaline), vernal pools. Elevation ranges from 0 to 980 feet (0 to 300 meters). Blooms April-June.	**Unlikely.** Wetlands and grasslands within the Study Area are disturbed and do not represent typical habitat for this species.	No further recommendations.
coastal triquetrella *Triquetrella californica*	Rank 1B.2	Coastal bluff scrub, coastal scrub/soil. Elevation ranges from 30 to 330 feet (10 to 100 meters).	**No Potential.** The Study Area does not contain potential habitat for this species.	No further recommendations.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
caper-fruited Tropidocarpum *Tropidocarpum capperideum*	Rank 1B.1	Valley and foothill grassland (alkaline hills). Elevation ranges from 0 to 1490 feet (1 to 455 meters). Blooms March-April.	**Unlikely.** Grassland portions of the Study Area largely consist of fill soil and have an ongoing history of disturbance such as disking, making this species unlikely to occur. All locally-documented occurrences of this species are from very old collections or are known to be extirpated; the closest extant population is in Monterey County (CDFW 2015).	No further recommendations.
oval-leaved viburnum *Viburnum ellipticum*	Rank 2B.3	Chaparral, cismontane woodland, lower montane coniferous forest. Elevation ranges from 710 to 4590 feet (215 to 1400 meters). Blooms May-June.	**No Potential.** The Study Area does not contain potential habitat for this species.	No further recommendations.

*** Key to status codes:**

FE	Federal Endangered
FT	Federal Threatened
FD	Federal Delisted
FC	Federal Candidate
BCC	USFWS Birds of Conservation Concern
SE	State Endangered
ST	State Threatened
SC	State Candidate
SR	State Rare
SSC	CDFW Species of Special Concern
CFP	CDFW Fully Protected Animal
WL	CDFW Watch List
RP	Species included in a USFWS Recovery Plan or Draft Recovery Plan
NMFS	Species under jurisdiction of NMFS
RPR 1B	CNPS California Rare Plant Rank 1B: Rare, threatened or endangered in California and elsewhere
RPR 2	CNPS California Rare Plant Rank 2: Rare, threatened, or endangered in California, but more common elsewhere
RPR 3	CNPS California Rare Plant Rank 3: Potentially rare species for which CNPS needs more information (a review list)

APPENDIX C

SITE PHOTOGRAPHS

Top: Non-native annual grassland within the Study Area prior to disking on May 28, 2015.

Bottom: Non-native annual grassland within the Study Area following disking on July 7, 2015.

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Top: Seasonal stream and riparian/Section 1602 jurisdictional areas near the center of the Study Area, looking southwest.

Bottom: Seasonal stream and riparian/Section 1602 jurisdictional areas in the western portion of the Study Area, looking south.

Photographs taken July 7, 2015.

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Top: Areas mapped as “seasonal wetlands and waters” immediately north of the Study Area.
Bottom: Existing access road adjacent to stream and riparian habitat in the eastern portion of the Study Area.

Photographs taken July 7, 2015.

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APPENDIX D
NAHC AND NATIVE AMERICAN RESPONSES

9685 Research Drive
Irvine, CA 92618

949.727.9336 PHONE
949.727.7311 FAX

www.trcsolutions.com

July 23, 2015

Ms. Debbie Pilas-Treadway
Native American Heritage Commission
915 Capitol Mall, Room 364
Sacramento, CA 95814
Sent via Fax

Dear Ms. Pilas-Treadway,

TRC Solutions, Inc. has been retained by NRG to conduct a cultural study for a potential solar site. The project is located in Contra Costa County in the City of Pittsburg. The project is depicted on the attached United States Geological Survey (USGS) quadrangle map.

Quadrangle	Township	Range	Section
Honker Bay	2 North	1 West	12

Please conduct a search of the Sacred Lands Inventory to determine if these locations are within any identified Sacred Lands. Additionally, please forward a list of Native American tribes associated with these areas. Thank you for your time and help.

Respectfully,

Susan Underbrink

Susan Underbrink, M.A., RPA
Project Manager/Senior Archaeologist

Enclosures: USGS map

STATE OF CALIFORNIA Edmund G. Brown, Jr., Governor

NATIVE AMERICAN HERITAGE COMMISSION
915 CAPITOL MALL, ROOM 364
SACRAMENTO, CA 95814
(916) 653-6251
Fax (916) 657-5390

August 3, 2015

Susan Underbrink
TRC

VIA Fax: 949.727.7311
Number of Pages: 2

Re: Solar Site project, Contra Costa County

Dear Ms. Underbrink:

A search of the Native American Heritage Commission (NAHC) *Sacred Lands File* was completed for the area of potential project effect (APE) referenced above. Please note that the absence of specific site information in the *Sacred Lands File* does not indicate the absence of Native American traditional cultural places or cultural landscapes in any APE. While in this case, a search of the NAHC *Sacred Lands File* did not indicate the presence of any sites within the APE you provided, a Native American tribe or individual may be the only source for the presence of traditional cultural places. For that reason, enclosed is a list of Native American individuals/organizations who may have knowledge of traditional cultural places in your project area. This list should provide a starting place in locating any areas of potential adverse impact.

The NAHC makes no recommendation or preference of any single individual, or group over another. All of those on the list should be contacted, if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe or group. If a response has not been received within two weeks of notification, the NAHC requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact me at my email address: dpt_nahc@pacbell.net.

Sincerely,

Debbie Pilas-Treadway
Environmental Specialist III

Native American Contacts
Contra Costa County
August 3, 2015

Katherine Erolinda Perez
P.O. Box 717
Linden , CA 95236
canutes@verizon.net
(209) 887-3415

Ohlone/Costanoan
Northern Valley Yokuts
Bay Miwok

The Ohlone Indian Tribe
Andrew Galvan
P.O. Box 3152
Fremont , CA 94539
chochenyo@AOL.com
(510) 882-0527 Cell

(510) 687-9393 Fax

Ohlone/Costanoan
Bay Miwok
Plains Miwok
Patwin

Trina Marine Ruano Family
Ramona Garibay, Representative
30940 Watkins Street
Jnion City , CA 94587
soaprootmo@comcast.net
'510) 972-0645

Ohlone/Costanoan
Bay Miwok
Plains Miwok
Patwin

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed Solar Site project, Contra Costa County

9685 Research Drive
Irvine, CA 92618

949.727.9336 PHONE
949.727.7311 FAX

www.trcsolutions.com

September 24, 2015

The Ohlone Indian Tribe
Mr. Andrew Galvan
P.O. Box 3152
Fremont, CA 94539
Sent via email

Dear Mr. Galvan,

TRC Solutions, Inc. has been retained to conduct a cultural study for the NRG Solar project. The project is located in Contra Costa County. The project is depicted on the attached United States Geological Survey (USGS) quadrangle map.

Quadrangle	Township	Range	Section
Honker Bay	2 North	1 West	12

TRC is notifying Native American parties about the project and inquiring about any cultural sensitivity concerns you may have.

I would appreciate any input or concerns you may have about the project in writing so they may be addressed in a timely manner. If you have any questions or concerns regarding this project, please feel free to contact me at any time. Thank you for your time and help.

Respectfully,

Susan Underbrink

Susan Underbrink M.A., RPA
Archaeologist
sunderbrink@trcsolutions.com
(949) 727-7385 direct line

Enclosure: Project Location Map on USGS Honker Bay Quadrangle

9685 Research Drive
Irvine, CA 92618

949.727.9336 PHONE
949.727.7311 FAX

www.trcsolutions.com

September 24, 2015

Trina Marine Ruano Family
Ms. Ramona Garibay, Representative
30940 Watkins Street
Union City, CA 94587

Dear Ms. Garibay,

TRC Solutions, Inc. has been retained to conduct a cultural study for the NRG Solar project. The project is located in Contra Costa County. The project is depicted on the attached United States Geological Survey (USGS) quadrangle map.

Quadrangle	Township	Range	Section
Honker Bay	2 North	1 West	12

TRC is notifying Native American parties about the project and inquiring about any cultural sensitivity concerns you may have.

I would appreciate any input or concerns you may have about the project in writing so they may be addressed in a timely manner. If you have any questions or concerns regarding this project, please feel free to contact me at any time. Thank you for your time and help.

Respectfully,

Susan Underbrink

Susan Underbrink M.A., RPA
Archaeologist
sunderbrink@trcsolutions.com
(949) 727-7385 direct line

Enclosure: Project Location Map USGS Honker Bay Quadrangle

9685 Research Drive
Irvine, CA 92618

949.727.9336 PHONE
949.727.7311 FAX

www.trcsolutions.com

September 24, 2015

Ms. Katherine Erolinda Perez
P.O. Box 717
Linden, CA 95236
Sent via email

Dear Ms. Perez,

TRC Solutions, Inc. has been retained to conduct a cultural study for the NRG Solar project. The project is located in Contra Costa County. The project is depicted on the attached United States Geological Survey (USGS) quadrangle map.

Quadrangle	Township	Range	Section
Honker Bay	2 North	1 West	12

TRC is notifying Native American parties about the project and inquiring about any cultural sensitivity concerns you may have.

I would appreciate any input or concerns you may have about the project in writing so they may be addressed in a timely manner. If you have any questions or concerns regarding this project, please feel free to contact me at any time. Thank you for your time and help.

Respectfully,

Susan Underbrink

Susan Underbrink M.A., RPA
Archaeologist
sunderbrink@trcsolutions.com
(949) 727-7385 direct line

Enclosure: Project Location Map USGS Honker Bay Quadrangle

Underbrink, Susan

From: Katherine Perez <canutes@verizon.net>
Sent: Saturday, September 26, 2015 6:29 PM
To: Underbrink, Susan
Subject: Re: NRG project

I am unaware of any cultural sensitivity in the proposed project area.

Katherine Perez
MLD
Nototomne Cultural Preservation
cell: (209) 649-8972 or
office: (209) 887-3415
canutes@verizon.net

On Thursday, September 24, 2015 11:12 AM, "Underbrink, Susan" <SUnderbrink@trcsolutions.com> wrote:

Hi Ms. Perez, Please see the attached letter and map. If you have any comments or concerns please feel free to contact me at your convenience. Thank you for your time and help.
Susan

***PLEASE NOTE NEW ADDRESS AS OF JUNE 19.**

Susan Underbrink MA, RPA
Senior Archaeologist

9685 Research Drive, Irvine, CA 92618
T: 949.727.7385 | F: 949.727.7311 | C: 949.275.0462

LinkedIn | Twitter | Blog | www.trcsolutions.com

Underbrink, Susan

From: soaprootmo@comcast.net
Sent: Thursday, September 24, 2015 5:48 PM
To: Underbrink, Susan
Subject: Re: NRG Project
Attachments: image001.jpg

Thank You Susan, Mona

From: "Susan Underbrink" <SUnderbrink@trcsolutions.com>
To: soaprootmo@comcast.net
Sent: Thursday, September 24, 2015 11:14:52 AM
Subject: NRG Project

Hi Ms. Garibay, Please see the attached letter and map. If you have any comments or concerns please feel free to contact me at your convenience. Thank you for your time and help.
Susan

***PLEASE NOTE NEW ADDRESS AS OF JUNE 19.**

Susan Underbrink MA, RPA
Senior Archaeologist

TRC
Results you can rely on

9685 Research Drive, Irvine, CA 92618
T: 949.727.7385 | F: 949.727.7311 | C: 949.275.0462

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APPENDIX E
HYDROLOGY REPORT

Biological Resources Assessment
Pittsburg Power Plant Solar Generation Facility

PITTSBURG, CONTRA COSTA COUNTY
CALIFORNIA

Prepared For:

Ray Kelly

NRG Renew, LLC.

WRA Contact:

Dana Riggs

riggs@wra-ca.com

Date:

August 2015

ENVIRONMENTAL CONSULTANTS

2169-G East Francisco Blvd., San Rafael, CA 94901 (415) 454-8868 tel (415) 454-0129 fax info@wra-ca.com www.wra-ca.com

TABLE OF CONTENTS

LIST OF APPENDICES

LIST OF TABLES

LIST OF FIGURES

LIST OF ACRONYMS AND ABBREVIATIONS

BCDC	San Francisco Bay Conservation and Development Commission
CBR	California black rail
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CDFW	California Department of Fish and Wildlife
CFGC	California Fish and Game Code
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
Corps	U.S. Army Corps of Engineers
EFH	Essential Fish Habitat
ESA	Federal Endangered Species Act
JD	U.S. Army Corps of Engineers Jurisdictional Determination
Inventory	CNPS Inventory of Rare and Endangered Plants
MBTA	Migratory Bird Treaty Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
OWHM	Ordinary High Water Mark
Rank	California Rare Plant Rank
RWQCB	Regional Water Quality Control Board
SMHM	Salt marsh harvest mouse
TOB	Top-of-bank
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
WBWG	Western Bat Working Group
WRA	WRA, Inc.

EXECUTIVE SUMMARY

The purpose of this report is to provide an analysis of natural community and special-status species issues at the 55.5-acre proposed NRG Solar Array Area (Study Area) in Pittsburg, Contra Costa County, California.

On May 28 and July 7, 2015, WRA, Inc. (WRA) conducted a biological resources assessment and focused plant surveys within the Study Area. WRA observed four biological communities, 75 plant species and 20 wildlife species. No special-status wildlife or plant species were observed within the Study Area. Three sensitive biological community types covering 6.48 acres of the Study Area were identified. Six special-status wildlife species and no special-status plant species have a moderate or high potential to occur within the Study Area; focused surveys for special status plants yielded negative results. Recommendations to avoid and/or minimize impacts to sensitive communities and wildlife species are provided.

1.0 INTRODUCTION

On May 28 and July 7, 2015, WRA, Inc. (WRA) performed an assessment of biological resources at the 55.5-acre proposed NRG Solar Array Area (Study Area) in Pittsburg, Contra Costa County, California (Figure 1). The Study Area includes vacant land adjacent to the existing Pittsburg Power Plant, and would be accessed via Willow Pass Road. The purpose of the assessment was to examine potential biological constraints for a proposal to install solar panels and associated infrastructure within the Study Area (Project).

This report describes the results of the site visit, which assessed the Study Area for the (1) potential to support special-status species; and (2) presence of other sensitive biological resources protected by local, state, and federal laws and regulations. If special-status species were observed during the site visit, they were recorded. Specific findings on the habitat suitability or presence of special-status species or sensitive habitats may require that protocol-level surveys be conducted.

A biological resources assessment provides general information on the potential presence of sensitive species and habitats. The biological assessment is not an official protocol-level survey for listed species that may be required for project approval by local, state, or federal agencies. This assessment is based on information available at the time of the study and on site conditions that were observed on the date of the site visit.

1.1 Study Area Description

The Study Area is entirely located within the existing NRG Pittsburg Power Plant Generation Facility property at 690 West 10th Street, Pittsburg, California. The proposed solar array area consists of level, vacant, grassy fields separated by low slopes and a seasonal stream corridor, along with an existing unimproved access road (Figure 2). Areas to the north include vacant, disturbed fields and marshland adjacent to Suisun Bay; the NRG generation facility and associated infrastructure is to the northeast; and the areas to the south include urban/residential and industrial land uses.

Figure 1. Study Area Location Map

NRG Solar
Contra Costa County, California

0 0.25 0.5 1 Miles

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Map Prepared Date: 8/25/2015
Map Prepared By: MRochelle
Base Source: NAIP 2014
Data Source(s): WRA

Path: L:\Acad 2000 Files\15000\15024-6\GIS\ArcMap\Figure1_LocationMap.mxd

wra
ENVIRONMENTAL CONSULTANTS

NRG Solar

Contra Costa County, California

Figure 2.

Study Area Site Map

N
W E
S

0 200 400 800

Feet

Map Prepared Date: 8/25/2015
Map Prepared By: MRochelle
Base Source: Contra Costa County 2014 Aerial
Data Source(s): WRA

Path: L:\Acad 2000 Files\15000\15024-6\GIS\ArcMap\Fig2_SiteMap.mxd

2.0 REGULATORY BACKGROUND

The following sections explain the regulatory context of the biological assessment, including applicable laws and regulations that were applied to the field investigations and analysis of potential project impacts.

2.1 Sensitive Biological Communities

Sensitive biological communities include habitats that fulfill special functions or have special values, such as wetlands, streams, or riparian habitat. These habitats are protected under federal regulations such as the Clean Water Act; state regulations such as the Porter-Cologne Act, the CDFW Streambed Alteration Program, and CEQA; or local ordinances or policies such as city or county tree ordinances, Special Habitat Management Areas, and General Plan Elements.

Waters of the United States

The U.S. Army Corps of Engineers (Corps) regulates "Waters of the United States" under Section 404 of the Clean Water Act. Waters of the U.S. are defined in the Code of Federal Regulations (CFR) as waters susceptible to use in commerce, including interstate waters and wetlands, all other waters (intrastate waterbodies, including wetlands), and their tributaries (33 CFR 328.3). Potential wetland areas, according to the three criteria used to delineate wetlands as defined in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987), are identified by the presence of (1) hydrophytic vegetation, (2) hydric soils, and (3) wetland hydrology. Areas that are inundated at a sufficient depth and for a sufficient duration to exclude growth of hydrophytic vegetation are subject to Section 404 jurisdiction as "other waters" and are often characterized by an ordinary high water mark (OHWM). Other waters, for example, generally include lakes, rivers, and streams. The placement of fill material into Waters of the U.S generally requires an individual or nationwide permit from the Corps under Section 404 of the Clean Water Act.

Waters of the State

The term "Waters of the State" is defined by the Porter-Cologne Act as "any surface water or groundwater, including saline waters, within the boundaries of the state." The Regional Water Quality Control Board (RWQCB) protects all waters in its regulatory scope and has special responsibility for wetlands, riparian areas, and headwaters. These waterbodies have high resource value, are vulnerable to filling, and are not systematically protected by other programs. RWQCB jurisdiction includes "isolated" wetlands and waters that may not be regulated by the Corps under Section 404. Waters of the State are regulated by the RWQCB under the State Water Quality Certification Program which regulates discharges of fill and dredged material under Section 401 of the Clean Water Act and the Porter-Cologne Water Quality Control Act. Projects that require a Corps permit, or fall under other federal jurisdiction, and have the potential to impact Waters of the State, are required to comply with the terms of the Water Quality Certification determination. If a proposed project does not require a federal permit, but does involve dredge or fill activities that may result in a discharge to Waters of the State, the RWQCB has the option to regulate the dredge and fill activities under its state authority in the form of Waste Discharge Requirements.

