Ellis Creek Water Recycling Facility Floating Solar Array Project

Addendum No. 8 to the 2002 Water Recycling Facility and River Access Improvements Environmental Impact Report (State Clearinghouse #2001052089)

prepared by

City of Petaluma, Public Works & Utilities
202 North McDowell Boulevard
Petaluma, California 94954

prepared with the assistance of

Rincon Consultants, Inc.
449 15th Street, Suite 303
Oakland, California 94612

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RINCON CONSULTANTS, INC.
Environmental Scientists | Planners | Engineers
rinconconsultants.com

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1 Introduction and Summary

1.1 Background

The City of Petaluma currently operates the Ellis Creek Water Recycling Facility (ECWR Facility). An Environmental Impact Report (EIR) for the Ellis Creek Water Recycling Facility (titled the *Water Recycling Facility and River Access Improvements EIR* – State Clearinghouse #2001052089) was certified by the City of Petaluma in 2002 (2002 Certified EIR), with addenda prepared in 2004, 2005, 2006, 2007, twice in 2016, and 2022. Subsequent to EIR certification, the City approved the Water Recycling Facility and River Access Improvements Project (Project). The approved Project included construction of new facilities, including secondary treatment and ammonia reduction upstream of the ponds and maintenance to the existing oxidation ponds. The proposed new floating solar array is within the footprint of the approved Project as analyzed in the 2002 Certified EIR. However, the approved Project did not consider inclusion of a floating solar array on top of an oxidation pond. This minor change to the approved Project is evaluated in this Floating Solar Array EIR Addendum.

This Addendum amends the original Water Recycling Facility and River Access Improvements EIR. Seven prior Addenda to the 2002 Certified EIR have previously been adopted. The first four EIR Addenda evaluated changes in design prior to the ECWR Facility being complete. The fifth EIR Addendum evaluated the addition of Biofuel to Biomass infrastructure to the ECWR Facility, the sixth EIR Addendum analyzed the relocation of a previously proposed bridge that had never been constructed, and the seventh EIR Addendum analyzed the relocation and construction of a new outfall pipeline and outfall structure to replace the existing outfall structure.

This EIR Addendum concludes that installation of a floating solar array on Pond No. 3 does not result in new significant impacts and does not cause substantially more severe significant impacts relative to the impacts previously disclosed in the 2002 Certified EIR. Thus, an Addendum is the appropriate level of California Environmental Quality Act (CEQA) analysis and the appropriate method of amending the 2002 Certified EIR, pursuant to CEQA Guidelines Sections 15162 and 15164.

1.2 Public Agency and Comments

This EIR Addendum is available for review at the Petaluma Public Works & Utilities Office located at 202 North McDowell Boulevard and on the City's Capital Improvements Program webpage. This EIR Addendum will also be submitted to the State Clearinghouse. The EIR Addendum is tentatively scheduled for consideration at the Petaluma City Council meeting to be held on December 19, 2022 at 6:30 p.m. Written comments should be mailed or emailed to:

City of Petaluma
202 North McDowell Boulevard
Petaluma, California 94954
dramirez@cityofpetaluma.org
Attention: Diane Ramirez

1.3 Organization of the Addendum

The EIR Addendum is organized in a similar fashion to the 2002 Certified EIR.

- This Introduction and Summary Chapter includes Table 1, a summary of potential significant impacts and mitigation measures associated with the approved Project and the proposed modification to the approved Project.
- Chapter 2 contains a detailed description of the proposed modifications to the Project Description.
- Chapter 3 presents the revisions to the Mitigation Monitoring Program.
- Chapter 4 presents the changes to the environmental analysis due to the proposed modification to the approved Project.
- Chapter 5 updates the Alternatives chapter.
- Chapter 6 updates the CEQA Issues chapter.
- Chapter 7 presents the preparers of this Addendum.

1.4 Applicability of the Addendum

As directed by CEQA, California Public Resources Code Section 21166, and CEQA Guidelines Section 15162, when an EIR has been prepared for a project, no subsequent EIR shall be prepared, unless one or more of the following circumstances occur:

1. Substantial changes are proposed in the project which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects;
2. Substantial changes occur with respect to the circumstances under which the project is undertaken which will require major revisions of the previous EIR or negative declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects; or
3. New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete or the Negative Declaration was adopted, shows any of the following:
    a. The project will have one or more significant effects not discussed in the previous EIR or negative declaration;
    b. Significant effects previously examined will be substantially more severe than shown in the previous EIR;
    c. Mitigation measures or alternatives previously found not to be feasible would in fact be feasible and would substantially reduce one or more significant effects of the project, but the project proponents decline to adopt the mitigation measure or alternative; or
    d. Mitigation measures or alternatives which are considerably different from those analyzed in the previous EIR would substantially reduce one or more significant effects on the environment, but the project proponents decline to adopt the mitigation measure or alternative.