Streams, Lakes, and Riparian Habitat

Streams and lakes, as habitat for fish and wildlife species, are subject to jurisdiction by CDFW under Sections 1600-1616 of California Fish and Game Code. Alterations to or work within or adjacent to streambeds or lakes generally require a 1602 Lake and Streambed Alteration Agreement. The term “stream”, which includes creeks and rivers, is defined in the California Code of Regulations (CCR) as “a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life [including] watercourses having a surface or subsurface flow that supports or has supported riparian vegetation” (14 CCR 1.72). In addition, the term “stream” can include ephemeral streams, dry washes, watercourses with subsurface flows, canals, aqueducts, irrigation ditches, and other means of water conveyance if they support aquatic life, riparian vegetation, or stream-dependent terrestrial wildlife (CDFG 1994). “Riparian” is defined as “on, or pertaining to, the banks of a stream.” Riparian vegetation is defined as “vegetation which occurs in and/or adjacent to a stream and is dependent on, and occurs because of, the stream itself” (CDFG 1994). Removal of riparian vegetation also requires a Section 1602 Lake and Streambed Alteration Agreement from CDFW.

San Francisco Bay and Shoreline

The San Francisco Bay Conservation and Development Commission (BCDC) has regulatory jurisdiction, as defined by the McAteer-Petris Act, over the Bay and its shoreline, which generally consists of the area between the shoreline and a line 100 feet landward of and parallel to the shoreline. BCDC jurisdiction in the northeastern portion of the Bay extends to “a line between Stake Point and Simmons Point, extending northeasterly to the mouth of Marshall Cut.” The NRG Pittsburg Power Plant, including the Study Area, is located to the east of this line; therefore, it is not within BCDC jurisdiction, and special BCDC regulations do not apply to the Study Area.

Other Sensitive Biological Communities

Other sensitive biological communities not discussed above include habitats that fulfill special functions or have special values. Natural communities considered sensitive are those identified in local or regional plans, policies, regulations, or by the CDFW. CDFW ranks sensitive communities as "threatened" or "very threatened" and keeps records of their occurrences in its California Natural Diversity Database (CNDDB; CDFW 2013). Sensitive plant communities are also identified by CDFW (2010). CNDDB vegetation alliances are ranked 1 through 5 based on NatureServe's (2010) methodology, with those alliances ranked globally (G) or statewide (S) as 1 through 3 considered sensitive. Impacts to sensitive natural communities identified in local or regional plans, policies, or regulations or those identified by the CDFW or USFWS must be considered and evaluated under CEQA (CCR Title 14, Div. 6, Chap. 3, Appendix G). Specific habitats may also be identified as sensitive in city or county general plans or ordinances.

East Contra Costa County Habitat Conservation Plan/Natural Community Conservation Plan

East Contra Costa County Habitat Conservation Plan / Natural Community Conservation Plan (Plan) is a regional conservation plan intended to protect natural resources and promote connectivity of habitats while streamlining regulatory requirements for continued economic development and growth in the area. Approved in August 2007, the Plan provides specific conditions and conservation measures for covered activities to mitigate for incidental take of sensitive species associated with those activities. The Plan also provides a U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW) Incidental Take Permits for covered projects.

The Study Area is adjacent to, but is not within, the Plan area; thus, regulatory and procedural guidelines established in the Plan are not considered in this report.

Contra Costa County General Plan and Zoning Ordinances

Conservation Element of the Contra Costa County General Plan (2005) has policies regarding new development along natural watercourses. The General Plan recommends setbacks of 50 feet on each side of the centerline of the creek for new development (General Plan Policy 8-89). The County Zoning Ordinances also require minimum setbacks to meet water quality and erosion control goals through a stream ordinance for unimproved earthen channels. This ordinance requires a "structure setback line" that varies between 30 feet and 50 feet from the top-of-bank (TOB), depending on the height of the TOB above the channel invert (County Code Title 9, Division 914-14.012).

2.2 Sensitive Special-Status Species

Special-status species include those plants and wildlife species that have been formally listed, are proposed as endangered or threatened, or are candidates for such listing under the Federal Endangered Species Act (ESA) or California Endangered Species Act (CESA). These acts afford protection to both listed species and those that are formal candidates for listing. In addition, California Department of Fish and Wildlife (CDFW) Species of Special Concern, which are species that face extirpation in California if current population and habitat trends continue; U.S. Fish and Wildlife Service (USFWS) Birds of Conservation Concern; and CDFW special-status invertebrates. Although CDFW Species of Special Concern generally have no special legal status, they are given special consideration under the California Environmental Quality Act (CEQA). Bat species are also evaluated for conservation status by the Western Bat Working Group (WBWG), a non-governmental entity; bats named as a "High Priority" species for conservation by the WBWG are typically considered special-status. In addition to regulations for special-status species, most birds in the United States, including non-special-status native species, are protected by the Migratory Bird Treaty Act of 1918 (MBTA) and the California Fish and Game Code (CFGC), i.e., sections 3503, 3503.5 and 3513. Under these laws, destroying active bird nests, eggs, and/or young is illegal.

Plant species on the California Native Plant Society (CNPS) Rare and Endangered Plant status plant species and must be considered under CEQA. Rank 3 and Rank 4 species are afforded little or no protection under CEQA, but are included in this analysis for completeness. A description of the CNPS Ranks is provided below in Table 1.

Table 1. Description of CNPS Ranks and Threat Codes

California Rare Plant Ranks (formerly known as CNPS Lists)	
Rank 1A	Presumed extirpated in California and either rare or extinct elsewhere
Rank 1B	Rare, threatened, or endangered in California and elsewhere
Rank 2A	Presumed extirpated in California, but more common elsewhere
Rank 2B	Rare, threatened, or endangered in California, but more common elsewhere
Rank 3	Plants about which more information is needed - A review list
Rank 4	Plants of limited distribution - A watch list
Threat Ranks	
0.1	Seriously threatened in California
0.2	Moderately threatened in California
0.3	Not very threatened in California

Critical Habitat

Critical habitat is a term defined in the ESA as a specific geographic area that contains features essential for the conservation of a threatened or endangered species and that may require special management and protection. The ESA requires federal agencies to consult with the USFWS to conserve listed species on their lands and to ensure that any activities or projects they fund, authorize, or carry out will not jeopardize the survival of a threatened or endangered species. In consultation for those species with critical habitat, federal agencies must also ensure that their activities or projects do not adversely modify critical habitat to the point that it will no longer aid in the species' recovery. In many cases, this level of protection is similar to that already provided to species by the ESA jeopardy standard. However, areas that are currently unoccupied by the species but which are needed for the species' recovery are protected by the prohibition against adverse modification of critical habitat.

3.0 METHODS

On May 28 and July 7, 2015 the Study Area was traversed on foot to determine (1) plant communities present within the Study Area, (2) if existing conditions provided suitable habitat for any special-status plant or wildlife species, and (3) if sensitive habitats are present. All plant and wildlife species encountered were recorded, and are summarized in Appendix A. Plant nomenclature follows Baldwin et al. (2012) and subsequent revisions by the Jepson Flora Project (2015), except where noted. For cases in which regulatory agencies, CNPS, or other entities base rarity on older taxonomic treatments, precedence was given to the treatment used by those entities.

3.1 Biological Communities

Prior to the site visit, aerial photographs, web soil survey (Natural Resources Conservation Service, United States Department of Agriculture 2015), the *List of Vegetation Alliances* (CDFG 2010), and *A Manual of California Vegetation* (Sawyer et al. 2009) were reviewed to assess the potential for sensitive biological communities to occur in the Study Area. Natural communities considered sensitive are those identified in local or regional plans, policies, regulations, or by the CDFW. CDFW ranks sensitive communities as "threatened" or "very threatened" and keeps records of their occurrences in its California Natural Diversity Database (CNDDB; CDFW 2015). CNDDB vegetation alliances are ranked 1 through 5 based on NatureServe's (2015) methodology, with those alliances ranked globally (G) or statewide (S) with 1 through 3 considered sensitive.

Natural communities were mapped in the Study Area by using aerial imagery of the Study Area in the field while gathering ground level information such as percent cover of dominant species and associated species. The information gathered was used to visually delineate the different communities on the aerial imagery in the field and in GIS. Community types mapped within the Study Area and described in this report do not strictly follow vegetation alliances, but were chosen to best represent biological constraints within the Study Area.

3.1.1 Non-sensitive Biological Communities

Non-sensitive biological communities are those communities that are not afforded special protection under CEQA, and other state, federal, and local laws, regulations and ordinances. These communities may, however, provide suitable habitat for some special-status plant or wildlife species and are identified or described in Section 4.1.1 below.

3.1.2 Sensitive Biological Communities

Sensitive biological communities are defined as those communities that are given special protection under CEQA and other applicable federal, state, and local laws, regulations and ordinances. Applicable laws and ordinances are discussed above in Section 2.0. Special methods used to identify sensitive biological communities are discussed below.

Wetlands and Waters

The Study Area has previously been surveyed to determine if any wetlands and waters subject to jurisdiction by the Corps and RWQCB are present. Wetland delineations following standard Corps guidance (Environmental Laboratory 1987; Corps 2008) were performed by WRA biologists is 2005 and 2012-2013. The extent of jurisdictional features within the Study Area was subsequently verified by the Corps in 2006, and again in 2013[1]. Therefore, the presence and extent of jurisdictional features within the Study Area, as well as areas that lack jurisdictional features, have been confirmed. The confirmed jurisdictional areas are depicted and described in this report, and are valid for planning purposes[2].

Riparian/Section 1602 Areas

Field guidance for CDFW Section 1600 jurisdiction (CDFG 1994) is typically understood to include all streams and to extend laterally to the TOB. If riparian vegetation is present within the TOB, then CDFW jurisdiction extends to the outer dripline of such vegetation. Thus, all streams within or adjacent to the Study Area were assumed to fall within CDFW jurisdiction, and in some cases the area of CDFW jurisdiction extended beyond the edges of the stream in order to encompass the area below TOB and any riparian vegetation. Any additional areas of CDFW jurisdiction were mapped during the 2015 site visits.

Other Sensitive Biological Communities

The Study Area was evaluated for the presence of other sensitive biological communities, including sensitive plant communities recognized by CDFW and areas protected under Contra Costa County General Plan and Zoning Ordinances (Section 2.1). Prior to the site visit, aerial photographs, local soil maps, the *List of Vegetation Alliances* (CDFG 2009), and *A Manual of California Vegetation* (Sawyer et al. 2009) were reviewed to assess the potential for sensitive biological communities to occur in the Study Area.

---

[1] The Corps issued a Jurisdictional Determination (JD) on May 15, 2006 that formally confirmed the extent of Waters of the U.S. within the Study Area (based on WRA's 2005 wetland delineation). The JD expired on May 15, 2011. WRA performed another wetland delineation in 2013 which examined the Study Area and determined that the extent of wetlands in this area was mostly unchanged from the 2006 JD. WRA performed a verification site visit with a Corps staff member on March 12, 2013, during which the Corps agreed that the JD could be re-issued with very few changes to the mapping of wetlands within the Study Area. Thus, the extent of Waters of the U.S. within the Study Area as shown in this report has been recently verified, although at the time of publication of this report, the Corps had not yet issued a new JD.

[2] A JD is typically valid for a period of 5 years. As described in footnote #1, the Corps verified the extent of wetlands within the Study Area on March 12, 2013. Since less than 5 years has passed since the verification visit, and since a new Corps JD is forthcoming, it is assumed that the mapping of wetlands within the Study Area as shown and described in this report is valid and would continue to be valid for at least 3-5 years from the date of this report.

3.2 Special-Status Species

3.2.1 Literature Review

Potential occurrence of special-status species in the Study Area was evaluated by first determining which special-status species occur in the vicinity of the Study Area through a literature and database search. Database searches for known occurrences of special-status species focused on the Honker Bay 7.5 minute USGS quadrangle and the eight surrounding USGS quadrangles. The following sources were reviewed to determine which special-status plant and wildlife species have been documented to occur in the vicinity of the Study Area:

- California Natural Diversity Database (CNDDB) records (CDFW 2015)
- CNPS Inventory records (CNPS 2015)
- CDFG publication "California's Wildlife, Volumes I-III" (Zeiner et al. 1990)
- CDFG publication "California Bird Species of Special Concern" (Shuford and Gardali 2008)
- CDFG publication "Amphibians and Reptile Species of Special Concern in California" (Jennings 1994)
- A Field Guide to Western Reptiles and Amphibians (Stebbins 2003)
- Breeding Bird Atlas of Contra Costa County (Glover 2009)
- USGS 7.5-Minute Quadrangle Map (USGS 1980)

3.2.2 Site Assessment

Two site visits were made to the Study Area to search for suitable habitats for special-status species. Habitat conditions observed at the Project Site were used to evaluate the potential for presence of special-status species based on these searches and the professional expertise of the investigating biologists. The potential for each special-status species to occur in the Study Area was then evaluated according to the following criteria:

- No Potential. Habitat on and adjacent to the site is clearly unsuitable for the species requirements (foraging, breeding, cover, substrate, elevation, hydrology, plant community, site history, disturbance regime).
- Unlikely. Few of the habitat components meeting the species requirements are present, and/or the majority of habitat on and adjacent to the site is unsuitable or of very poor quality. The species is not likely to be found on the site.
- Moderate Potential. Some of the habitat components meeting the species requirements are present, and/or only some of the habitat on or adjacent to the site is unsuitable. The species has a moderate probability of being found on the site.
- High Potential. All of the habitat components meeting the species requirements are present and/or most of the habitat on or adjacent to the site is highly suitable. The species has a high probability of being found on the site.
- Present. Species is observed on the site or has been recorded (i.e. CNDDB, other reports) on the site recently.

The site assessment is intended to identify the presence or absence of suitable habitat for each special-status species known to occur in the vicinity in order to determine its potential to occur in the Study Area. In cases where little information is known about species occurrences and

habitat requirements, the species evaluation was based on best professional judgment of WRA biologists with experience working with the species and habitats. If necessary, recognized experts in individual species biology were contacted to obtain the most up to date information regarding species biology and ecology.

If a special-status species was observed during the site visit, its presence is recorded and discussed below in Section 4.2. For some species, a site assessment visit at the level conducted for this report may not be sufficient to determine presence or absence of a species to the specifications of regulatory agencies. In these cases, a species may be assumed to be present or further protocol-level special-status species surveys may be necessary. Special-status species for which further protocol-level surveys may be necessary are described below in Section 5.0.

4.0 RESULTS

The Study Area is located on vacant, undeveloped portions of the Pittsburg Power Plant property, southwest of the existing power plant. It is bounded by the Southern Pacific Railroad, West 10th St and Willow Pass Road to the south. Contra Costa County Water District lands are located to the west, while additional undeveloped lands adjacent to the Pittsburg Power Plant are located to the north and east. Elevations within the Study Area range from about 5 to 15 feet (USGS 1980).

The majority of the Study Area is characterized by weedy non-native annual grasslands. A stream corridor passes through the center of the Study Area, but will be avoided by work activities.

The Study Area is on a mostly-flat terrace which appears to have been highly modified by human activities. Especially in the area north of the stream, the substrate appears to be imported fill material. The fill material was distributed and shaped to form a broad, mostly-flat area at slightly higher elevation than the low-lying fields, wetlands, and marshland to the north. The stream channel that passes through the Study Area has been re-routed and straightened from its original course, and flows within an excavated trench or is contained by banks of earthen fill material in some areas. The eastern portion of the Study Area includes an existing, unimproved access road that travels along a man-made embankment adjacent to the stream. Along the northwestern edge of the Study Area, a steep embankment marks the edge of the man-made terrace, and the land drops down to the level of the adjacent low-lying field, some of which is within the Study Area. A pile of apparent fill material can still be seen in the north-central portion of the Study Area, and includes both soil and concrete rubble.

In addition to the historic disturbance that shaped the Study Area, regular land management activities appear to reduce the habitat suitability for most special-status plants and wildlife. Site managers report that the property (outside of the stream corridor) is disked and/or mowed at a frequency of one or more times per year. While tall grasses and weeds were observed in the area during the May 28, 2015 site visit, the site had recently been disked prior to the July 7, 2015 site visit.

Although all soils within the Study Area appear to have been modified as described above, the soils in this area are officially mapped as Antioch loam, 0-2 percent slopes, Sycamore silty clay loam, and Joice muck (USDA 2015). The latter two soil types reflect the Study Area's proximity to low-lying areas adjacent to Suisun Bay; however, human modifications have largely isolated the Study Area from the Bay.

The following sections present the results and discussion of the biological assessment within the Study Area.

4.1 Biological Communities

Biological communities observed within the Study Area are summarized in Table 2 and depicted in Figure 3. Descriptions of each biological community are contained in the following sections.

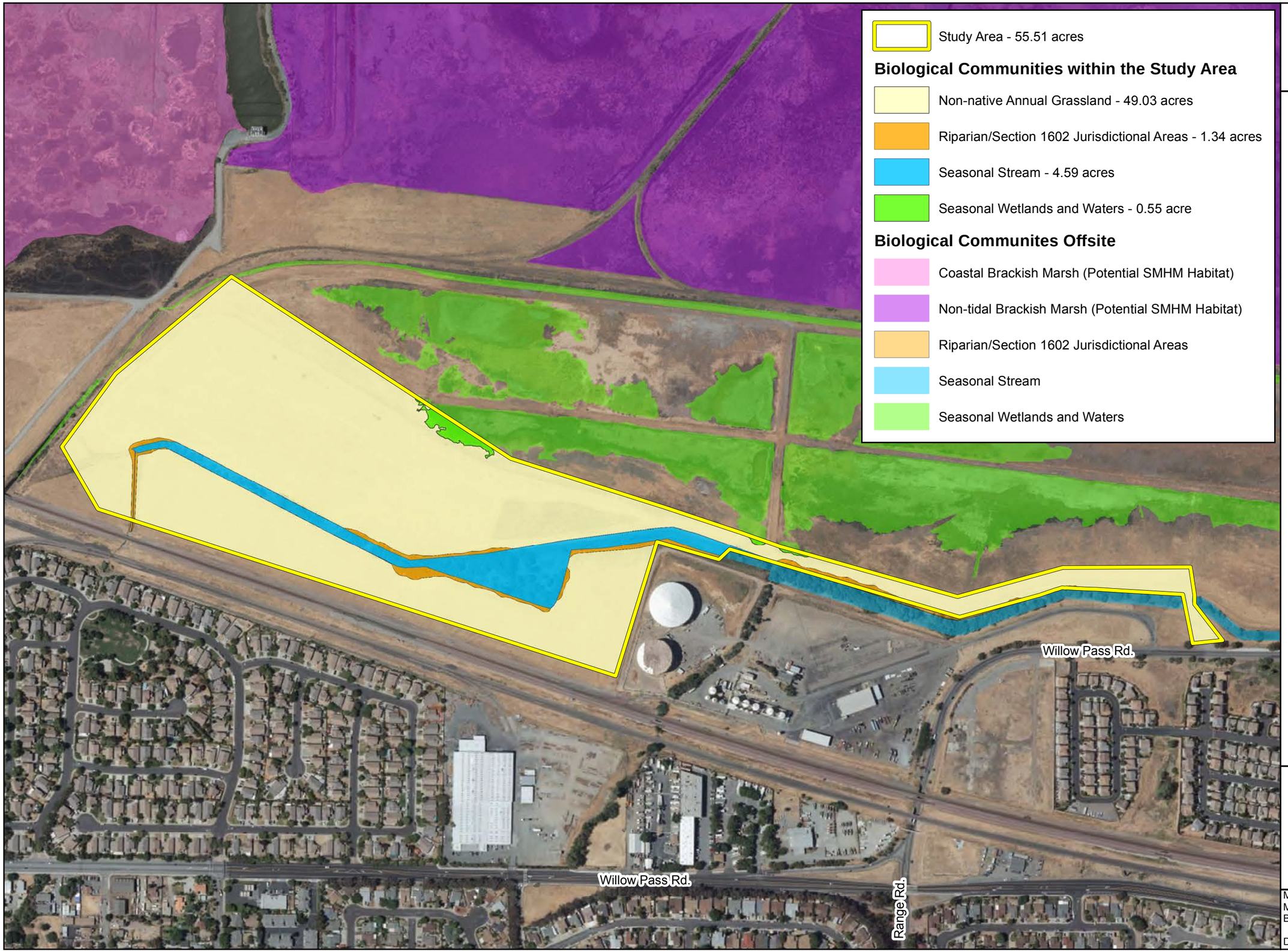
Table 2. Summary of Biological Communities within the Study Area.

Biological Community Type	**Acres**
Non-Sensitive Biological Communities	
Non-native Annual Grassland	49.03
Sensitive Biological Communities	
Seasonal Stream	4.59
Riparian/Section 1602 Jurisdictional Areas	1.34
Seasonal Wetlands and Waters	0.55
Total	**55.51**

4.1.1 Non-Sensitive Biological Communities

Non-native Annual Grassland

The majority of the Study Area is composed of non-native annual grassland. This community type is common throughout California, especially in upland areas that have been disturbed by human activities. The community is dominated by non-native annual grasses, which in the case of the Study Area included such species as wild oats (*Avena* spp.), ripgut brome (*Bromus diandrus*), Italian rye grass (*Festuca perennis*), and brome fescue (*Festuca bromoides*). Non-native herbaceous species are also common within this community, and include such species as stork's bill (*Erodium* spp.), prickly lettuce (*Lactuca serriola*), fennel (*Foeniculum vulgare*), and Italian thistle (*Carduus pycnocephalus*). Stands of black mustard (*Brassica nigra*) and wild radish (*Raphanus sativus*) were also observed within areas mapped as non-native annual grassland. Although far less prevalent than non-native species, common native grasses and herbs can also be found in this community. Within the Study Area, such species included alkali heath (*Frankenia salina*), alkali mallow (*Malva leprosa*), Mexican milkweed (*Asclepias fascicularis*), and fringed willowherb (*Epilobium ciliatum* ssp. *ciliatum*).



wra
ENVIRONMENTAL CONSULTANTS

NRG Solar

Contra Costa County, California

Figure 3.

Biological Communities within the Study Area

N
W E
S

0 400 800

Feet

Map Prepared Date: 8/25/2015
Map Prepared By: MRochelle
Base Source: Contra Costa County 2014 Aerial
Data Source(s): WRA

Path: L:\Acad 2000 Files\15000\15024-6\GIS\ArcMap\Fig3_BioComms.mxd

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Wildlife species observed in this plant community included such species as common raven (*Corvus corax*), house finch (*Haemorhous mexicanus*), black-tailed jackrabbit (*Lepus californicus*), and Botta's pocket gopher (*Thomomys bottae*).

4.1.2 Sensitive Biological Communities

While sensitive biological communities do occur in the Study Area, they will be almost entirely avoided by the project footprint. In addition, protective buffers will be established around these areas, and with limited exceptions, all work will occur outside of the buffered areas in order to further avoid the possibility of impact.

Seasonal Stream

A stream corridor bisects the western portion of the Study Area, and also follows immediately adjacent to the path of the access road in the eastern portion of the Study Area. The seasonal stream, as shown on Figure 3, constitutes both "Waters of the U.S." and "Waters of the State" as described in Section 2.1. This feature was mapped within the Study Area during previous studies (WRA 2005; WRA 2013), and its regulatory status has been confirmed by the U.S. Army Corps of Engineers[1].

The stream is a man-made channel that conveys the flow of a drainage historically mapped as Willow Creek. A 1938 image (Google Earth 2015) shows the natural stream located slightly north of the Study Area, while the channel's present-day location appears to be an open field; the stream was apparently diverted into the man-made channel sometime after 1938.

The stream varies in width from just 2 feet wide on its western end to approximately 280 feet at its widest point. With the exception of its western end, it is almost entirely vegetated. The vegetation includes patches of emergent plants such as California bulrush (*Schoenoplectus californicus*) and common cattail (*Typha latifolia*), and riparian trees such as Fremont cottonwood (*Populus fremontii* ssp. *fremontii*) and willow (*Salix exigua* var. *exigua, S. laevigata, S. lasiolepis*). Flow within the stream continues east into a levied channel of open water, then travels north adjacent to a non-tidal brackish marsh. Water in the channel ultimately flows into Suisun Bay through one-way duckbill valves.

The stream appears to flow or contain standing water only seasonally, although its hydrology is likely influenced by downstream management. The stream with the Study Area was dry during both site visits in 2015, and did not appear to have had large flows in some time. While the site visits were performed during a drought, these observations suggest that the stream goes dry for some portion of the year (likely summer and fall) during most years. In addition, human modifications to prevent backflow of water from Suisun Bay and/or control water levels in the nearby marsh may currently reduce the amount of standing water in the stream.

Wildlife species observed in this community include red-winged blackbird (*Agelaius phoeniceus*) and common yellowthroat (*Geothlypis trichas*).

Riparian/Section 1602 Areas

The “seasonal stream” (described above) is protected under Section 1602 of CDFW code in addition to the CWA; however, the area protected by CDFW extends beyond the mapped edges of the seasonal stream in many places to account for riparian vegetation and areas below TOB. These additional areas were mapped as Riparian/Section 1602 Areas (as described in Section 3.1.2).

The riparian community type present within the Study Area includes upland areas below the TOB, which are largely vegetated by nonnative upland grasses, similar to the nonnative annual grassland community described in Section 4.1.1. In addition, Riparian/Section 1602 Areas also include upland areas adjacent to the seasonal stream which are within the dripline of large trees such as Fremont cottonwood, willow, and Coast live oak (*Quercus agrifolia*).

Wildlife species observed in this plant community include western scrub jay (*Aphelocoma californica*), mourning dove (*Zenaida macroura*), and northern mockingbird (*Mimus polyglottos*).

Seasonal Wetlands and Waters

Jurisdictional seasonal wetlands and non-wetland waters have been mapped in close proximity to the Study Area, and wetlands also extend a short distance into the Study Area along its northern edge. These areas have previously been confirmed to be jurisdictional features, although they are disturbed, and in some cases man-made features that do not represent high-value habitat in comparison to other wetland types such as streams or tidal marshes.

The wetlands that extend into the Study Area are seasonal depressional wetlands with no direct connection to streams or tidal areas. They are vegetated by a mix of native and non-native species such as Mediterranean barley (*Hordeum marinum*), fivehook Bassia (*Bassia hyssopifolia*), salt grass (*Distichlis spicata*), and alkali heath (*Frankenia salina*). The area where the wetlands are located is mowed and/or disked on a regular basis to manage vegetation and reduce fuel for potential wildfires. Thus, jurisdictional wetlands within the Study Area are highly disturbed and have minimal vegetative development, reducing their habitat suitability for special-status plants and wildlife.

4.1.2.1 Sensitive Biological Communities Located Outside the Study Area

Two additional sensitive biological communities are located in close proximity to the Study Area, and may present constraints that affect work within the Study Area. These communities include coastal brackish marsh and non-tidal brackish marsh.

Coastal Brackish Marsh and Non-tidal Brackish Marsh

Two expanses of marshland exist to the north and northwest of the Study Area, as shown in Figure 3. These sensitive areas will not be impacted by the Project; however, they are relevant because they may provide habitat for the Federal and State Endangered salt marsh harvest mouse (SMHM; *Reithrodontomys raviventris*), which is known to be present in the area (CDFW 2015). Although SMHM typically resides in marshes, it is known to occasionally utilize vegetated habitats adjacent to marshes. For this reason, some vegetated habitats in close proximity to the marshland may be protected as potential SMHM habitat. SMHM is further discussed in Sections 4.2.2 and 5.1.

4.2 Special-Status Species

4.2.1 Plants

Based upon a review of the resources and databases given in Section 3.2.1, 84 special-status plant species have been documented in the vicinity of the Study Area (Figure 4). Appendix B summarizes the potential for each of these species to occur in the Study Area. WRA biologists conducted focused surveys of the Study Area where work is likely to occur twice in preparation of this BRA, and the site visits were within the blooming period of all 84 species with potential to occur, save two (discussed below). Thus, the remaining 82 species should have been recognizable during the site visits if they were present. However, no special status plant species were observed within the Study Area. The 75 plant species observed within the Study Area were non-native species frequently found in disturbed habitats, or were common native species without a special protective status.

The site visits occurred outside of the blooming period of two special-status plant species determined unlikely to occur in the Study Area. Caper-fruited tropidocarpum (*Tropidocarpum capparideum*) blooms from March to April; the last recorded occurrence of this species in the vicinity was in 1895, suggesting it is locally extirpated. Carquinez goldenbush (*Isacoma arguta*) blooms from August to December; however, plants of the genus *Isacoma* would have been identifiable through vegetative characteristics at the time of the July site visit, and none were observed. In addition, most portions of the Study Area where these species could potentially occur include fill soil that is disked regularly, making their occurrence unlikely.

The Study Area has a limited potential to support most special-status plant species documented in the vicinity of the Study Area. Most special status plants are likely only to occur in specific habitat types such as wetlands, which would be completely avoided by Project activities. Furthermore, the fact that none of these species were observed within the Study Area during two surveys within the species' blooming periods provides strong evidence that they are not extant within the Study Area. The majority of the Study Area, including almost all areas where work is proposed, consists of non-native annual grassland on imported fill soil or otherwise disturbed soil, and these areas are regularly disturbed during site management activities, rendering them unsuitable for most special-status plant species. Thus, the Project is unlikely or has no potential to impact special-status plant species.

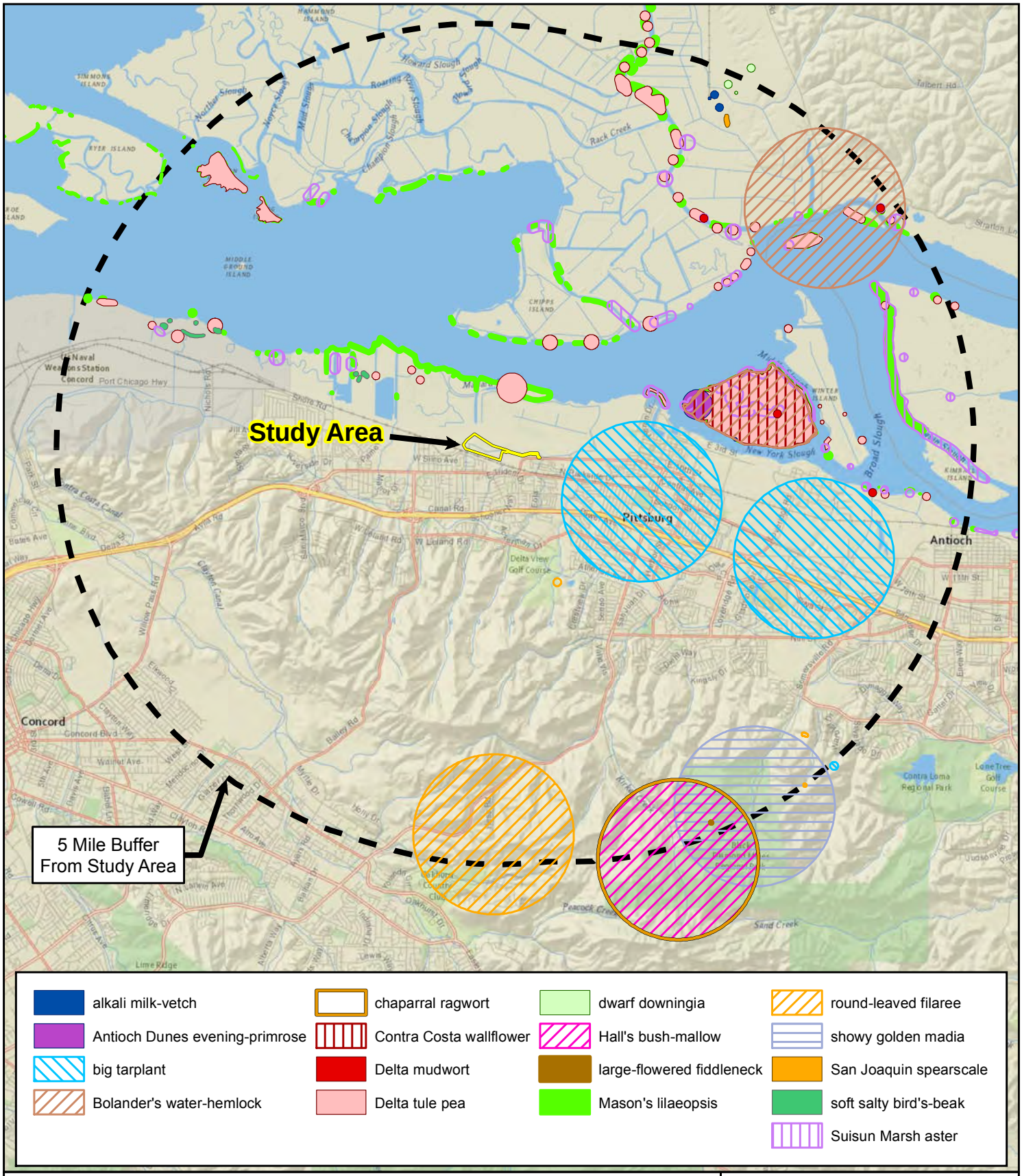

Figure 4. Special Status Plant Species Occurrences in the Vicinity of the Study Area

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NRG Solar
Contra Costa County, California

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ENVIRONMENTAL CONSULTANTS

Map Prepared Date: 8/25/2015
Map Prepared By: MRochelle
Base Source: National Geographic
Data Source(s): CNDDB (August 2015)

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4.2.2 Wildlife

Fifty-four special-status wildlife species have been recorded in the vicinity of the Study Area. Figure 5 depicts the special-status wildlife species documented in the vicinity based on CNDDB data (CDFW 2015). Appendix B summarizes the potential for each of these species to occur in the Study Area. Twenty wildlife species were observed in the Study Area during the site visits, all of which were common species without a special protective status. No special-status wildlife species have a high potential to occur in the Study Area, and six special-status wildlife species have a moderate potential to occur in the Study Area. No trees are to be removed during Project activities, and most work activities will be set back 50 feet from the seasonal stream and riparian habitats; therefore, the Project is anticipated to avoid impacts to bats and with implementation of additional measures will also avoid birds. Special-status wildlife species that were determined to have a moderate potential to occur in the Study Area are discussed below.

Wildlife species with a moderate potential for occurrence within the Study Area

Burrowing owl (*Athene cunicularia*), CDFW Species of Special Concern; USFWS Bird of Conservation Concern. The burrowing owl typically favors flat, open grassland or gentle slopes and sparse shrub-land ecosystems. These owls prefer annual or perennial grasslands, typically with sparse or nonexistent tree or shrub canopies; however, they also colonize debris piles and old pipes. Burrowing owls exhibit high site fidelity and usually nest in abandoned burrows of ground squirrels or pocket gophers. Site managers have stated that the Study Area is disked annually for fire prevention; the Study Area had been recently disked prior to the July 7, 2015 site visit. Prior to disking, grasses are likely greater than 12 inches in height and unsuitable for burrowing owl. Based on grass height and regular disking, burrowing owl is unlikely to occur within the Study Area during the nesting season (February 1 through August 31). However, ground squirrels and suitable burrows were observed within 20 feet of the Study Area. Therefore, burrowing owl could occupy areas immediately adjacent to the Study Area, and could forage within the Study Area. If disking of the site were to cease, ground squirrels may create new burrows and the Study Area could potentially have greater value for owls. Burrowing owl was assessed as having a moderate potential for occurrence though was not observed during either the May or July site visits, which occurred during the species' nesting period.

Northern harrier (*Circus cyaneus*). CDFW Species of Special Concern. The northern harrier occurs as a resident and winter visitor in open habitats throughout most of California, including freshwater and brackish marshes, grasslands and fields, agricultural areas, and deserts. Harriers typically nest in treeless areas within patches of dense, relatively tall, vegetation, the composition of which is highly variable; nests are placed on the ground and often located near water or within wetlands (Davis and Niemala 2008). Harriers are birds of prey and subsist on a variety of small mammals and other vertebrates. The Study Area is disked annually for fire prevention, which reduces the potential for northern harrier to nest within the Study Area. However, the northern harrier may nest adjacent to the Study Area and forage in grassland portions of the Study Area. Northern harrier was assessed as having a moderate potential for occurrence.