The change in environmental impacts associated with the proposed modification to the Project or changed conditions has been evaluated and measured against the standards set forth in paragraphs 1, 2, and 3 above to determine whether an Addendum is appropriate or a subsequent EIR is needed. The environmental analysis in Chapter 4*, Environmental Analysis*, provides the detailed examination of each of these issues. The conclusion is that none of the circumstances which might require a subsequent or supplemental EIR has occurred and that an Addendum is therefore appropriate.

This Addendum should be read together with the full text of the 2002 Certified EIR and subsequent Addenda. Even though modifications to the approved Project are minor, the modifications have been subjected to a detailed analytical process consistent with the methodology and thresholds of significance applied in the 2002 Certified EIR.

CEQA Guidelines Section 15164 provides that an Addendum is the appropriate level of CEQA analysis when the circumstances defined in CEQA Guidelines Section 15162 calling for preparation of a Subsequent EIR do not occur. As noted above, none of the circumstances that require a Subsequent EIR are present. Thus, an Addendum is the appropriate level of CEQA analysis and the appropriate method of amending the 2002 Certified EIR.

1.5 Significant and Unavoidable Adverse Impacts

There are no new significant unavoidable environmental impacts as a result of the proposed modification to the approved Project. The one significant unavoidable impact from the approved Project remains:

- Impact AG-1: Loss of approximately 149 acres of farmland on Parcels A and B

When the project was approved in August 2002, a statement of overriding considerations was adopted, explaining the City's reasons for approving the Project despite the significant impact on farmland.

1.6 Impact and Mitigation Summary

No new significant impacts have been identified as a result of this Addendum; therefore, no new mitigation measures have been developed. Table 1 provides a summary of the impacts and mitigation measures that were identified in the 2002 Certified EIR for the approved Project and those identified for the proposed Floating Solar Array Project. The impacts and mitigation measures remain the same.

The impacts and mitigation measures are identified in one of three categories:

- **Significant** - Impact is significant before mitigation; some of these significant impacts can be mitigated to a less than significant level, but others remain significant after mitigation.
- **Less than Significant** - Impact is not considered significant and no mitigation is required.
- **No Impact** - The project has no effect on the resource described in the criterion.

Table 1 Impact and Mitigation Summary of Approved Project and Project Modifications

Impact	2002 Certified EIR for Approved Project	Floating Solar Array Addendum	Mitigation Measures for Floating Solar Array
Land Use			
LU-1. Will the project be inconsistent with the land use plan map of an adopted General Plan?	Less than Significant	No Impact	No mitigation is necessary.
LU-2. Will the project be inconsistent with zoning?	Less than Significant	No Impact	No mitigation is necessary.
LU-3. Will the project be an incompatible land use type in the MRZ-2 classification or in a designated quarry area?	No Impact	No Impact	No mitigation is necessary.
LU-4. Will the project introduce inappropriate uses in a Community Separator?	No Impact	No Impact	No mitigation is necessary.
LU-5. Will the project increase potential for conflict as a result of incompatible land uses?	Less than Significant	No Impact	No mitigation is necessary.
LU-6. Will the project convert non-urban land to urban uses for project facilities?	Less than Significant	No Impact	No mitigation is necessary.
LU-7. Will the project convert public open space for project facilities?	No Impact	No Impact	No mitigation is necessary.
LU-8. Will the project result in loss of homes due to construction of facilities?	Less than Significant	No Impact	No mitigation is necessary.
LU-C1. Will the project have a cumulative potential to disturb land uses?	Less than Significant	No Impact	No mitigation is necessary.
Agriculture			
AG-1. Will the project cause loss of farmland?	Significant	No Impact	No mitigation is necessary.
AG-2. Will the project cause Williamson Act contracts to be canceled?	No Impact	No Impact	No mitigation is necessary.
AG-3. Will the project cause damage to adjacent vineyards by increasing glassy-winged sharpshooter populations?	Less than Significant	Less than Significant	No mitigation is necessary.
AG-C1. Will the project have cumulative impacts to agriculture?	Significant	No Impact	No mitigation is necessary.
Geology, Soils, and Seismicity			
GS-1. Will project facilities be located within an area of unstable slope conditions?	Less than Significant	Less than Significant	No mitigation is necessary.
GS-2. Will project facilities be subject to ground rupture due to location near a surface trace of an active fault?	Less than Significant	Less than Significant	No mitigation is necessary.
GS-3. Will project facilities be located in areas with soils and groundwater conditions that are susceptible to liquefaction during an earthquake?	Less than Significant	Less than Significant	No mitigation is necessary.
GS-4. Will earthquake-induced strong ground shaking damage project facilities?	Less than Significant	Less than Significant	No mitigation is necessary.
GS-5. Will construction of the project cause off-site water-related erosion?	Less than Significant	Less than Significant	No mitigation is necessary.
GS-6. Will project facilities be exposed to damage due to expansive soils?	Less than Significant	Less than Significant	No mitigation is necessary.