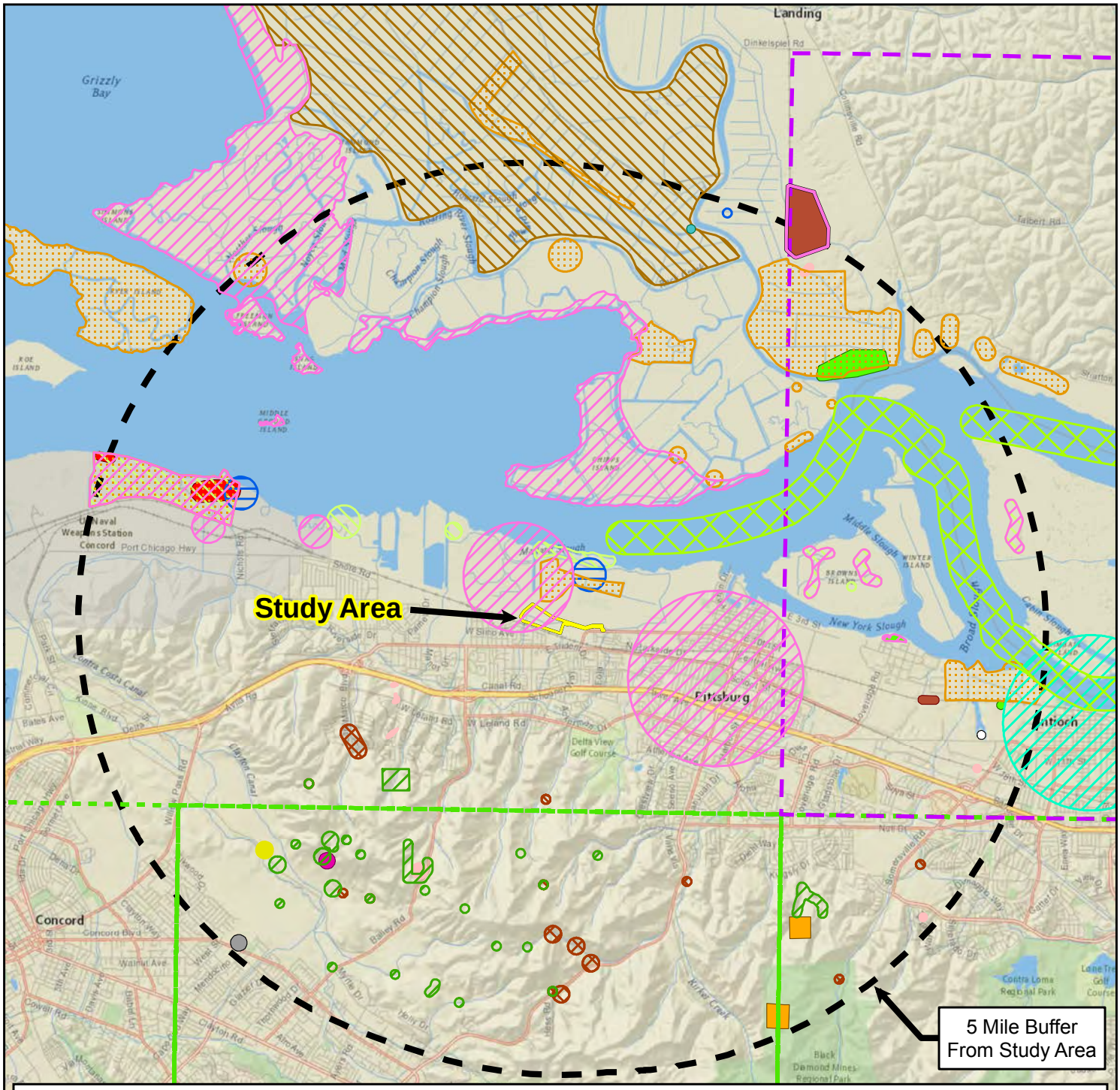

Figure 5. Special Status Wildlife Species Occurrences in the Vicinity of the Study Area

NRG Solar
Contra Costa County, California

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ENVIRONMENTAL CONSULTANTS

Map Prepared Date: 8/25/2015
Map Prepared By: MRochelle
Base Source: National Geographic
Data Source(s): CNDDB (August 2015)

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White-tailed kite (*Elanus leucurus*). CDFW Fully Protected Species. The white-tailed kite is resident in open to semi-open habitats throughout the lower elevations of California, including grasslands, savannahs, woodlands, agricultural areas and wetlands. Vegetative structure and prey availability seem to be more important habitat elements than associations with specific plants or vegetative communities (Dunk 1995). Nests are constructed mostly of twigs and placed in trees, often at habitat edges. Nest trees are highly variable in size, structure, and immediate surroundings, ranging from shrubs to trees greater than 150 feet tall (Dunk 1995). This species preys upon a variety of small mammals, as well as other vertebrates and invertebrates. Trees within the Study Area provide suitable nesting habitat for white-tailed kite, and the grasslands provide suitable foraging habitat for this species. Habitat within the Study Area is suitable for white-tailed kite, although this species was not observed during either the May or July site visits. White-tailed kite was assessed as having a moderate potential for occurrence. However, preliminary project plans indicate that these areas will be avoided and buffered to prevent indirect or inadvertent impacts.

Loggerhead shrike (*Lanius ludovicianus*). CDFW Species of Special Concern, USFWS Bird of Conservation Concern. The loggerhead shrike is a year-round resident and winter visitor in lowlands and foothills throughout California. This species is associated with open country with short vegetation and scattered trees, shrubs, fences, utility lines and/or other perches. Although they are songbirds, shrikes are predatory and forage on a variety of invertebrates and small vertebrates. Captured prey items are often impaled for storage purposes on suitable substrates, including thorns or spikes on vegetation, and barbed wire fences. This species nests in trees and large shrubs; nests are usually placed three to ten feet off the ground (Shuford and Gardali 2008). Although outside the Project's limit of disturbance, trees and shrubs within the Study Area provide suitable nesting habitat for white-tailed kite, and grasslands provide suitable foraging habitat for this species. Habitat within the Study Area is suitable for loggerhead shrike, although this species was not observed during either the May or July site visits. Loggerhead shrike was assessed as having a moderate potential for occurrence. However, preliminary project plans indicate that these areas will be avoided and buffered to prevent indirect or inadvertent impacts.

Tricolored blackbird (*Agelaius tricolor*). CDFW Species of Special Concern, USFWS Bird of Conservation Concern. The tricolored blackbird is a locally common resident in the Central Valley and along coastal California. Most tricolored blackbirds reside in the Central Valley March through August, then moving into the Sacramento-San Joaquin Delta and east to Merced County and coastal locations during winter (Meese et al. 2014). This species breeds adjacent to fresh water, preferring emergent wetlands with tall, dense cattails or tules, thickets of willow or blackberry, and/or tall herbs. Flooded agricultural fields with dense vegetation are also used (Shuford and Gardali 2008). This species is highly colonial; nesting habitat must be large enough to support a minimum of 30 pairs, and colonies are commonly substantially larger (up to thousands of pairs). The tricolored blackbird often intermingles with other blackbird species during the non-breeding season. Although tricolored blackbirds typically prefer to nest in dense vegetation, the tules and willows within the seasonal stream and riparian habitats may provide suitable nesting habitat. Tricolored blackbird was assessed to have a moderate potential to occur within the Study Area, though this species was not observed during the May or July site visits, which occurred during this species' nesting period. However, preliminary project plans indicate that these areas will be avoided and buffered to prevent indirect or inadvertent impacts.

Western red bat (*Lasiurus blossevillii*), CDFW Species of Special Concern, WBWG High Priority. This species is highly migratory and broadly distributed, ranging from southern Canada through much of the western United States. They are typically solitary, roosting primarily in the foliage of trees or shrubs. Day roosts are commonly in edge habitats adjacent to streams or open fields, in orchards, and sometimes in urban areas possibly in association with riparian habitat (particularly willows, cottonwoods, and sycamores; WBWG 2015). It is believed that males and females maintain different distributions during pupping, where females take advantage of warmer inland areas and males occur in cooler areas along the coast. The trees within the seasonal stream and riparian habitats in the Study Area may provide suitable roost habitat for western red bat, and this species has a moderate potential to occur in these areas. However, preliminary project plans indicate that these areas will be avoided and buffered to prevent indirect or inadvertent impacts.

Selected wildlife species unlikely to occur within the Study Area but documented in the vicinity

Several special-status wildlife species are of note due to their documented occurrence in the vicinity of Suisun Bay, although they were determined to be unlikely to occur within the Study Area or to have no potential for occurrence. These species include SMHM,, California black rail (CBR; *Laterallus jamaicensis*), Pacific pond turtle (*Actinemys marmorata*), and Suisun song sparrow (*Melospiza melodia maxillaris*). These species are discussed below. The site is outside the historic range of the California Ridgway's (clapper) rail (*Rallus obsoletus [longirostris).*

The SMHM is a relatively small rodent found only in suitable salt- and brackish-marsh habitat in the greater San Francisco Bay, San Pablo Bay, and Suisun Bay areas. The habitat associated with the SMHM is pickleweed-dominated vegetation and mixed vegetation including native and non-native salt- and brackish-marsh species (Sustaita et al. 2005, Sustaita et al. 2011). The SMHM prefers deep, dense vegetative cover at least 6 inches in height (Fisler 1965; Shellhammer et al. 1982; USFWS 2013). Persistent, low numbers of the SMHM are also found in grasslands with suitable cover at least 330 feet (100 meters) from the edge of marsh habitat, though their presence in grasslands may be seasonal and opportunistic (USFWS 2013). The Study Area does not contain brackish marsh or seasonal wetland habitats capable of supporting the SMHM. Seasonal wetlands and waters located within the Study Area and within 400 feet north of the Study Area were assessed for potential SMHM habitat, and were found not to contain vegetation of suitable height or cover to be occupied by SMHM (vegetation in this area is generally sparse and less than 6 inches in height due to regular vegetation management). Although the extreme northwest corner of the Study Area is 200 feet from potentially suitable marsh habitat, the gravel maintenance road separating the Study Area from the adjacent marshland is unvegetated and may act as a barrier to SMHM dispersal. In addition, the Study Area is mowed and/or disked, resulting in low vegetation (generally less than 6 inches in height) for most of the year. SMHM are unlikely to enter or occupy areas with low or no vegetation. Therefore, it is unlikely that the SMHM would occur within the Study Area, including the grasslands in the northwest portion of the Study Area closest to marsh habitats.

The CBR is the resident black subspecies that occurs in California coastal salt and brackish marshes from Bodega Bay to Morro Bay, with additional populations known from freshwater marshes near or in the northern Sierra Nevada foothills (Eddleman et al. 1994, Richmond et al. 2008). Black rails are extremely secretive and very difficult to glimpse or flush; identification typically relies on voice. Nests are placed on the ground in dense wetland vegetation. The

CBR is known to occur within the marsh habitat located north of the Study Area (CDFW 2015, WRA unpubl. data). The Study Area does not contain marsh habitat and the nearest suitable nesting habitat within the adjacent marsh is greater than 600 feet from the Study Area. Based upon distance from suitable nesting habitat, the Study Area does not have potential to create disturbance including noise disturbance during the nesting season for the CBR.

Pacific pond turtle is an obligate aquatic species. Although upland habitat is utilized for refuge during short dry periods, during winter, and for nesting, this species preferentially utilizes aquatic and riparian corridors for movement and dispersal. Females nest in suitable upland habitat away from water in the spring (Rathbun et al. 2002). The seasonal stream within the Study Area appears to remain dry for most of the year (Section 4.1.2), and there is no suitable freshwater habitat within 1,000 feet of the Study Area. No turtles were observed in the Study Area or adjacent drainages during the July 2015 site visit. It is unlikely Pacific pond turtle would occur within the Study Area, including during the nesting season.

Suisun song sparrow nests in tidal marsh vegetation and adjacent weedy vegetation on levees. The Study Area is greater than 200 feet from suitable nesting habitat and tidal marsh vegetation (coastal brackish marsh and possibly non-tidal brackish marsh, as shown on Figure 3). This subspecies of song sparrow does not nest in upland habitats beyond the immediate edge of marsh vegetation. Song sparrows observed within the Study Area are unlikely to be the Suisun song sparrow subspecies and it is unlikely the Suisun song sparrow subspecies would occur within the Study Area based upon distance from suitable habitat.

5.0 SUMMARY AND RECOMMENDATIONS

Three sensitive biological communities were identified within the Study Area. No special-status plant or wildlife species were observed within the Study Area, and none have a high potential for occurrence within the Study Area. Six special-status wildlife species have a moderate potential to occur within the Study Area; no special-status plant species have a moderate or high potential for occurrence. The following sections present recommendations for future studies and/or measures to avoid or reduce impacts to these sensitive habitats and species. Development constraints within the Study Area with regard to sensitive biological resources are depicted in Figure 6.

5.1 Biological Communities

As described in Section 4.1, three sensitive biological communities occur within the Study Area, including a seasonal stream, riparian/Section 1602 jurisdictional areas, and seasonal wetlands and waters. Preliminary plans indicate that these areas would be avoided by work activities related to the proposed Project. In addition, it is recommended that a buffer be maintained around these areas to prevent indirect impacts. Sensitive areas and recommended buffers are depicted in Figure 6. The three sensitive biological community types cover 6.48 acres within the Study Area; recommended no-work buffers cover an additional 12.25 acres within the Study Area (including some areas of overlap).

Study Area - 55.51 acres

Biological Constraints within the Study Area

Riparian/Section 1602 Jurisdictional Areas - 1.34 acres

Seasonal Stream - 4.59 acres

Seasonal Wetlands and Waters - 0.54 acre

30 ft. Wetland buffer - 1.06 acres within the Study Area

50 ft. Stream/Riparian buffer - 10.75 acres within the Study Area

328 ft. (100m) SMHM buffer - 0.44 acre within the Study Area

Biological Communites Offsite

Coastal Brackish Marsh (Potential SMHM Habitat)

Non-tidal Brackish Marsh (Potential SMHM Habitat)

Riparian/Section 1602 Jurisdictional Areas

Seasonal Stream

Seasonal Wetlands and Waters

Willow Pass Rd.

Willow Pass Rd.

Range Rd.

wra
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NRG Solar

Contra Costa County, California

Figure 6.

Potential Biological Constraints within the Study Area

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Map Prepared Date: 8/25/2015
Map Prepared By: MRochelle
Base Source: Contra Costa County 2014 Aerial
Data Source(s): WRA

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The recommended buffer for the seasonal stream and/or Section 1602 jurisdictional areas is 50 feet. This buffer would prevent work activities from disturbing soils, wildlife, or vegetation in and around the stream and riparian area. The buffer would also keep the project in compliance with County regulations protecting streams and trees described in Section 2.1.

The recommended buffer for the seasonal wetlands and waters is 30 feet. This distance should be adequate to prevent any indirect impacts to the wetlands caused by shading as a result of solar panels and related infrastructure that would be installed as a component of the Project. The buffer would also serve to prevent soil runoff into the wetlands from the limited soil disturbance that will occur as a component of the Project.

As depicted in Figure 6, a large portion of the Study Area does not contain sensitive biological communities or buffers, and the preliminary plans indicate that almost all work activities would occur within these areas.

One exception is the proposed entry road in the eastern portion of the Study Area. The road is in close proximity to the seasonal stream, and is overlapped by riparian/Section 1602 jurisdictional areas in some places; seasonal wetlands and waters come close to the road in other areas. It is recommended that all work along the proposed access road completely avoid these sensitive biological communities. However, it should be acceptable to work within the buffer area, since road improvements will include only limited impacts.

The following precautionary measures are recommended to avoid impacts:

- Do not perform any work in areas mapped as sensitive biological communities during both implementation and operational phases of the Project. If work is necessary within these areas, additional precautionary measures and/or federal and state regulatory permits may be required.
- A biologist should oversee placement of orange construction fencing to demarcate sensitive communities and their associated buffer zones to prevent entry into these areas.
- While vegetation removal is not anticipated, no vegetation within any the exclusion zone should be removed, including trimming without a Streambed Alteration Agreement (1602 permit).
- In areas where buffers cannot be avoided, e.g. the future alignment and/or improvement of the existing access road, pole placement, or other minor impact, a Stormwater Pollution Prevention Plan (SWPPP) and Best Management Practices (BMPs) are recommended to prevent accidental discharge of sediment or other materials into sensitive habitats. Additionally a biologist should be present during activities performed within any buffer zone.
- No work should occur within the SMHM buffer area. Although SMHM are not anticipated to occur in the Study Area, avoidance of this buffer area will ensure take of this species does not occur. It is assumed that this area can and will be avoided by Project activities. If work is necessary in this area, additional review and mitigation may be required.
- During implementation and operational phases of the Project, any access roads within buffer areas should be used for transit only or planned improvements; they should not be used for staging materials, parking or fueling vehicles, or other activities.

5.2 Special-Status Plant Species

As described in Section 4.2.1, the Project is unlikely or has no potential to impact special status plant species. Assuming that sensitive habitats will be completely avoided, and assuming that the precautionary measures outlined in Section 5.1 are followed, no additional precautionary measures should be necessary with regard to special-status plant species. However, if Project work does not proceed within 5 years, or if management activities change before work is initiated (e.g. if disking of the site is halted for more than 1 year), an additional survey for special-status plant species is recommended prior to the start of work.

5.3 Special-Status Wildlife Species

Of the 54 special-status wildlife species known to occur in the vicinity of the Study Area, only six were determined to have the potential to occur in the Study Area. Most of the species found in the review of background literature occur in habitats not found in the Study Area or the Study Area is out of the species' range. The lack of aquatic habitat within and in the vicinity of Study Area eliminates the potential for Pacific pond turtles to occur, including nesting pond turtles. Habitat suitability for grassland-associated species in the Study Area is reduced because of disking within site and adjacent development. The Study Area is also outside of disturbance buffers for marsh-related species, and no impacts are anticipated to marsh species such as CBR, and Suisun song sparrow. It is assumed that no work will occur within the SMHM buffer area shown in Figure 6 and, as such, no impacts are anticipated to SMHM.

<u>Burrowing Owl</u>

Habitat conditions within the Study Area reduce the potential for burrowing owl to occur within the Study Area during the nesting season (February 1 through August 1). However, burrowing owl has potential to occur within the Study Area during the non-nesting season and in adjacent habitats throughout the year. Burrows occupied by burrowing owl are protected in both the nesting and non-nesting seasons (CDFG 2012). The following measures are recommended to avoid impacts to burrowing owl.

- Pre-construction surveys shall be conducted within 14 days prior to initiation of construction activities.
    - o If an occupied burrow is observed within or adjacent to the Study Area during the nesting season (February 1 through August 31) and is determined to contain an active nest, then a buffer will be established surrounding the nest burrow by a qualified biologist dependent upon nest location, baseline disturbance levels, and in accordance with CDFW guidelines (CDFG 2012). No work will occur within the buffer until the nest is determined to be inactive by the biologist.
    - o If occupied burrows are observed within or adjacent to the Study Area during the non-nesting season (September 1 through January 31) or if an occupied burrow is determined to not be a nest burrow during the nesting season, then a buffer will be established surrounding the nest burrow by a qualified biologist

dependent upon location, baseline disturbance levels, and in accordance with CDFW guidelines (CDFG 2012).

- o If an occupied burrow cannot be avoided by Project activities (i.e., the burrow is within the limit of disturbance), a burrowing owl exclusion plan will be written and submitted to CDFW. The plan will be in accordance with CDFW guidelines and no exclusion activities will occur during the nesting season or until it has been determined all chicks have fledged.

- During Project activities, all pipes between 3 inches and 10 inches stored on-site shall be capped to prevent burrowing owl from establishing within the Study Area.

Special-Status and Non-Special-Status Nesting Birds

This assessment determined that four additional special-status bird species may use the Study Area or immediately adjacent habitats for breeding and foraging. The four special-status bird species in addition to burrowing owl discussed above are white-tailed kite, northern harrier, loggerhead shrike, and tricolored blackbird. In addition, active nests of most native birds are protected under the MBTA. No trees are to be removed during this Project. The following measures are recommended to avoid impacts to active nests of special-status and non-special-status bird species.

- It is recommended that Project activities be initiated during the non-nesting season (September 1 through January 31).
- If Project activities are initiated during the nesting season (February 1 through August 31), a pre-construction nesting bird survey shall be conducted within 14 days of ground disturbance to avoid disturbance to active nests, eggs, and/or young of ground-nesting birds.
    - o If active nests are observed, then a qualified biologist will establish a no-disturbance buffer surrounding the active nest to be determined by species and nest location. No work shall occur within the buffer until the biologist determines the nest is inactive. Standard buffers for raptors and other special status birds (including white-tailed kite, northern harrier, and loggerhead shrike) are typically 250 feet, while buffers for other common migratory birds is typically 50 feet. The biologist may reduce the no-disturbance buffer in consultation with CDFW, if topography or other site conditions warrant such a reduction.
    - o If Project activities are halted for more than 14 days within the nesting season, then nesting bird surveys shall be conducted within 14 days prior to re-initiation of Project activities.

Western Red Bat

Western red bat has potential to roost in trees within the seasonal stream and riparian habitats, though no maternity roost are likely to be present. The proposed Project does not include tree removal and is to avoid the stream and riparian habitats. Work in close proximity to the stream and riparian habitats will be buffered, and these buffers should prevent indirect impacts to species occurring within these sensitive areas. In the few places where work may be done within the buffers, the work is only expected to entail relatively brief and low-impact road improvements, using precautionary measures outlined in Section 5.1. Therefore, the proposed Project is not anticipated to result in impacts to western red bats or non-special-status roosting bats provided no tree removal or trimming occurs. In addition, the following precautionary measures are recommended to avoid impacts. If work is necessary within these areas, additional avoidance measures such as work windows or roost surveys may be required.

6.0 CONCLUSION

Based on the results of the site assessment, it is not anticipated that the Project will result in impacts to sensitive biological communities, special-status plant species, or special-status wildlife species, assuming that certain precautions are observed. No special-status plants were observed during the site visits, and none are expected to occur within the Study Area; accordingly, no avoidance measures for special-status plants are required. No special-status wildlife species were observed during the site visits. Six special-status wildlife species have a moderate potential to occur. Avoidance measures include nesting bird surveys and pre-construction burrowing owl surveys. Accordingly, all potential impacts to sensitive biological resources will be avoided for the proposed Project.

7.0 REFERENCES

Baldwin, BG, DH Goldman, DJ Keil, R Patterson, TJ Rosatti, and DH Wilken (eds.). 2012. The Jepson Manual: Vascular Plants of California, second edition. University of California Press, Berkeley, CA.

California Department of Fish and Game (CDFG). 1994. A Field Guide to Lake and Streambed Alteration Agreements, Sections 1600-1607, California Fish and Game Code. Environmental Services Division, Sacramento, CA.

California Department of Fish and Game (CDFG). 2010. List of Vegetation Alliances and Associations. Vegetation Classification and Mapping Program, Sacramento, CA.

California Department of Fish and Game (CDFG). 2012. Staff Report on Burrowing Owl Mitigation. State of California Natural Resources Agency, Department of Fish and Game.

California Department of Fish and Wildlife (CDFW). 2015. California Natural Diversity Database. Wildlife and Habitat Data Analysis Branch, Sacramento, CA.

California Native Plant Society (CNPS). 2015. Inventory of Rare and Endangered Plants of California. California Native Plant Society, Sacramento, California. Online at: http://www.rareplants.cnps.org; most recently accessed: July 2015.

Davis, JN and CA Niemala. 2008. Northern Harrier (*Circus cyaneus*). In: Shuford, WD and T Gardali, eds. 2008. California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Game, Sacramento.

Dunk, JR. 1995. White-tailed Kite (*Elanus leucurus*), The Birds of North America Online (A Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/178.

Eddleman, WR, RE Flores and M Legare. 1994. Black Rail (*Laterallus jamaicensis*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; The Birds of North America Online: http://bna.birds.cornell.edu/bna/species/123.

Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual. Department of the Army, Waterways Experiment Station, Vicksburg, Mississippi 39180-0631.

Fisler, GF. 1965. Adaptations and speciation in harvest mice of the marshes of San Francisco Bay. University of California Publications in Zoology 77: 1-108.

Glover, S. 2009. Breeding Bird Atlas of Contra Costa County. Mount Diablo Audubon Society, Walnut Creek, CA.

Google Earth. 2015. Aerial Imagery 1938-2014. Accessed: July-August 2015.

Harvey, T. E. 1988. Breeding biology of the California clapper rail in South San Francisco Bay. Transactions of the Western Section of the Wildlife Society 24: 98-104.

Harvey, T. E. 1980. A breeding season survey of the California clapper rail (*Rallus longirostns obsoletus*) in South San Francisco Bay. San Francisco Bay National Wildlife Refuge, Newark, California.

Holland, RF. 1986. Preliminary Descriptions of the Terrestrial Natural Communities of California. Prepared for the California Department of Fish and Game, Sacramento, CA.

Jennings, MR. 2004. An Annotated Check List of Amphibians and Reptile Species of California and Adjacent Waters, third revised edition. California Department of Fish and Game, Sacramento, CA.

Jepson Flora Project (eds.). 2015. Jepson eFlora. Online at: http://ucjeps.berkeley.edu/IJM.html; most recently accessed July 2015.

Meese, RJ, EC Beedy and WJ Hamilton, III. 2014. Tricolored Blackbird (*Agelaius tricolor*), The Birds of North America Online (A Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/423.

Natural Resources Conservation Service (NRCS). 2010. Field Indicators of Hydric Soils in the United States, version 7.0. In cooperation with the National Technical Committee for Hydric Soils, Fort Worth, TX.

NatureServe. 2010. NatureServe Conservation Status. Available online at: http://explorer.natureserve.org/ranking.htm

Rathbun, GB, NJ Scott, Jr., and TG Murphey. 2002. Terrestrial habitat use by Pacific pond turtles in a Mediterranean climate. The Southwestern Naturalist 47: 225-235.

Richmond, O.M., J. Tecklin, and S.R. Beissinger. 2008. Distribution of California Black Rails in the Sierra Nevada Foothills. J. of Field Ornithology 79(4): 381-390.

Sawyer, J, T Keeler-Wolf and J Evens. 2009. A Manual of California Vegetation. California Native Plant Society, Berkeley, CA.

Shellhammer, H.S., Jackson, R., Davilla, W., Gilroy, A.M., Harvey, H.T., and Simons, L. 1982. Habitat Preferences of Salt Marsh Harvest Mice (*Reithrodontomys raviventris*). The Wasmann Journal of Biology. Vol: 40(1-2). pp. 102-144.

Shuford, WD, and T Gardali (eds). 2008. California Bird Species of Special Concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, California, and CDFG, Sacramento.

Stebbins, RC. 2003. A Field Guide to Western Reptiles and Amphibians, third edition. The Peterson Field Guide Series, Houghton Mifflin Company, NY.

Sustaita, D, L Barthman-Thompson, P Quickert, L Patterson, and S Estrella. 2005. Annual Salt Marsh Harvest Mouse Demography and Habitat Use in Suisun Marsh Conservation Areas. Presentation at the CALFED Science Conference.

Sustaita, D, PF Quickert, L Patterson, L Barthman-Thompson, S Estrella. 2011. Salt Marsh Harvest Mouse Demography and Habitat Use in the Suisun Marsh, California. The Journal of Wildlife Management 75(6): 1498-1507.

U.S. Army Corps of Engineers (Corps). 2008. Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region.

U.S. Department of Agriculture (USDA), Natural Resources Conservation Service. 2015. Web Soil Survey. Online at http://websoilsurvey.nrcs.usda.gov; most recently accessed: July 2015.

United States Fish and Wildlife Service (USFWS). 2013. Recovery Plan for Tidal Marsh Ecosystems of Northern and Central California. Sacramento, California. xviii + 605 pp.

U.S. Geological Survey (USGS). 1980. Honker Bay, California. 7.5-minute quadrangle topographic map. Originally published in 1953; photorevised in 1980.

Western Bat Working Group (WBWG). 2015. Species Accounts. Available online at: http://wbwg.org/western-bat-species/; Accessed July 2015

WRA, Inc. (WRA). 2005. Delineation of Potential Jurisdictional Wetlands and "Other Waters" Under Section 404 of the Clean Water Act Mirant Delta Facility, Pittsburg, Contra Costa County, California. 89pp. plus map.

WRA, Inc. (WRA). 2013. Wetland Delineation Data Sheets and Map ("Map of Section 404 Wetlands and Non-wetland Waters, GenOn/nrg Generating Station, Pittsburg, California"). 34pp. plus map.

Zeiner, DC, WF Laudenslayer, Jr., KE Mayer, and M White. 1990. California's Wildlife, Volume I-III: Amphibians and Reptiles, Birds, Mammals. California Statewide Wildlife Habitat Relationships System, California Department of Fish and Game, Sacramento, CA.

APPENDIX A

LIST OF OBSERVED PLANT AND WILDLIFE SPECIES

Appendix A1. Wildlife species observed by WRA biologists during the May 28, 2015 and July 7, 2015 site visits at the NRG Solar Array Area.

SCIENTIFIC NAME	COMMON NAME
Birds	
Mimus polyglottos	northern mockingbird
Haemorhous mexicanus	house finch
Corvus brachyrhynchos	American crow
Corvus corax	common raven
Falco sparverius	American kestrel
Buteo jamaicensis	red-tailed hawk
Zenaida macroura	mourning dove
Tachycineta thalassina	violet-green swallow
Hirundo rustica	barn swallow
Cathartes aura	turkey vulture
Sayornis nigricans	black phoebe
Aphelocoma californica	western scrub jay
Agelaius phoeniceus	red-winged blackbird
Geothlypis trichas	common yellowthroat
Charadrius vociferus	killdeer
Melospiza melodia	song sparrow
Mammals	
Thomomys bottae	Botta's pocket gopher (mounds)
Lepus californicus	black-tailed jackrabbit
Otospermophilus beecheyi	California ground squirrel
Canis latrans	coyote (scat)

Appendix A2. Plant species observed by WRA biologists during the May 28, 2015 and July 7, 2015 site visits at the NRG Solar Array Area.

Family	Scientific name	Common name	Life form	Origin	Rare Status[1]	Invasive Status[2]	Wetland indicator[3]
Apiaceae	*Foeniculum vulgare*	fennel	forb	non-native	--	high	NL
Arecaceae	*Washingtonia robusta*	Washington fan palm	tree	non-native	--	moderate	NL
Asclepiadaceae	*Asclepias fascicularis*	Mexican milkweed	forb	native	--	--	FAC
Asteraceae	*Baccharis pilularis ssp. pilularis*	coyote brush	shrub	native	--	--	NL
Asteraceae	*Carduus pycnocephalus*	Italian thistle	forb	non-native	--	moderate	NL
Asteraceae	*Centaurea solstitialis*	yellow star thistle	forb	non-native	--	high	NL
Asteraceae	*Centromadia pungens ssp. pungens*	common tarweed	forb	native	--	--	FAC
Asteraceae	*Cynara cardunculus ssp. cardunculus*	artichoke	forb	non-native	--	moderate	NL
Asteraceae	*Dittrichia graveolens*	stinkwort	forb	non-native	--	moderate	NL
Asteraceae	*Erigeron canadensis*	Canadian horseweed	forb	native	--	--	FACU
Asteraceae	*Helminthotheca echioides*	bristly ox-tongue	forb	non-native	--	limited	FACU
Asteraceae	*Lactuca serriola*	prickly lettuce	forb	non-native	--	assessed	FACU
Asteraceae	*Silybum marianum*	milk thistle	forb	non-native	--	limited	NL
Asteraceae	*Sonchus asper ssp. asper*	prickly sow thistle	forb	non-native	--	assessed	FAC
Asteraceae	*Sonchus oleraceus*	common sow thistle	forb	non-native	--	--	NL
Asteraceae	*Xanthium strumarium*	rough cocklebur	forb	native	--	--	FAC
Boraginaceae	*Amsinckia intermedia*	common fiddleneck	forb	native	--	--	NL
Brassicaceae	*Brassica nigra*	black mustard	forb	non-native	--	moderate	NL
Brassicaceae	*Lepidium latifolium*	perennial pepperweed	forb	non-native	--	high	FAC
Brassicaceae	*Raphanus sativus*	wild radish	forb	non-native	--	limited	NL
Caryophyllaceae	*Spergularia rubra*	red sandspurry	forb	non-native	--	--	FAC
Chenopodiaceae	*Atriplex prostrata*	fat hen	forb	non-native	--	--	FACW
Chenopodiaceae	*Bassia hyssopifolia*	fivehook bassia	forb	non-native	--	limited	FAC
Chenopodiaceae	*Beta vulgaris*	common beet	forb	non-native	--	--	NL
Chenopodiaceae	*Salicornia pacifica*	Pacific swampfire	forb	native	--	--	OBL
Convolvulaceae	*Convolvulus arvensis*	field bindweed	forb	non-native	--	assessed	NL
Convolvulaceae	*Cressa truxillensis*	spreading alkaliweed	forb	native	--	--	FACW
Cyperaceae	*Cyperus eragrostis*	tall flatsedge	graminoid	native	--	--	FACW
Cyperaceae	*Schoenoplectus californicus*	California bulrush	graminoid	native	--	--	OBL
Euphorbiaceae	*Croton setiger*	turkey mullein	forb	native	--	--	NL
Fabaceae	*Medicago polymorpha*	bur medic	forb	non-native	--	limited	FACU
Fabaceae	*Melilotus indicus*	yellow annual sweetclover	forb	non-native	--	--	FACU
Fabaceae	*Vicia sativa ssp. sativa*	pubescent common vetch	forb	non-native	--	--	FACU

Family	Scientific name	Common name	Life form	Origin	Rare Status[1]	Invasive Status[2]	Wetland indicator[3]
Fabaceae	*Vicia villosa ssp. villosa*	winter vetch	forb	non-native	--	assessed	NL
Fagaceae	*Quercus agrifolia var. agrifolia*	coast live oak	tree	native	--	--	NL
Frankeniaceae	*Frankenia salina*	alkali heath	forb	native	--	--	FACW
Geraniaceae	*Erodium botrys*	longbeak stork's bill	forb	non-native	--	assessed	FACU
Geraniaceae	*Erodium cicutarium*	redstem stork's bill	forb	non-native	--	limited	NL
Geraniaceae	*Erodium moschatum*	musky stork's bill	forb	non-native	--	assessed	NL
Geraniaceae	*Geranium dissectum*	cutleaf geranium	forb	non-native	--	moderate	NL
Malvaceae	*Malva nicaeensis*	bull mallow	forb	non-native	--	--	NL
Malvaceae	*Malvella leprosa*	alkali mallow	forb	native	--	--	FACU
Moraceae	*Ficus carica*	common fig	tree	non-native	--	moderate	FACU
Oleaceae	*Fraxinus latifolia*	Oregon ash	tree	native	--	--	FACW
Onagraceae	*Epilobium ciliatum ssp. ciliatum*	fringed willowherb	forb	native	--	--	FACW
Poaceae	*Avena barbata*	slender oat	graminoid	non-native	--	moderate	NL
Poaceae	*Avena fatua*	wild oat	graminoid	non-native	--	moderate	NL
Poaceae	*Bromus diandrus*	ripgut brome	graminoid	non-native	--	moderate	NL
Poaceae	*Bromus hordeaceus*	soft chess	graminoid	non-native	--	limited	FACU
Poaceae	*Crypsis schoenoides*	swamp pricklegrass	graminoid	non-native	--	--	OBL
Poaceae	*Cynodon dactylon*	Bermuda grass	graminoid	non-native	--	moderate	FACU
Poaceae	*Distichlis spicata*	saltgrass	graminoid	native	--	--	FAC
Poaceae	*Festuca arundinacea*	tall fescue	graminoid	non-native	--	moderate	FACU
Poaceae	*Festuca bromoides*	brome fescue	graminoid	non-native	--	--	FAC
Poaceae	*Festuca perennis*	Italian rye grass	graminoid	non-native	--	moderate	FAC
Poaceae	*Hordeum marinum ssp. gussoneanum*	Mediterranean barley	graminoid	non-native	--	moderate	FAC
Poaceae	*Hordeum murinum ssp. murinum*	wall barley	graminoid	non-native	--	moderate	FACU
Poaceae	*Paspalum dilatatum*	dallis grass	graminoid	non-native	--	--	FAC
Poaceae	*Bromus madritensis ssp. madritensis*	foxtail chess	graminoid	non-native	--	--	NL
Poaceae	*Piptatherum miliaceum*	smilo grass	graminoid	non-native	--	--	NL
Polygonaceae	*Polygonum aviculare ssp. aviculare*	dooryard knotweed	forb	non-native	--	--	FACW
Polygonaceae	*Rumex crispus*	curly dock	forb	non-native	--	limited	FAC
Portulacaceae	*Portulaca oleracea*	little hogweed	forb	non-native	--	--	FAC
Primulaceae	*Anagallis arvensis*	scarlet pimpernel	forb	non-native	--	--	NL
Rosaceae	*Rosa californica*	California rose	shrub	native	--	--	FAC
Rosaceae	*Rubus armeniacus*	Himalayan blackberry	shrub	non-native	--	high	FACU
Rubiaceae	*Galium aparine*	common bedstraw	forb	native	--	--	FACU

Family	Scientific name	Common name	Life form	Origin	Rare Status[1]	Invasive Status[2]	Wetland indicator[3]
Salicaceae	*Populus fremontii ssp. fremontii*	Fremont cottonwood	tree	native	--	--	FACW
Salicaceae	*Salix exigua var. exigua*	sandbar willow	tree	native	--	--	FACW
Salicaceae	*Salix laevigata*	red willow	tree	native	--	--	FACW
Salicaceae	*Salix lasiolepis*	arroyo willow	tree	native	--	--	FACW
Solanaceae	*Solanum furcatum*	forked nightshade	forb	non-native	--	--	NL
Typhaceae	*Typha latifolia*	common cattail	forb	native	--	--	OBL
Vitaceae	*Vitis californica*	California wild grape	vine	native	--	--	FACU

All species identified using the *Jepson Manual, 2nd Edition* (Baldwin et al. 2012) and *A Flora of Sonoma County* (Best et al. 1996); nomenclature follows Baldwin et al. 2012

[1]Rare Status: The CNPS Inventory of Rare and Endangered Plants (CNPS 2014)

FE:	Federal Endangered
FT:	Federal Threatened
SE:	State Endangered
ST:	State Threatened
SR:	State Rare
Rank 1A:	Plants presumed extirpated in California and either rare or extinct elsewhere
Rank 1B:	Plants rare, threatened, or endangered in California and elsewhere
Rank 2A:	Plants presumed extirpated in California, but more common elsewhere
Rank 2B:	Plants rare, threatened, or endangered in California, but more common elsewhere
Rank 3:	Plants about which we need more information – a review list
Rank 4:	Plants of limited distribution – a watch list

[2]Invasive Status: California Invasive Plant Inventory (Cal-IPC 2006)

High:	Severe ecological impacts; high rates of dispersal and establishment; most are widely distributed ecologically.
Moderate:	Substantial and apparent ecological impacts; moderate-high rates of dispersal, establishment dependent on disturbance; limited-moderate distribution ecologically
Limited:	Minor or not well documented ecological impacts; low-moderate rate of invasiveness; limited distribution ecologically
Assessed:	Assessed by Cal-IPC and determined to not be an existing current threat

[3]Wetland Status: National List of Plant Species that Occur in Wetlands, California – Region 10 (Lichvar 2012)

OBL:	Almost always a hydrophyte, rarely in uplands
FACW:	Usually a hydrophyte, but occasionally found in uplands
FAC:	Commonly either a hydrophyte or non-hydrophyte
FACU:	Occasionally a hydrophyte, but usually found in uplands
UPL:	Rarely a hydrophyte, almost always in uplands
NL:	Rarely a hydrophyte, almost always in uplands
NI:	No information; not factored during wetland delineation

APPENDIX B

POTENTIAL FOR SPECIAL-STATUS SPECIES TO OCCUR IN THE STUDY AREA

Appendix B. Potential for special-status species to occur in the Study Area. List compiled from the California Department of Fish and Wildlife (CDFW) Natural Diversity Database (CDFW 2015), U.S. Fish and Wildlife Service (USFWS) Species Lists, and California Native Plant Society (CNPS) Electronic Inventory search of the Antioch North, Antioch South, Birds Landing, Clayton, Denverton, Fairfield South, Honker Bay, Vine Hill, and Walnut Creek USGS 7.5-minute quadrangles and a review of other CDFW lists and publications (Jennings and Hayes 1994, Zeiner et al. 1990).