Impact	2002 Certified EIR for Approved Project	Floating Solar Array Addendum	Mitigation Measures for Floating Solar Array
GS-7. Will project facilities be exposed to damage due to construction on corrosive soils?	Less than Significant	Less than Significant	No mitigation is necessary.
GS-C1. Will the project have a cumulative potential for geologic or seismic impacts?	Less than Significant	No Impact	No mitigation is necessary.
Groundwater			
GW-1. Will the project degrade groundwater quality at existing drinking water wells, resulting in a public health hazard?	Less than Significant after Mitigation	No Impact	No mitigation is necessary.
GW-2. Will the project cause groundwater mounding or increase groundwater levels that cause surface discharge in a non-stream environment?	Less than Significant	No Impact	No mitigation is necessary.
GW-3. Will the project lower groundwater levels at existing wells?	No Impact	No Impact	No mitigation is necessary.
GW-C1. Will the project have a potential for cumulative groundwater impacts?	Less than Significant	No Impact	No mitigation is necessary.
Surface Water Quality			
WQ-1. Will the project discharge cause numeric-based criteria to be exceeded?	Less than Significant after Mitigation	No Impact	No mitigation is necessary.
WQ-2. Will the project cause narrative-based criteria to be exceeded?	Less than Significant after Mitigation	No Impact	No mitigation is necessary.
WQ-3. Will project construction result in a substantial degradation of surface runoff quality?	Less than Significant	Less than Significant	No mitigation is necessary.
WQ-C1. Will the project have a cumulative potential to cause numeric or narrative-based criteria to be exceeded?	Less than Significant	Less than Significant	No mitigation is necessary.
Hydrology			
H-1. Will the project discharge cause flooding anywhere along thePetaluma River?	Less than Significant	No Impact	No mitigation is necessary.
H-2. Will the project discharge cause streambank erosion in thePetaluma River?	Less than Significant	No Impact	No mitigation is necessary.
H-3. Will non-discharge projectcomponents cause flooding?	Less than Significant	No Impact	No mitigation is necessary.
H-4. Will non-discharge project components cause streambankerosion?	Less than Significant	No Impact	No mitigation is necessary.
H-C1. Will the project have acumulative potential to cause flooding or erosion?	Less than Significant	No Impact	No mitigation is necessary.
Public Health and Safety			
PHS-1. Will the project expose thepublic to chemicals, radionuclides, pathogenic viruses, bacteria, or other disease organisms at concentrations detrimental to human health?	Less than Significant	No Impact	No mitigation is necessary.
PHS-2. Will the project expose workers or the public to hazards from a known hazardous waste site?	Less than Significant	No Impact	No mitigation is necessary.