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Mammals				
pallid bat *Antrozous pallidus*	SSC, WBWG	Found in deserts, grasslands, shrublands, woodlands, and forests. Most common in open, forages along river channels. Roost sites include crevices in rocky outcrops and cliffs, caves, mines, trees and various human structures such as bridges, barns, and human-occupied as well as vacant buildings. Roosts must protect bats from high temperatures. Very sensitive to disturbance of roosting sites.	**Unlikely.** Tree roosting sites are typically large cavities in conifer snags (ponderosa or redwoods) or boles in large oak trees (WBWG 2015). These roost site characteristics and tree species are not present within or near the Study Area.	No further recommendations.
Townsend's big-eared bat *Corynorhinus townsendii*	SC, SSC, WBWG	This species is associated with a wide variety of habitats from deserts to mid-elevation mixed coniferous-deciduous forest. Females form maternity colonies in buildings, caves and mines and males roost singly or in small groups. Foraging occurs in open forest habitats where they glean moths from vegetation.	**Unlikely.** No caves, mines, or other suitable roost habitat is present in the Study Area or vicinity.	No further recommendations.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
western red bat *Lasiurus blossevillii*	SSC, WBWG	This species is typically solitary, roosting primarily in the foliage of trees or shrubs. Day roosts are commonly in edge habitats adjacent to streams or open fields, in orchards, and sometimes in urban areas. There may be an association with intact riparian habitat (particularly willows, cottonwoods, and sycamores).	**Moderate Potential.** Potential roost habitat is present in trees within the seasonal stream and immediately adjacent areas within the Study Area. The proposed Project avoids these habitats.	Avoidance of stream and riparian habitats, or additional avoidance measures (e.g. work windows).
big free-tailed bat *Nyctinomops macrotis*	SSC, WBWG	Occurs rarely in low-lying arid areas. Requires high cliffs or rocky outcrops for roosting sites.	**Unlikely.** No cliffs or other suitable roost habitat are present in the Study Area or vicinity.	No further recommendations.
salt-marsh harvest mouse *Reithrodontomys raviventris*	FE, SE, CFP, RP	Found only in the saline emergent wetlands of San Francisco Bay and its tributaries. Pickleweed is the primary habitat. Does not burrow, but builds loosely organized nests and requires higher areas for flood escape.	**Unlikely.** Suitable marsh habitat is greater than 200 feet from the Study Area, and no marsh habitat is present within the Study Area.	Avoid areas within 328 feet of suitable marsh habitat.
San Joaquin kit fox *Vulpes macrotis mutica*	FE, ST	Annual grasslands or grassy open stages with scattered shrubby vegetation. Need loose-textured sandy soils for burrowing, and suitable prey base.	**No Potential.** The Study Area is outside of the species' known range.	No further recommendations.
American badger *Taxidea taxus*	SSC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Requires friable soils and open, uncultivated ground. Preys on burrowing rodents.	**No Potential.** The Study Area is a disked and maintained Valley and Foothill Grasslands with no connectivity to occupied or suitable habitats.	No further recommendations.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Birds				
golden eagle *Aquila chrysaetos*	CFP, BCC	Occurs year-round in rolling foothills, mountain areas, sage-juniper flats, and deserts. Cliff-walled canyons provide nesting habitat in most parts of range; also nests in large trees, usually within otherwise open areas.	**Unlikely.** The Study Area and vicinity do not contain suitable nesting habitat. This species may be observed foraging or flying over the Study Area.	No further recommendations.
burrowing owl *Athene cunicularia*	SSC, BCC	Year-round resident and winter visitor. Occurs in open, dry grasslands and scrub habitats with low-growing vegetation, perches and abundant mammal burrows. Preys upon insects and small vertebrates. Nests and roosts in old mammal burrows, most commonly those of ground squirrels.	**Moderate Potential.** The Study Area is predominantly a disked grassland with few suitable burrows and tall vegetation in undisked habitat. However, suitable burrows are present in immediately adjacent habitats.	Pre-construction survey within 14 days of ground disturbance regardless of time of year.
short-eared owl *Asio flammeus*	SSC	Occurs year-round, but primarily as a winter visitor; breeding very restricted in most of California. Found in open, treeless areas (e.g., marshes, grasslands) with elevated sites for foraging perches and dense herbaceous vegetation for roosting and nesting. Preys mostly on small mammals, particularly voles.	**Unlikely.** This species is rare in the region, and mowing and disking regimes within the Study Area reduce the potential for nesting by this species.	No further recommendations.
long-eared owl *Asio otus*	SSC	Occurs year-round in California. Nests in trees in a variety of woodland habitats, including oak and riparian, as well as tree groves. Requires adjacent open land with rodents for foraging, and the presence of old nests of larger birds (hawks, crows, magpies) for breeding.	**Unlikely.** This species is extremely rare in the region, and has not been documented in the vicinity (Glover 2009, CDFW 2015). In addition, no trees are to be removed by the proposed Project.	No further recommendations.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
ferruginous hawk *Buteo regalis*	BCC	Winter visitor to open habitats, including grasslands, sagebrush flats, scrub, and low foothills surrounding valleys. Preys on mammals. Does not breed in California.	**Unlikely.** The species does not breed in the region, but may be observed foraging within the Study Area during the non-breeding season.	No further recommendations.
Swainson's hawk *Buteo swainsoni*	ST	Summer resident in California's Central Valley and limited portions of interior southern California. Nests in tree groves and isolated trees in riparian and agricultural areas, including near buildings. Forages in grasslands and scrub habitats as well as agricultural fields, especially alfalfa.	**Unlikely.** This species is typically found further east in the Delta and Central Valley. The nearest nesting occurrence is over 5 miles from the Study Area.	No further recommendations.
northern harrier *Circus cyaneus*	SSC	Year-round resident and winter visitor. Found in open habitats including grasslands, prairies, marshes and agricultural areas. Nests on the ground in dense vegetation, typically near water or otherwise moist areas. Preys on small vertebrates.	**Moderate Potential.** Grasslands within the Study Area provide suitable foraging habitat; however, mowing and disking regimes within the Study Area reduce the potential for nesting by this species.	Pre-construction survey within 14 days of ground disturbance during the nesting season (February 1-August 31).
white-tailed kite *Elanus leucurus*	CFP	Year-round resident in coastal and valley lowlands with scattered trees and large shrubs, including grasslands, marshes and agricultural areas. Nests in trees, of which the type and setting are highly variable. Preys on small mammals and other vertebrates.	**Moderate Potential.** Trees within the seasonal stream and riparian habitat adjacent to the Study Area provide suitable nesting habitat.	Pre-construction survey within 14 days of ground disturbance during the nesting season (February 1-August 31).