Impact	2002 Certified EIR for Approved Project	Floating Solar Array Addendum	Mitigation Measures for Floating Solar Array
PHS-3. Will the project increase potential exposure of the public to hazardous materials due to a chemical release?	Less than Significant	No Impact	No mitigation is necessary.
PHS-4. Will the project expose the public to safety hazards associated with operation of heavy machinery, vehicles, or equipment; or creation of accessible excavations (trenches, pits, or borings); or creation of an accessible open body of water?	Less than Significant	No Impact	No mitigation is necessary.
PHS-5. Will the project increase the potential exposure of the public to disease vectors (i.e., mosquitoes)?	Less than Significant	No Impact	No mitigation is necessary.
PHS-C1. Will the project have a cumulative impact on public health and safety?	Less than Significant	No Impact	No mitigation is necessary.
Biological Resources			
BIO-1. Will the project cause loss of individuals or occupied habitat of endangered, threatened, or rare fish, wildlife or plant species?	Less than Significant after Mitigation	Less than Significant after Mitigation	BIO-1a. Special-status Species Protection Program. BIO-1b. Rare, Threatened and Endangered Plant Protection Program
BIO-2. Will the project cause loss of active raptor nest, migratory bird nests, or wildlife nursery sites?	Less than Significant after Mitigation	Less than Significant after Mitigation	BIO-2a. Active Raptor and Migratory Bird Nest Protection Program.
BIO-3. Will the project cause permanent loss of sensitive wildlife habitat?	Less than Significant	Less than Significant	No mitigation is necessary.
BIO-4. Will the project cause permanent loss of sensitive native plant communities?	Less than Significant after Mitigation	Less than Significant	No mitigation is necessary.
BIO-5. Will the project substantially block or disrupt major fish or wildlife migration or travel corridors?	Less than Significant after Mitigation	Less than Significant	No mitigation is necessary.
BIO-6. Will the project cause permanent loss of aquatic habitat (i.e., streams)?	Less than Significant after Mitigation	Less than Significant	No mitigation is necessary.
BIO-7. Will the project destroy wetlands or other waters of the U.S.?	Less than Significant after Mitigation	Less than Significant	No mitigation is necessary.
BIO-8. Will the project expose organisms to hazardous levels of toxic or bioaccumulatory substances?	Less than Significant after Mitigation	No Impact	No mitigation is necessary.
BIO-C1. Will the project have cumulative impacts to biological resources?	Less than Significant	Less than Significant	No mitigation is necessary.

Impact	2002 Certified EIR for Approved Project	Floating Solar Array Addendum	Mitigation Measures for Floating Solar Array
Traffic and Circulation			
TR-1. Will project traffic cause congestion along study area roadways?	Less than Significant after Mitigation	No Impact	No mitigation is necessary.
TR-2. Will lane closures due to project construction cause traffic delays, transit delays, restricted access, increased traffic hazards, and rerouting of traffic, including emergency vehicles?	Less than Significant	No Impact	No mitigation is necessary.
TR-3. Will project construction traffic increase traffic hazards to motor vehicles, bicyclists, or pedestrians?	Less than Significant	Less than Significant	No mitigation is necessary.
TR-4. Will project construction traffic damage public or private roadbeds?	Less than Significant	Less than Significant	No mitigation is necessary.
TR-5. Will there be inadequate parking for project activities?	Less than Significant	No Impact	No mitigation is necessary.
TR-6. Will project construction activities result in heavy vehicles on roadways not designated or suitable as truck routes?	Less than Significant	Less than Significant	No mitigation is necessary.
TR-C1. Will there be traffic congestion along study area roadways during the cumulative conditions?	Less than Significant	Less than Significant	No mitigation is necessary.
Air Quality			
AQ-1. Will construction of the project generate emissions that expose people to high levels of dust and equipment exhaust?	Less than Significant	Less than Significant	No mitigation is necessary.
AQ-2. Will project emissions cumulatively exceed allowable limits?	Less than Significant	Less than Significant	No mitigation is necessary.
AQ-3. Will the project expose sensitive receptors to substantial levels of toxic air contaminants?	Less than Significant	Less than Significant	No mitigation is necessary.
AQ-4. Will the project violate or contribute to violation of an ambient air quality standard?	Less than Significant	Less than Significant	No mitigation is necessary.
AQ-5. Will the project cause potential odors?	Less than Significant	Less than Significant	No mitigation is necessary.
AQ-C1. Will the project have the potential to have a cumulative impact to air quality?	Less than Significant	Less than Significant	No mitigation is necessary.
Noise			
N-1. Will construction of the project expose the public to high noise levels?	Less than Significant	Less than Significant	No mitigation is necessary.
N-2. Will construction of the project cause high noise levels from construction traffic?	Less than Significant	Less than Significant	No mitigation is necessary.
N-3. Will operation and maintenance of the project expose the public to high noise levels?	Less than Significant	Less than Significant	No mitigation is necessary.
N-C1. Will the project have a cumulative potential to disturb noise-sensitive receptors during or after construction?	Less than Significant	Less than Significant	No mitigation is necessary.

Impact	2002 Certified EIR for Approved Project	Floating Solar Array Addendum	Mitigation Measures for Floating Solar Array
Cultural Resources			
CR-1. Will the project disturb known, potentially-eligible National or California Register properties, including archaeological, historical, architectural, and Native American/traditional heritage resources?	Less than Significant	Less than Significant	No mitigation is necessary.
CR-2. Will the project disturb unknown archaeological resources?	Less than Significant	Less than Significant	No mitigation is necessary.
CR-C1. Will the project have a cumulative potential to disturb historical or cultural resources?	Less than Significant	Less than Significant	No mitigation is necessary.
Visual Resources			
VR-1. Will the project be inconsistent with the Sonoma County Open Space Element regarding Community Separators seen from public viewpoints?	No impact	No impact	No mitigation is necessary.
VR-2. Will the project be inconsistent with the Sonoma County Open Space Element regarding Scenic Landscape Units seen from public viewpoints?	No impact	No Impact	No mitigation is necessary.
VR-3. Will the project be inconsistent with the Sonoma County Open Space Element regarding Scenic Corridors?	Less than Significant	No Impact	No mitigation is necessary.
VR-4. Will the project be inconsistent with minimum building setbacks for structures along Sonoma County designated scenic corridors?	Less than Significant	No Impact	No mitigation is necessary.
VR-5. Will the project cause an adverse effect on foreground or middle-ground views from a high volume travelway, recreation use area, or other public use area?	Less than Significant	No Impact	No mitigation is necessary.
VR-6. Will the project cause an adverse effect on foreground views from one or more private residences?	Less than Significant	No Impact	No mitigation is necessary.
VR-7. Will the project create a new light source?	Less than Significant	No Impact	No mitigation is necessary.
VR-C1. Will the project have a cumulative potential to disturb open space or visual resources?	Less than Significant	No Impact	No mitigation is necessary.
Public Services and Utilities			
PS-1. Will the project increase demand for police, fire, park and recreation facilities, water, sewage treatment and disposal or solid waste removal to such a degree that accepted service standards are not maintained?	Less than Significant	Less than Significant	No mitigation is necessary.
PS-2. Will project construction disrupt police, fire, schools, parks and recreation facilities to such a degree that accepted service standards are not maintained?	No Impact	No Impact	No mitigation is necessary.
PS-C1. Will the project have a cumulative potential to impact public services and utilities?	Less than Significant	No Impact	No mitigation is necessary.

2 Project Description

2.1 Project Background and Location

The Ellis Creek Water Recycling Facility (ECWR Facility) Floating Solar Array Project would be located at the ECWR Facility at 4400 Lakeville Highway in Petaluma, California (Figure 1). The ECWR Facility is owned and operated by the City of Petaluma (City). The ECWR Facility provides secondary treatment for wastewater from the City and adjacent unincorporated areas of Sonoma County (County). A portion of the secondary treated wastewater is pumped to the ECWR Facility's tertiary treatment system to produce recycled water. Flows not diverted for tertiary treatment are directed through a series of seven oxidation ponds and constructed wetlands for additional treatment. The proposed Floating Solar Array Project, which generally consists of a four-megawatt (MW) floating solar array, would be constructed on top of one of the seven oxidation ponds (Pond No. 3) at the ECWR Facility. The oxidation ponds provide both storage and biological treatment. The oxidation ponds also provide treatment for wet weather peak flow and polishing of the effluent flow for metals during the river discharge season.

2.2 Floating Solar Array Project

The proposed Floating Solar Array Project involves the installation of a 10.45-acre 4-MW floating solar array, including approximately 5.9 MW of direct current photovoltaic (PV) modules, on top of Pond No. 3. The purpose of the project is to reduce the City's cost of electricity consumption at the ECWR Facility while furthering the City's long-term goals for renewable energy and environmental sustainability. Appendix A shows the preliminary site plan for the proposed Floating Solar Array Project.

The proposed solar array would consist of 550-watt solar panels mounted and installed on high density polyethene (HDPE) floats specifically designed for solar arrays sited on bodies of water. The array would be held together by a series of interlocking floats with walkways that form one large solar array island. To prevent array movement and adequately spread wind load, the floats would be securely anchored to the bank of the oxidation pond using mooring lines. The array would include aisle space in between sets of PV modules for maintenance and wireway routing. Appendix A shows the preliminary layout of the solar array.