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
loggerhead shrike *Lanius ludovicianus*	SSC, BCC	Year-round resident in open woodland, grassland, savannah and scrub. Prefers areas with sparse shrubs, trees, posts, and other suitable perches for foraging. Preys upon large insects and small vertebrates. Nests are well-concealed in densely-foliaged shrubs or trees.	**Moderate Potential.** Trees and shrubs within a portion of the seasonal stream and riparian habitat adjacent to the Study Area provide suitable nesting habitat.	Pre-construction survey within 14 days of ground disturbance during the nesting season (February 1-August 31).
California black rail *Laterallus jamaicensis coturniculus*	ST, CFP, BCC	Resident in marshes (saline to freshwater) with dense vegetation within four inches of the ground. Prefers larger, undisturbed marshes close to a major water source. Extremely secretive and cryptic.	**Unlikely.** The Study Area does not contain suitable marsh habitat for this species. The nearest suitable marsh habitat is greater than 200 feet from the Study Area.	No further recommendations.
California Ridgway's (clapper) rail *Rallus obsoletus obsoletus*	FE, SE, CFP	Year-round resident in tidal marshes of the San Francisco Bay estuary. Requires tidal sloughs and intertidal mud flats for foraging, and dense marsh vegetation for nesting and cover. Typical habitat features abundant growth of cordgrass and pickleweed. Feeds primarily on molluscs and crustaceans.	**No Potential.** Salt marsh and wetland habitats are not present in the Study Area. The nearest suitable salt marsh habitat is over 700 feet from the Study Area.	No further recommendations.
California least tern *Sternula antillarum browni*	FE, SE, CFP	(Nesting colony) nests along the coast from San Francisco Bay south to northern Baja California. Breeding colonies in San Francisco Bay found in abandoned salt ponds and along estuarine shores. Colonial breeder on barren or sparsely vegetated, flat substrates near water.	**Unlikely.** The Study Area does not contain nesting or foraging habitat for this species. The nearest nesting habitat is greater than 0.5 mile northeast.	No further recommendations.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
bank swallow *Riparia riparia*	ST	Migrant in riparian and other lowland habitats in western California. Colonial nester in riparian areas with vertical cliffs and bands with fine-textured or fine-textured sandy soils near streams, rivers, lakes or the ocean. Currently is known to breed in Siskiyou, Shasta, and Lassen Cos., and along Sacramento River from Shasta Co. south to Yolo Co.	**No Potential.** The Study Area and vicinity do not contain suitable riparian bank habitat for this species. The Study Area is outside the known breeding range.	No further recommendations.
San Francisco (saltmarsh) common yellowthroat *Geothlypis trichas sinuosa*	SSC, BCC	Resident of the San Francisco Bay region, in fresh and salt water marshes. Requires thick, continuous cover down to water surface for foraging; tall grasses, tule patches, willows for nesting.	**No Potential.** This subspecies does not occur east of the Carquinez Strait (Shuford and Gardali 2008). Although common yellowthroat was observed during a site visit, the Study Area is out of the range of the protected subspecies.	No further recommendations.
Grasshopper sparrow *Ammodramus savannarum*	SSC	Summer resident. Breeds in open grasslands, generally with low- to moderate-height grasses and scattered shrubs. Well-hidden nests are placed on the ground.	**Unlikely.** The Study Area contains tall grasses or is disked, and is not near suitable habitat for this species. This species is known in the open space preserves to the south of Pittsburg.	No further recommendations.
song sparrow, Modesto population *Melospiza melodia*	SSC, BCC	Restricted to the Sacramento and extreme northern San Joaquin Valleys from Colusa County south to Stanislaus County. Associated with woody riparian habitat and freshwater marshes.	**No Potential.** The Study Area is outside of the species' known range.	No further recommendations.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Suisun song sparrow *Melospiza melodia maxillaris*	BCC, SSC	Resident of brackish-water marshes surrounding Suisun Bay. Inhabits cattails, tules and other sedges, and *Salicornia*; also known to frequent tangles bordering sloughs.	**Unlikely.** The Study Area does not contain suitable marsh habitat or vegetation for nesting. Although this subspecies is known in nearby marshes, it is unlikely to nest or forage in the Study Area.	No further recommendations.
San Pablo song sparrow *Melospiza melodia samuelis*	BCC, SSC	Resident of salt marshes along the north side of San Francisco and San Pablo Bays. Inhabits tidal sloughs in the *Salicornia* marshes; nests in Grindelia bordering slough channels.	**No Potential.** The Study Area is outside of the subspecies known range.	No further recommendations.
tricolored blackbird *Agelaius tricolor*	SSC, BCC	Nearly endemic to California, where it is most numerous in the Central Valley and vicinity. Highly colonial, nesting in dense aggregations over or near freshwater in emergent growth or riparian thickets. Also uses flooded agricultural fields. Abundant insect prey near breeding areas essential.	**Moderate Potential.** The Study Area contains tules and willows within the seasonal stream and riparian habitats. These habitats may provide suitable nesting habitat.	Avoid the seasonal stream and riparian areas; Pre-construction survey within 14 days of ground disturbance during the nesting season (February 1-August 31).
Reptiles and Amphibians				
California tiger salamander *Ambystoma californiense*	FT, ST	Inhabits grassland, oak woodland, ruderal and seasonal pool habitats. Seasonal ponds and vernal pools are crucial to breeding. Adults utilize mammal burrows as estivation habitat.	**No Potential.** No suitable breeding habitat is present in the Study Area or vicinity. The nearest occupied location is over 2 miles south and is separated from the Study Area by urban barriers.	No further recommendations.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
California red-legged frog *Rana draytonii*	FT, SSC	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. Requires 11 to 20 weeks of permanent water for larval development. Must have access to estivation habitat.	**No Potential.** No suitable breeding habitat is present in the Study Area or vicinity. The nearest occupied location is over 2 miles south and is separated from the Study Area by urban barriers.	No further recommendations.
Alameda whipsnake *Masticophis lateralis euryxanthus*	FT, ST	Inhabits chaparral and foothill-hardwood habitats in the eastern Bay Area. Prefers south-facing slopes and ravines with rock outcroppings where shrubs form a vegetative mosaic with oak trees and grasses and small mammal burrows provide basking and refuge.	**No Potential.** The Study Area is outside of the species' known range and does not contain suitable habitat.	No further recommendations.
giant gartersnake *Thamnophis gigas*	FT, ST	Prefers freshwater marsh and low gradient streams. Has adapted to drainage canals and irrigation ditches. This is the most aquatic of the garter snakes in California.	**No Potential.** The Study Area is outside of the species' known range and does not contain suitable habitat.	No further recommendations.
Pacific pond turtle *Actinemys marmorata*	SSC	A thoroughly aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches with aquatic vegetation. Require basking sites such as partially submerged logs, vegetation mats, or open mud banks, and suitable upland habitat (sandy banks or grassy open fields) for egg-laying.	**Unlikely.** The Study Area and vicinity do not contain suitable aquatic habitat capable of supporting pond turtle. In addition, the substantial distance to suitable aquatic habitat results in a reduced likelihood for turtles to use the Study Area for nesting.	No further recommendations.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Blainville's (coast) horned lizard *Phrynosoma blainvillii (coronatum)*	SSC	Frequents a wide variety of habitats, most common in lowlands along sandy washes with scattered low bushes. Prefers friable, rocky, or shallow sandy soils for burial; open areas for sunning; bushes for cover; and an abundant supply of ants and other insects.	**Unlikely.** The Study Area and vicinity do not contain suitable habitat. Annual disking also reduces potential for this species to occur.	No further recommendations.
Silvery legless lizard *Anniella pulchra pulchra*	SSC	Sandy or loose loamy soils under sparse vegetation. Soil moisture is essential. They prefer soils with a high moisture content.	**Unlikely.** The Study Area and vicinity do not contain suitable sandy habitat. Annual disking also reduces potential for this species to occur.	No further recommendations.
Fishes				
green sturgeon *Acipenser medirostris*	FT, SSC (NMFS)	Anadromous. Spawns in the Sacramento and Klamath River systems. Lingering transients may be found throughout the San Francisco Bay Estuary, particularly juveniles.	**No Potential.** The Study Area does not contain aquatic habitat.	No further recommendations.
Delta smelt *Hypomesus transpacificus*	FT, SE, RP	Lives in the Sacramento-San Joaquin estuary in areas where salt and freshwater systems meet. Occurs seasonally in Suisun Bay, Carquinez Strait and San Pablo Bay. Seldom found at salinities > 10 ppt; most often at salinities < 2 ppt.	**No Potential.** The Study Area does not contain aquatic habitat.	No further recommendations.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Sacramento perch *Archoplites interruptus*	SSC	Historically found in the sloughs, slow-moving rivers, and lakes of the Central Valley. Prefer warm water. Aquatic vegetation is essential for young. Tolerate wide range of physio-chemical water conditions.	**No Potential.** The Study Area does not contain aquatic habitat.	No further recommendations.
steelhead - Central Valley ESU *Oncorhynchus mykiss irideus*	FT (NMFS)	The Central Valley ESU includes all naturally spawned populations (and their progeny) in the Sacramento and San Joaquin Rivers and their tributaries, excluding San Francisco and San Pablo bays and their tributaries. Preferred spawning habitat for steelhead is in cool to cold perennial streams with high dissolved oxygen levels and fast flowing water.	**No Potential.** The Study Area does not contain aquatic habitat.	No further recommendations.
Chinook salmon - Central Valley Spring-run ESU *Oncorhynchus tshawytscha*	FT,ST	Occurs in the Feather River and the Sacramento River and its tributaries, including Butte, Mill, Deer, Antelope and Beegum Creeks. Adults enter the Sacramento River from late March through September. Adults migrate upstream to spawn in cool, clear, well-oxygenated streams from mid-August through early October.	**No Potential.** The Study Area does not contain aquatic habitat.	No further recommendations.
Chinook salmon - Central Valley Fall/late fall-run ESU *Oncorhynchus tshawytscha*	SSC, RP, FS sensitive (NMFS)	Populations spawning in the Sacramento and San Joaquin Rivers and their tributaries. Adults migrate upstream to spawn in cool, clear, well-oxygenated streams.	**No Potential.** The Study Area does not contain aquatic habitat.	No further recommendations.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Chinook salmon - Sacramento River Winter-run ESU *Oncorhynchus tshawytscha*	FE, SE, RP, (NMFS)	Occurs in the Sacramento River below Keswick Dam. Spawns in the Sacramento River but not in tributary streams. Adults migrate upstream to spawn in cool, clear, well-oxygenated streams.	**No Potential.** The Study Area does not contain aquatic habitat.	No further recommendations.
Sacramento splittail *Pogonichthys macrolepidotus*	SSC, RP	Endemic to the lakes and rivers of the Central Valley, but now confined to the Sacramento Delta, Suisun Bay and associated marshes. Occurs in slow moving river sections and dead end sloughs. Requires flooded vegetation for spawning and foraging for young.	**No Potential.** The Study Area does not contain aquatic or marsh habitats and is not contiguous with marsh habitat.	No further recommendations.
longfin smelt *Spirinchus thaleichthys*	ST, SSC, RP	Euryhaline, nektonic and anadromous. Found in open waters of estuaries, mostly in middle or bottom of water column. Prefer salinities of 15 to 30 ppt, but can be found in completely freshwater to almost pure seawater.	**No Potential.** The Study Area does not contain aquatic or estuarine habitats.	No further recommendations.
Invertebrates				
vernal pool fairy shrimp *Branchinecta lynchi*	FT, SSI	Endemic to the grasslands of the Central Valley, central coast mountains, and south coast mountains, in astatic rain-filled pools. Inhabit small, clear-water sandstone-depression pools and grassed swale, earth slump, or basalt-flow depression pools.	**Unlikely.** The Study Area and vicinity do not contain vernal pool habitat.	No further recommendations.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
vernal pool tadpole shrimp *Lepidurus packardi*	FE, SSI	Inhabits vernal pools and swales in the Sacramento Valley containing clear to highly turbid water. Pools commonly found in grass bottomed swales of unplowed grasslands. Some pools are mud-bottomed and highly turbid.	**No Potential.** The Study Area and vicinity do not contain vernal pool habitat.	No further recommendations.
vernal pool andrenid bee *Andrena blennospermatis*	SSI	A solitary, ground-nesting bee found in upland areas near vernal pools. Its host plant is *Blennosperma* spp. and does not forage far from the host plant. Range is Contra Costa, El Dorado, Lake, Placer, Sacramento, San Joaquin, Solano, Sonoma, Tehama, and Yolo counties.	**Unlikely.** The Study Area is outside the known range of this species and does not contain vernal pool habitat or host plant species.	No further recommendations.
Antioch andrenid bee *Perdita scitula antiochensis*	SSI	Antioch dunes. Visits flowers of *Eriogonum*, *Gutierrezia californica*, *Heterotheca grandiflora*, *Lessingia glandulifera*.	**Unlikely.** The Study Area is outside the known range of this species and does not contain dune habitat or associated flowering plants.	No further recommendations.
Antioch Dunes halcitid bee *Sphecodogastra antiochensis*	SSI	A rare, specialist foraging bee with a very restricted distribution—the Antioch Dunes of Contra Costa County, California.	**Unlikely.** The Study Area is outside the known range of this species and does not contain dune habitat.	No further recommendations.
Antioch specid wasp *Philanthus nasalis*	SSI	Known only from the Antioch dunes of the Sacramento-San Joaquin Delta area, in the vicinity of Antioch, Contra Costa County. Also collected in Santa Cruz County.	**Unlikely.** The Study Area is outside the known range of this species and does not contain dune habitat.	No further recommendations.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Antioch Dunes anthicid beetle *Anthicus antiochensis*	SSI	*Anthicus antiochensis* is apparently extirpated from the type locality at Antioch Dunes (CDFW 2015). Stabilization of the dunes in the 1950s may have eliminated suitable habitat.It is also known at several sites along the Sacramento River in Glenn, Tehama, Shasta, and Solano Counties, and from one site at Nicolas on the Feather River in Sutter County.	**No Potential.** The Study Area is outside the known range of this species and does not contain dune habitat.	No further recommendations.
molestan blister beetle *Lytta molesta*	SSI	Inhabits the Central Valley of California, from Contra Costa to Kern and Tulare counties. Lytta molesta has been collected on *Lupinus, Trifolium wormskioldii* in dried vernal pools, and on *Eriodium*. Appears to be absent in nearby areas with nonvernal pool vegetation, but a lack of detailed collecting information makes it unclear whether the species is always or usually associated with dried vernal pools.	**No Potential.** The Study Area is outside the known range of this species and does not contain vernal pool habitat.	No further recommendations.
Antioch efferian robberfly *Efferia antiochi*	SSI	Known only from Antioch, Fresno, and Scout Island in the San Joaquin River.	**No Potential.** The Study Area is outside the known range of this species.	No further recommendations.
Lange's metalmark *Apodemia mormo langei*	FE, SSI	Inhabits stabilized dunes along the San Joaquin River. Endemic to Antioch Dunes, Contra Costa County. Primary host plant is *Eriogonum nudum* var. *auriculatum*; feeds on nectar of other wildflowers, as well as host plant.	**No Potential.** The Study Area does not contain dune habitat or the primary host plant. Study Area is outside of the known range of this species.	No further recommendations.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
San Bruno elfin butterfly *Callophrys mossii bayensis*	FE, SSI	Limited to the vicinity of San Bruno Mountain, San Mateo County. Colonies are located on in rocky outcrops and cliffs in coastal scrub habitat on steep, north-facing slopes within the fog belt. Species range is tied to the distribution of the larval host plant, *Sedum spathulifolium*.	**No Potential.** The Study Area does not contain the larval host plant or suitable habitat of the host plant. Study Area is outside of the known range of this species.	No further recommendations.
San Joaquin dune beetle *Coelus gracilis*	SSI	Inhabits fossil dunes along the western edge of San Joaquin Valley; extirpated from Antioch Dunes (type locality). Inhabits sites containing sandy substrates.	**No Potential.** The occurrence of this species previously recorded in the vicinity of the Study Area is considered extirpated (CDFW 2015).	No further recommendations.
Plants				
slender silver moss *Anomobryum julaceum*	Rank 4.2	Broadleafed upland forest, lower montane coniferous forest, north coast coniferous forest/damp rock and soil on outcrops, usually on roadcuts. Elevation ranges from 330 to 3280 feet (100 to 1000 meters).	**No potential.** Typical habitat is not present within the Study Area; species is known from higher elevations.	No further recommendations.
soft bird's-beak *Chloropyron molle* ssp. *molle*	FE, SR, Rank 1B.2	Marshes and swamps (coastal salt). Elevation ranges from 0 to 10 feet (0 to 3 meters). Blooms July-November.	**Unlikely.** Wetlands within the Study Area are fresh water to brackish, are disturbed, and do not represent typical habitat for this species.	No further recommendations.
Delta tule pea *Lathyrus jepsonii* var. *jepsonii*	Rank 1B.2	Marshes and swamps (freshwater and brackish). Elevation ranges from 0 to 20 feet (0 to 5 meters). Blooms May-July (August), (September).	**Unlikely.** Wetlands within the Study Area are disturbed, mostly isolated from Suisun Bay, and do not represent typical habitat for this species.	No further recommendations.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Suisun Marsh aster *Symphyotrichum lentum*	Rank 1B.2	Marshes and swamps (brackish and freshwater). Elevation ranges from 0 to 10 feet (0 to 3 meters). Blooms May-November.	**Unlikely.** Wetlands within the Study Area are disturbed, mostly isolated from Suisun Bay, and do not represent typical habitat for this species.	No further recommendations.
Bolander's Water Hemlock *Cicuta maculata* var. *bolanderi*	Rank 2B.1	Marshes and swamps, coastal, fresh or brackish water. Elevation ranges from 0 to 660 feet (0 to 200 meters). Blooms July-September.	**Unlikely.** Wetlands within the Study Area are disturbed, mostly isolated from Suisun Bay, and do not represent typical habitat for this species.	No further recommendations.
Delta mudwort *Limosella australis*	Rank 2B.1	Marshes and swamps (freshwater or brackish), riparian scrub/usually mud banks. Elevation ranges from 0 to 10 feet (0 to 3 meters). Blooms May-August.	**Unlikely.** Wetlands within the Study Area are disturbed, mostly isolated from Suisun Bay, and do not represent typical habitat for this species.	No further recommendations.
dwarf Downingia *Downingia pusilla*	Rank 2B.2	Valley and foothill grassland (mesic), vernal pools. Elevation ranges from 0 to 1460 feet (1 to 445 meters). Blooms March-May.	**Unlikely.** Vernal pools are not present; wetlands within the Study Area are disturbed, and do not represent typical habitat for this species.	No further recommendations.
Ferris' goldfields *Lasthenia ferrisiae*	Rank 4.2	Vernal pools (alkaline, clay). Elevation ranges from 70 to 2300 feet (20 to 700 meters). Blooms February-May.	**No potential.** Vernal pools are not present within the Study Area; species is known from higher elevations.	No further recommendations.
Lobb's aquatic buttercup *Ranunculus lobbii*	Rank 4.2	Cismontane woodland, north coast coniferous forest, valley and foothill grassland, vernal pools/mesic. Elevation ranges from 50 to 1540 feet (15 to 470 meters). Blooms February-May.	**Unlikely.** Wetlands within the Study Area are disturbed and do not represent typical habitat for this species; species known from higher elevations.	No further recommendations.
small spikerush *Eleocharis parvula*	Rank 4.3	Marshes and swamps. Elevation ranges from 0 to 9910 feet (1 to 3020 meters). Blooms (April), June-August (September).	**Unlikely.** Wetlands within the Study Area are disturbed and do not represent typical habitat for this species.	No further recommendations.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Tehama Navarretia *Navarretia heterandra*	Rank 4.3	Valley and foothill grassland (mesic), vernal pools. Elevation ranges from 100 to 3310 feet (30 to 1010 meters). Blooms April-June.	**No potential.** Wetlands within the Study Area are disturbed and do not represent typical habitat for this species; species known from higher elevations.	No further recommendations.
Mason's Lilaeopsis *Lilaeopsis masonii*	SR, Rank 1B.1	Marshes and swamps (brackish or freshwater), riparian scrub. Elevation ranges from 0 to 30 feet (0 to 10 meters). Blooms April-November.	**Unlikely.** Wetlands within the Study Area are disturbed, mostly isolated from Suisun Bay, and do not represent typical habitat for this species.	No further recommendations.
Mt. Diablo cottonweed *Micropus amphibolus*	Rank 3.2	Broadleafed upland forest, chaparral, cismontane woodland, valley and foothill grassland/rocky. Elevation ranges from 150 to 2710 feet (45 to 825 meters). Blooms March-May.	**No Potential.** Typical habitat is not present within the Study Area; species is known from higher elevations than the Study Area.	No further recommendations.
California Androsace *Androsace elongata* ssp *acuta*	Rank 4.2	Chaparral, cismontane woodland, coastal scrub, meadows and seeps, pinyon and juniper woodland, valley and foothill grassland. Elevation ranges from 490 to 3940 feet (150 to 1200 meters). Blooms March-June.	**No Potential.** Typical habitat is not present within the Study Area; species is known from higher elevations than the Study Area.	No further recommendations.
phlox-leaf serpentine bedstraw *Galium andrewsii* ssp. *gatense*	Rank 4.2	Chaparral, cismontane woodland, lower montane coniferous forest/serpentine, rocky. Elevation ranges from 490 to 4760 feet (150 to 1450 meters). Blooms April-July.	**No Potential.** Typical habitat is not present within the Study Area; species is known from higher elevations than the Study Area.	No further recommendations.
adobe Navarretia *Navarretia nigelliformis* ssp *nigelliformis*	Rank 4.2	Valley and foothill grassland vernally mesic, vernal pools sometimes/clay, sometimes serpentine. Elevation ranges from 330 to 3280 feet (100 to 1000 meters). Blooms April-June.	**No Potential.** Typical habitat is not present within the Study Area; species is known from higher elevations than the Study Area.	No further recommendations.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Oakland star-tulip *Calochortus umbellatus*	Rank 4.2	Broadleafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest, valley and foothill grassland/often serpentine. Elevation ranges from 330 to 2300 feet (100 to 700 meters). Blooms March-May.	**No Potential.** Typical habitat is not present within the Study Area; species is known from higher elevations than the Study Area.	No further recommendations.
serpentine Collomia *Collomia diversifolia*	Rank 4.3	Chaparral, cismontane woodland/ serpentine, rocky or gravelly. Elevation ranges from 980 to 1970 feet (300 to 600 meters). Blooms May-June.	**No Potential.** Typical habitat is not present within the Study Area; species is known from higher elevations than the Study Area.	No further recommendations.
Jepson's woolly sunflower *Eriophyllum jepsonii*	Rank 4.3	Chaparral, cismontane woodland, coastal scrub/sometimes serpentine. Elevation ranges from 660 to 3360 feet (200 to 1025 meters). Blooms April-June.	**No Potential.** Typical habitat is not present within the Study Area; species is known from higher elevations than the Study Area.	No further recommendations.
Hall's bush-mallow *Malacothamnus hallii*	Rank 1B.2	Chaparral, coastal scrub. Elevation ranges from 30 to 2490 feet (10 to 760 meters). Blooms May-September (October).	**Unlikely.** Typical habitat is not present within the Study Area; species is known from higher elevations than the Study Area.	No further recommendations.
chaparral ragwort *Senecio aphanactis*	Rank 2B.2	Chaparral, cismontane woodland, coastal scrub/sometimes alkaline. Elevation ranges from 50 to 2620 feet (15 to 800 meters). Blooms January-April.	**No Potential.** Typical habitat is not present within the Study Area; species is known from higher elevations than the Study Area.	No further recommendations.
little mousetail *Myosurus minimus* ssp. *apus*	Rank 3.1	Valley and foothill grassland, vernal pools (alkaline). Elevation ranges from 70 to 2100 feet (20 to 640 meters). Blooms March-June.	**Unlikely.** Typical habitat is not present within the Study Area; species is known from higher elevations than the Study Area.	No further recommendations.
sweet marsh ragwort *Senecio hydrophiloides*	Rank 4.2	Lower montane coniferous forest, meadows and seeps/mesic. Elevation ranges from 0 to 9190 feet (0 to 2800 meters). Blooms May-August.	**No Potential.** Typical habitat is not present within the Study Area.	No further recommendations.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Contra Costa wallflower *Erysimum capitatum* var. *angustatum*	FE, SE, Rank 1B.1	Inland dunes. Elevation ranges from 10 to 70 feet (3 to 20 meters). Blooms March-July.	**Unlikely.** Typical dune habitat is not present within the Study Area.	No further recommendations.
Antioch Dunes evening-primrose *Oenothera deltoides* ssp. *howellii*	FE, SE, Rank 1B.1	Inland dunes. Elevation ranges from 0 to 100 feet (0 to 30 meters). Blooms March-September.	**Unlikely.** Typical dune habitat is not present within the Study Area.	No further recommendations.
big tarplant *Blepharizonia plumosa*	Rank 1B.1	Valley and foothill grassland/usually clay. Elevation ranges from 100 to 1660 feet (30 to 505 meters). Blooms July-October.	**Unlikely.** Typical habitat is not present within the Study Area; species is known from higher elevations than the Study Area.	No further recommendations.
round-leaved filaree *California macrophylla*	Rank 1B.1	Cismontane woodland, valley and foothill grassland/clay. Elevation ranges from 50 to 3940 feet (15 to 1200 meters). Blooms March-May.	**Unlikely.** Typical habitat is not present within the Study Area; species is known from higher elevations than the Study Area.	No further recommendations.
showy golden madia *Madia radiata*	Rank 1B.1	Cismontane woodland, valley and foothill grassland. Elevation ranges from 80 to 3990 feet (25 to 1215 meters). Blooms March-May.	**Unlikely.** Typical habitat is not present within the Study Area; species is known from higher elevations than the Study Area.	No further recommendations.
alkali milk-vetch *Astragalus tener* var *tener*	Rank 1B.2	Playas, valley and foothill grassland (adobe clay), vernal pools/alkaline. Elevation ranges from 0 to 200 feet (1 to 60 meters). Blooms March-June.	**Unlikely.** Vernal pools are not present; wetlands within the Study Area are disturbed, and do not represent typical habitat for this species.	No further recommendations.
San Joaquin spearscale *Extriplex joaquinana*	Rank 1B.2	Valley and foothill grassland (alkaline, clay). Elevation ranges from 0 to 3200 feet (0 to 975 meters). Blooms April-October.	**Unlikely.** Grassland portions of the Study Area largely consist of fill soil and have an ongoing history of disturbance such as disking, making this species unlikely to occur.	No further recommendations.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
woolly-headed Lessingia *Lessingia hololeuca*	Rank 3	Broadleafed upland forest, coastal scrub, lower montane coniferous forest, valley and foothill grassland/clay, serpentine. Elevation ranges from 50 to 1000 feet (15 to 305 meters). Blooms June-October.	**Unlikely.** Typical habitat is not present within the Study Area; species is known from higher elevations than the Study Area.	No further recommendations.
crownscale *Atriplex coronata* var. *coronata*	Rank 4.2	Chenopod scrub, valley and foothill grassland, vernal pools/alkaline, often clay. Elevation ranges from 0 to 1940 feet (1 to 590 meters). Blooms March-October.	**Unlikely.** Grassland portions of the Study Area largely consist of fill soil and have an ongoing history of disturbance such as disking, making this species unlikely to occur. Vernal pools are not present.	No further recommendations.
Brewer's Calandrinia *Calandrinia breweri*	Rank 4.2	Chaparral, coastal scrub/sandy or loamy, disturbed sites and burns. Elevation ranges from 30 to 4000 feet (10 to 1220 meters). Blooms March-June.	**Unlikely.** Typical habitat is not present within the Study Area; species is known from higher elevations than the Study Area.	No further recommendations.
johnny-nip *Castellija ambigua* var. *ambigua*	Rank 4.2	Coastal bluff scrub, coastal prairie, coastal scrub, marshes and swamps, valley and foothill grassland, vernal pools margins. Elevation ranges from 0 to 1430 feet (0 to 435 meters). Blooms March-August.	**Unlikely.** Wetlands and grasslands within the Study Area are disturbed and do not represent typical habitat for this species. Vernal pools are not present.	No further recommendations.
Parry's rough tarplant *Centromadia parryi* spp. *rudis*	Rank 4.2	Valley and foothill grassland, vernal pools/alkaline, vernally mesic, seeps, sometimes roadsides. Elevation ranges from 0 to 330 feet (0 to 100 meters). Blooms May-October.	**Unlikely.** Wetlands and grasslands within the Study Area are disturbed and do not represent typical habitat for this species. Vernal pools are not present.	No further recommendations.
small-flowered morning-glory *Convolvulus simulans*	Rank 4.2	Chaparral (openings), coastal scrub, valley and foothill grassland/clay, serpentine seeps. Elevation ranges from 100 to 2300 feet (30 to 700 meters). Blooms March-July.	**Unlikely.** Typical habitat is not present within the Study Area; species is known from higher elevations than the Study Area.	No further recommendations.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
stinkbells *Fritillaria agrestis*	Rank 4.2	Chaparral, cismontane woodland, pinyon and juniper woodland, valley and foothill grassland/clay, sometimes serpentine. Elevation ranges from 30 to 5100 feet (10 to 1555 meters). Blooms March-June.	**Unlikely.** Typical habitat is not present within the Study Area; species is known from higher elevations than the Study Area.	No further recommendations.
coast rockcress *Arabis blepharophylla*	Rank 4.3	Broadleafed upland forest, coastal bluff scrub, coastal prairie, coastal scrub/rocky. Elevation ranges from 10 to 3610 feet (3 to 1100 meters). Blooms February-May.	**No Potential.** The Study Area does not contain potential habitat for this species.	No further recommendations.
large-flowered fiddleneck *Amsinckia grandiflora*	FE, SE, Rank 1B.1	Cismontane woodland, valley and foothill grassland. Elevation ranges from 900 to 1800 feet (275 to 550 meters). Blooms April-May.	**Unlikely.** Typical habitat is not present within the Study Area; species is known from higher elevations than the Study Area.	No further recommendations.
bent-flowered fiddleneck *Amsinckia lunaris*	Rank 1B.2	Coastal bluff scrub, cismontane woodland, valley and foothill grassland. Elevation ranges from 10 to 1640 feet (3 to 500 meters). Blooms March-June.	**Unlikely.** Typical habitat is not present within the Study Area.	No further recommendations.
Mt. Diablo manzanita *Arctostaphylos auriculata*	Rank 1B.3	Chaparral (sandstone), cismontane woodland. Elevation ranges from 440 to 2130 feet (135 to 650 meters). Blooms January-March.	**No Potential.** The Study Area does not contain potential habitat for this species.	No further recommendations.
Contra Costa manzanita *Arctostaphylos manzanita* ssp. *laevigata*	Rank 1B.2	Chaparral (rocky). Elevation ranges from 1410 to 3610 feet (430 to 1100 meters). Blooms January-March (April).	**No Potential.** The Study Area does not contain potential habitat for this species.	No further recommendations.
heartscale *Atriplex cordulata* var. *cordulata*	Rank 1B.2	Chenopod scrub, meadows and seeps, valley and foothill grassland (sandy)/saline or alkaline. Elevation ranges from 0 to 1840 feet (0 to 560 meters). Blooms April-October.	**Unlikely.** Wetlands and grasslands within the Study Area are disturbed and do not represent typical habitat for this species. Vernal pools are not present.	No further recommendations.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
brittlescale *Atriplex depressa*	Rank 1B.2	Chenopod scrub, meadows and seeps, playas, valley and foothill grassland, vernal pools/alkaline, clay. Elevation ranges from 0 to 1050 feet (1 to 320 meters). Blooms April-October.	**Unlikely.** Wetlands and grasslands within the Study Area are disturbed and do not represent typical habitat for this species. Vernal pools are not present.	No further recommendations.
vernal pool smallscale *Atriplex persistens*	Rank 1B.2	Vernal pools (alkaline). Elevation ranges from 30 to 380 feet (10 to 115 meters). Blooms June-October.	**Unlikely.** Wetlands and grasslands within the Study Area are disturbed and do not represent typical habitat for this species. Vernal pools are not present.	No further recommendations.
Mt. Diablo fairy-lantern *Calochortus pulchellus*	Rank 1B.2	Chaparral, cismontane woodland, riparian woodland, valley and foothill grassland. Elevation ranges from 100 to 2760 feet (30 to 840 meters). Blooms April-June.	**Unlikely.** Typical habitat is not present within the Study Area; species is known from higher elevations than the Study Area.	No further recommendations.
chaparral harebell *Campanula exigua*	Rank 1B.2	Chaparral (rocky, usually serpentine). Elevation ranges from 900 to 4100 feet (275 to 1250 meters). Blooms May-June.	**No Potential.** The Study Area does not contain potential habitat for this species.	No further recommendations.
Congdon's tarplant *Centromadia parryi* ssp. *congdonii*	Rank 1B.1	Valley and foothill grassland (alkaline). Elevation ranges from 0 to 750 feet (0 to 230 meters). Blooms May-October (November).	**Unlikely.** Grassland portions of the Study Area largely consist of fill soil and have an ongoing history of disturbance such as disking, making this species unlikely to occur.	No further recommendations.
pappose tarplant *Centromadia parryi* ssp. *parryi*	Rank 1B.2	Chaparral, coastal prairie, meadows and seeps, marshes and swamps (coastal salt), valley and foothill grassland (vernally mesic)/often alkaline. Elevation ranges from 0 to 1380 feet (0 to 420 meters). Blooms May-November.	**Unlikely.** Wetlands and grasslands within the Study Area are disturbed and do not represent typical habitat for this species.	No further recommendations.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
hispid bird's-beak *Chloropyron molle ssp. hispidum*	Rank 1B.1	Meadows and seeps, playas, valley and foothill grassland/alkaline. Elevation ranges from 0 to 510 feet (1 to 155 meters). Blooms June-September.	**Unlikely.** Wetlands and grasslands within the Study Area are disturbed and do not represent typical habitat for this species.	No further recommendations.
Suisun thistle *Cirsium hydrophilum* var. *hydrophilum*	FE, Rank 1B.1	Marshes and swamps (salt). Elevation ranges from 0 to 0 feet (0 to 1 meters). Blooms June-September.	**Unlikely.** Wetlands within the Study Area are disturbed, mostly isolated from Suisun Bay, and do not represent typical habitat for this species.	No further recommendations.
Mt. Diablo bird's-beak *Cordylanthus nidularius*	SR, Rank 1B.1	Chaparral (serpentine). Elevation ranges from 1970 to 2620 feet (600 to 800 meters). Blooms June-August.	**No Potential.** The Study Area does not contain potential habitat for this species.	No further recommendations.
Hoover's cryptantha *Cryptantha hooveri*	Rank 1A	Inland dunes, valley and foothill grassland (sandy). Elevation ranges from 30 to 490 feet (9 to 150 meters). Blooms April-May.	**Unlikely.** Typical habitat is not present within the Study Area; species is known from higher elevations than the Study Area.	No further recommendations.
Hospital Canyon larkspur *Delphinium californicum* ssp. *interius*	Rank 1B.2	Chaparral (openings), cismontane woodland (mesic), coastal scrub. Elevation ranges from 640 to 3590 feet (195 to 1095 meters). Blooms April-June.	**No Potential.** The Study Area does not contain potential habitat for this species.	No further recommendations.
Lime Ridge Eriastrum *Eriastrum ertterae*	Rank 1B.1	Chaparral (openings or edges)/alkaline or semi-alkaline, sandy.. Elevation ranges from 660 to 950 feet (200 to 290 meters). Blooms June-July.	**No Potential.** The Study Area does not contain potential habitat for this species.	No further recommendations.
Antioch Dunes buckwheat *Eriogonum nudum* var. *psychicola*	Rank 1B.1	Inland dunes. Elevation ranges from 0 to 70 feet (0 to 20 meters). Blooms July-October.	**No Potential.** The Study Area does not contain potential habitat for this species.	No further recommendations.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Mt. Diablo buckwheat *Eriogonum truncatum*	Rank 1B.1	Chaparral, coastal scrub, valley and foothill grassland/sandy. Elevation ranges from 10 to 1150 feet (3 to 350 meters). Blooms April-September (November), (December).	**Unlikely.** Grassland portions of the Study Area largely consist of fill soil and have an ongoing history of disturbance such as disking, making this species unlikely to occur.	No further recommendations.
diamond-petaled California poppy *Eschscholzia rhombipetala*	Rank 1B.1	Valley and foothill grassland (alkaline, clay). Elevation ranges from 0 to 3200 feet (0 to 975 meters). Blooms March-April.	**Unlikely.** Grassland portions of the Study Area largely consist of fill soil and have an ongoing history of disturbance such as disking, making this species unlikely to occur.	No further recommendations.
fragrant fritillary *Fritillaria liliacea*	Rank 1B.2	Cismontane woodland, coastal prairie, coastal scrub, valley and foothill grassland/often serpentine. Elevation ranges from 10 to 1350 feet (3 to 410 meters). Blooms February-April.	**No Potential.** The Study Area does not contain potential habitat for this species.	No further recommendations.
Toren's grimmia *Grimmia torenii*	Rank 1B.3	Chaparral, cismontane woodland, lower montane coniferous forest/openings, rocky, boulder and rock walls, carbonate, volcanic. Elevation ranges from 1070 to 3810 feet (325 to 1160 meters).	**No Potential.** The Study Area does not contain potential habitat for this species.	No further recommendations.
Diablo Helianthella *Helianthella castanea*	Rank 1B.2	Broadleafed upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, valley and foothill grassland. Elevation ranges from 200 to 4270 feet (60 to 1300 meters). Blooms March-June.	**Unlikely.** Typical habitat is not present within the Study Area; species is known from higher elevations than the Study Area.	No further recommendations.
Brewer's western flax *Hesperolinon breweri*	Rank 1B.2	Chaparral, cismontane woodland, valley and foothill grassland/usually serpentine. Elevation ranges from 100 to 3100 feet (30 to 945 meters). Blooms May-July.	**No Potential.** The Study Area does not contain potential habitat for this species.	No further recommendations.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Carquinez goldenbush *Isocoma arguta*	Rank 1B.1	Valley and foothill grassland (alkaline). Elevation ranges from 0 to 70 feet (1 to 20 meters). Blooms August-December.	**Unlikely.** Grassland portions of the Study Area largely consist of fill soil and have an ongoing history of disturbance such as disking, making this species unlikely to occur. Nearest documented population is in a mima mound area, which is lacking in Study Area (CDFW 2015).	No further recommendations.
Contra Costa goldfields *Lasthenia conjugens*	FE, Rank 1B.1	Cismontane woodland, playas (alkaline), valley and foothill grassland, vernal pools/mesic. Elevation ranges from 0 to 1540 feet (0 to 470 meters). Blooms March-June.	**Unlikely.** Wetlands and grasslands within the Study Area are disturbed and do not represent typical habitat for this species.	No further recommendations.
Legenere *Legenere limosa*	Rank 1B.1	Vernal pools. Elevation ranges from 0 to 2890 feet (1 to 880 meters). Blooms April-June.	**Unlikely.** Vernal pools are not present; wetlands within the Study Area are disturbed, and do not represent typical habitat for this species.	No further recommendations.
marsh Microseris *Microseris paludosa*	Rank 1B.2	Closed-cone coniferous forest, cismontane woodland, coastal scrub, valley and foothill grassland. Elevation ranges from 20 to 980 feet (5 to 300 meters). Blooms April-June (July).	**Unlikely.** Typical habitat is not present within the Study Area; species is known from higher elevations than the Study Area.	No further recommendations.
woodland woolythreads *Monolopia gracilens*	Rank 1B.2	Broadleafed upland forest (openings), chaparral (openings), cismontane woodland, north coast coniferous forest (openings), valley and foothill grassland/serpentine. Elevation ranges from 330 to 3940 feet (100 to 1200 meters). Blooms (February), March-July.	**No Potential.** The Study Area does not contain potential habitat for this species.	No further recommendations.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Lime Ridge Navarretia *Navarretia gowenii*	Rank 1B.1	Chaparral. Elevation ranges from 590 to 1000 feet (180 to 305 meters). Blooms May-June.	**No Potential.** The Study Area does not contain potential habitat for this species.	No further recommendations.
Baker's Navarretia *Navarretia leucocephala* subsp.. *bakeri*	Rank 1B.1	Cismontane woodland, lower montane coniferous forest, meadows and seeps, valley and foothill grassland, vernal pools/mesic. Elevation ranges from 20 to 5710 feet (5 to 1740 meters). Blooms April-July.	**Unlikely.** Typical habitat is not present within the Study Area; There are no known populations of this species south of Suisun Bay (CDFW 2015).	No further recommendations.
shining Navarretia *Navarretia nigelliformis* ssp. *radians*	Rank 1B.2	Cismontane woodland, valley and foothill grassland, vernal pools/sometimes clay. Elevation ranges from 250 to 3280 feet (76 to 1000 meters). Blooms April-July.	**Unlikely.** Typical habitat is not present within the Study Area; species is known from higher elevations than the Study Area.	No further recommendations.
Colusa grass *Neostapfia colusana*	FT, SE, Rank 1B.1	Vernal pools (adobe, large). Elevation ranges from 20 to 660 feet (5 to 200 meters). Blooms May-August.	**Unlikely.** Vernal pools are not present; wetlands within the Study Area are disturbed, and do not represent typical habitat for this species.	No further recommendations.
Mt. Diablo Phacelia *Phacelia phaceliodies*	Rank 1B.2	Chaparral, cismontane woodland/rocky. Elevation ranges from 1640 to 4490 feet (500 to 1370 meters). Blooms April-May.	**No Potential.** The Study Area does not contain potential habitat for this species.	No further recommendations.
bearded popcorn-flower *Plagiobothrys hystriculus*	Rank 1B.1	Valley and foothill grassland (mesic), vernal pools margins/often vernal swales. Elevation ranges from 0 to 900 feet (0 to 274 meters). Blooms April-May.	**Unlikely.** Vernal pools are not present; wetlands within the Study Area are disturbed, and do not represent typical habitat for this species.	No further recommendations.
rock sanicle *Sanicula saxatilis*	SR, Rank 1B.2	Broadleaved upland forest, chaparral, valley and foothill grassland/rocky. Elevation ranges from 2030 to 3850 feet (620 to 1175 meters). Blooms April-May.	**No Potential.** The Study Area does not contain potential habitat for this species.	No further recommendations.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
Keck's checkerbloom *Sidalcea keckii*	FE, Rank 1B.1	Cismontane woodland, valley and foothill grassland/serpentine, clay. Elevation ranges from 250 to 2130 feet (75 to 650 meters). Blooms April-May (June).	**No Potential.** The Study Area does not contain potential habitat for this species.	No further recommendations.
most beautiful jewel-flower *Streptanthus albidus* ssp. *peramoenus*	Rank 1B.2	Chaparral, cismontane woodland, valley and foothill grassland/serpentine. Elevation ranges from 310 to 3280 feet (95 to 1000 meters). Blooms (March), April-September (October).	**No Potential.** The Study Area does not contain potential habitat for this species.	No further recommendations.
Mt. Diablo jewel-flower *Streptanthus hispidus*	Rank 1B.3	Chaparral, valley and foothill grassland/rocky. Elevation ranges from 1200 to 3940 feet (365 to 1200 meters). Blooms March-June.	**No Potential.** The Study Area does not contain potential habitat for this species.	No further recommendations.
slender-leaved pondweed *Stuckenia filiformis* ssp. *alpina*	Rank 2B.2	Marshes and swamps (assorted shallow freshwater). Elevation ranges from 980 to 7050 feet (300 to 2150 meters). Blooms May-July.	**Unlikely.** Wetlands within the Study Area are disturbed and do not represent typical habitat for this species; species is known from higher elevations than the Study Area.	No further recommendations.
saline clover *Trifolium hydrophilum*	Rank 1B.2	Marshes and swamps, valley and foothill grassland (mesic, alkaline), vernal pools. Elevation ranges from 0 to 980 feet (0 to 300 meters). Blooms April-June.	**Unlikely.** Wetlands and grasslands within the Study Area are disturbed and do not represent typical habitat for this species.	No further recommendations.
coastal triquetrella *Triquetrella californica*	Rank 1B.2	Coastal bluff scrub, coastal scrub/soil. Elevation ranges from 30 to 330 feet (10 to 100 meters).	**No Potential.** The Study Area does not contain potential habitat for this species.	No further recommendations.