Primary electrical equipment associated with the Floating Solar Array Project, including inverters, a low-voltage switchboard, a step-up transformer, and other system components, would be located adjacent to the northeastern corner of the pond in an elevated structure at least two feet above grade. Appendix A shows the preliminary layout of the electrical equipment.

Energy generated by the proposed Floating Solar Array Project would be collected via a wire collection system that would lead to centralized direct current (DC) combiner boxes. The DC combiner boxes would be connected via underwater shielded cables that would feed into a new electrical line installed in a trench bored underneath the existing service road adjacent to Pond No. 3. The new electrical line would lead to inverters to be located northeast of the pond, which would then feed into a medium voltage (MV) step-up transformer that would connect to an underground MV circuit. The MV circuit would extend from the northeastern corner of the pond toward Lakeville Highway, turn west to proceed along the northern perimeter of the property generally parallel to

Lakeville Highway, and connect to the point of interconnection located immediately north of the existing secondary clarifiers. The circuit would tie-in to a new breaker in the main facility switchgear behind the meter. The circuit would proceed into the ECWR Facility's existing electrical building via an existing conduit in from a pull box. One underground/exposed single circuit vault would be installed along the circuit alignment at the northeastern corner of the ECWR Facility site, and approximately four underground single circuit vaults would be installed along the east-west portion of the circuit alignment. All vaults would be sited in areas outside the jurisdictional limits of the United States Army Corps of Engineers, California Department of Fish and Wildlife (CDFW), and the Regional Water Quality Control Board. Each underground vault would be approximately 35 square feet in size and four feet in depth.

The Floating Solar Array Project would also equip the existing electrical building with a PV system utility, an alternating current disconnect, and a pad mount switch.

Construction Activities

Construction Schedule and Hours

Project construction would take approximately six to eight months and is anticipated to be completed in 2023. Authorized construction work hours would be 7:00 a.m. to 5:00 p.m. on ECWR Facility premises.

Solar Array Construction

Installation of the floating solar array would require a staging, assembly, and launch area. Assembly of the modular floats and PV modules would occur by hand along the banks of Pond No. 3 (launch area) using torque wrenches, fasteners, beams, spreader bars, and other similar equipment. Once the floats are connected in a series of blocks, they would be pushed into the water using commercial carpeting material, a wooden ramp, or other similar means. The main floats and secondary floats, including the associated walkways, would be floated into position, secured using connection pins, and anchored to the banks using mooring lines.

Electrical Equipment Installation

Vibratory pile driving may be required for installation of the structure support piles for the foundation of the elevated electrical equipment structure to the northeast of Pond No. 3. Piles would be made of galvanized steel and would be sized to meet structural requirements (a typical size is aW6x25, which is 6.38 inches by 6.08 inches). The piles would be installed at a distance from the top of the nearest oxidation pond levee that follows all applicable standards and recommendations relevant to this type of engineering work. The ultimate foundation design would be determined during the structural engineering process and would be designed such that vibration levels at the nearest levee do not exceed 0.12 inches per second (in/sec) peak particle velocity (PPV), which is the vibration threshold recommended by the Federal Transit Administration (FTA) to avoid construction vibration damage.[1] If an exceedance of this vibration level at the nearest levee cannot be avoided using the vibratory pile driving method, an alternative foundation design would be implemented to avoid compromising the structural integrity of the levee due to high vibration levels. Installation of electrical equipment on the structure would require use of a Gradall forklift or

[1] FTA. 2018. *Transit Noise and Vibration Impact Assessment Manual*. September 2018. https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf (accessed October 2022).

crane due to its weight. All appropriate design measures will be applied to ensure structural integrity of buildings and levees within the project area.

Circuit Installation

The underground MV circuit would be installed via a combination of field trenching and directional boring. Field trenching would occur during installation of the MV circuit from the northeastern corner of Pond No. 3 to the point at which the circuit turns to the west. Directional boring would be utilized to install the remainder of the circuit as it proceeds to the west to the interconnection point located immediately north of the existing secondary clarifiers. Bore pits for directional boring would be sited outside wetlands and waters of the United States (U.S.) and State. In addition, a qualified biologist would be retained to identify the depth at which the underground MV circuit should be drilled to avoid impacts to wetlands and waters of the U.S. and State. The project contractor would be required to install the circuit at or below this depth. The circuit would also be installed at least 25 feet (as measured horizontally, vertically, or a combination thereof) from the building located within the historic farmhouse complex (Masciorini Ranch). A small backhoe or similar equipment would be utilized for trenching and digging vault holes and bore pits, and a crane would be used to lower vaults into place. Directional boring would require the use of a horizontal directional drill.

Construction Access, Deliveries, Staging, and Laydown

Primary construction access to the site of the proposed Floating Solar Array Project would be provided via the ECWR Facility's Pond Site entrance at 4400 Lakeville Highway. Secondary access would be provided via the ECWR Facility's main entrance on Cypress Drive for construction activities associated with the tie-in at the main electrical building. Approximately four deliveries of equipment and materials through the Pond Site entrance would occur each day during the construction period. Construction staging and laydown would occur in multiple locations at the ECWR Facility. An approximately 32,550-square-foot (sf) laydown yard and staging area would be used along the northern edge of Pond No. 3, which currently consists of an unpaved access pathway along the top of the levees. Five approximately 4,050-sf laydown yards and staging areas would be used along the eastern portion of the property immediately adjacent to the existing access road. Construction staging and laydown may also occur in the developed portion of the ECWR Facility adjacent to the main electrical building. All staging and laydown areas would be located outside wetlands and waters of the U.S. and State. Appendix A shows the proposed construction staging and laydown areas near Pond No. 3.

Operation

The proposed Floating Solar Array Project would be operated and monitored remotely. Maintenance activities would occur on an as-needed basis. Maintenance events would not require the use of heavy-duty equipment or result in ground disturbance. Washing of the solar PV panels to remove debris and improve energy production would be required periodically and would be accomplished via dry washing, which involves minimal water usage.

2.3 Permits and Approvals

No other regulatory permits or approvals would be required for the Floating Solar Array Project. The project has been designed to avoid impacts to wetlands, waters of the U.S. and waters of the State; therefore, a Clean Water Act Section 404 permit and Clean Water Act Section 401 permit are not

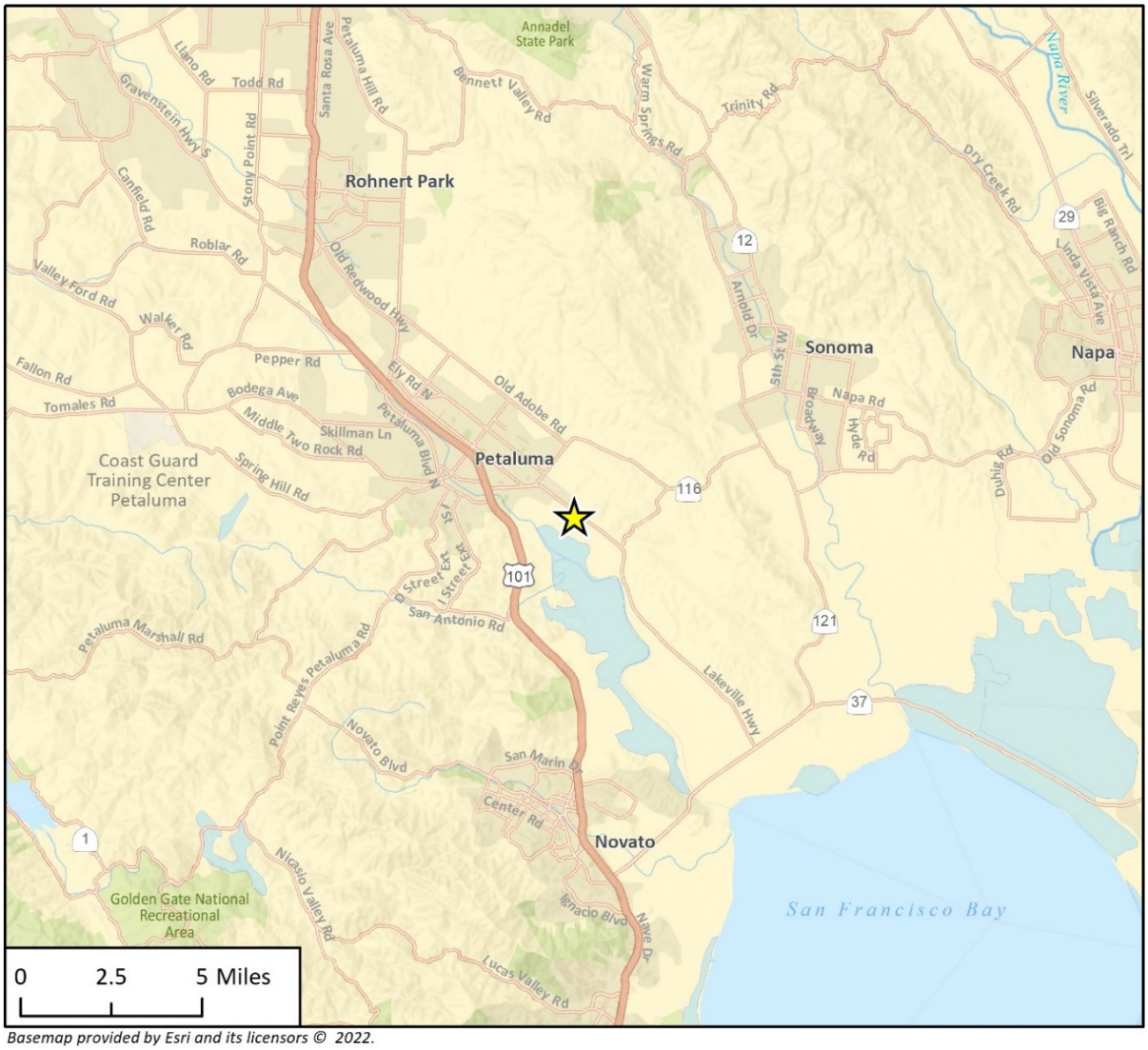
required. CDFW may encourage the project applicant to apply for a California Fish and Game Code Section 1602 Lake and Streambed Alteration Agreement with an approved frac-out plan for directional boring under waters of the State. The project will comply with all applicable federal and state regulatory requirements. Although not anticipated based on current project design, in the event that project disturbance areas occur within the California Department of Transportation (Caltrans) right-of-way associated with Lakeville Highway, a Caltrans encroachment permit would be required.