SPECIES	STATUS*	HABITAT REQUIREMENTS	POTENTIAL FOR OCCURRENCE	RECOMMENDATIONS
caper-fruited Tropidocarpum *Tropidocarpum capperideum*	Rank 1B.1	Valley and foothill grassland (alkaline hills). Elevation ranges from 0 to 1490 feet (1 to 455 meters). Blooms March-April.	**Unlikely.** Grassland portions of the Study Area largely consist of fill soil and have an ongoing history of disturbance such as disking, making this species unlikely to occur. All locally-documented occurrences of this species are from very old collections or are known to be extirpated; the closest extant population is in Monterey County (CDFW 2015).	No further recommendations.
oval-leaved viburnum *Viburnum ellipticum*	Rank 2B.3	Chaparral, cismontane woodland, lower montane coniferous forest. Elevation ranges from 710 to 4590 feet (215 to 1400 meters). Blooms May-June.	**No Potential.** The Study Area does not contain potential habitat for this species.	No further recommendations.

*** Key to status codes:**

FE	Federal Endangered
FT	Federal Threatened
FD	Federal Delisted
FC	Federal Candidate
BCC	USFWS Birds of Conservation Concern
SE	State Endangered
ST	State Threatened
SC	State Candidate
SR	State Rare
SSC	CDFW Species of Special Concern
CFP	CDFW Fully Protected Animal
WL	CDFW Watch List
RP	Species included in a USFWS Recovery Plan or Draft Recovery Plan
NMFS	Species under jurisdiction of NMFS
RPR 1B	CNPS California Rare Plant Rank 1B: Rare, threatened or endangered in California and elsewhere
RPR 2	CNPS California Rare Plant Rank 2: Rare, threatened, or endangered in California, but more common elsewhere
RPR 3	CNPS California Rare Plant Rank 3: Potentially rare species for which CNPS needs more information (a review list)

APPENDIX C

SITE PHOTOGRAPHS

Top: Non-native annual grassland within the Study Area prior to disking on May 28, 2015.

Bottom: Non-native annual grassland within the Study Area following disking on July 7, 2015.

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Top: Seasonal stream and riparian/Section 1602 jurisdictional areas near the center of the Study Area, looking southwest.

Bottom: Seasonal stream and riparian/Section 1602 jurisdictional areas in the western portion of the Study Area, looking south.

Photographs taken July 7, 2015.

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Top: Areas mapped as “seasonal wetlands and waters” immediately north of the Study Area.
Bottom: Existing access road adjacent to stream and riparian habitat in the eastern portion of the Study Area.

Photographs taken July 7, 2015.

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