2.4 Resource Avoidance Measures and Best Management Practices

The Floating Solar Array Project would incorporate all applicable project measures adopted by the City for the approved Project to avoid and reduce environmental impacts, as outlined in the 2002 Certified EIR and subsequent Addenda. These measures include the following:

- **PD-3 Liquefaction Protection**: PD-3 requires the incorporation of project design measures to densify or solidify soils as necessary where site-specific conditions are liquefaction-prone.
- **PD-4 Seismic Design to Resist Ground Shaking**: PD-4 requires the incorporation of seismic design measures in new facilities to resist ground shaking.
- **PD-5 Standard Engineering Methods for Expansive Soils**: PD-5 requires implementation of standard geotechnical practices for expansive soils during project design.
- **PD-6 Standard Engineering Methods for Corrosive Soils**: PD-6 requires construction of facilities with materials not susceptible to corrosion or designed to provide corrosion protection.
- **PD-8 Erosion, Stormwater Runoff, and Spill Control Measures**: PD-8 requires the implementation of measures designed to prevent construction-related water quality impacts. As applied to the proposed Floating Solar Array Project, these measures would include but would not be limited to temporary soil stabilization measures such as hydroseeding and fiber rolls, measures for proper vehicle and equipment cleaning/fueling/maintenance, and waste management and materials pollution control measures such as spill prevention and control and hazardous waste management.
- **PD-14 Construction Air Quality Controls:** PD-14 requires incorporation of standard construction air quality control measures into construction activities. As applied to the proposed Floating Solar Array Project, these measures would include watering all active construction areas with the potential to generate significant amounts of dust at least twice a day; applying water twice daily or applying non-toxic soil stabilizers on all unpaved access roads, parking areas, and staging areas at the construction site; and properly maintaining construction equipment.
- **PD-17 Construction Nosie Mitigation Measures:** PD-17 requires incorporation of construction noise mitigation measures into construction activities. As applied to the proposed Floating Solar Array Project, these measures would include properly muffling and maintaining all construction equipment powered by internal construction engines, prohibiting unnecessary idling, and locating stationary noise-generating equipment as far as practical from existing nearby residences and other noise-sensitive land uses.
- **PD-20 Protection of Previously Undiscovered Historic and Archaeological Resources:** PD-20 requires implementation of appropriate avoidance, treatment, and disposition protocols should subsurface archaeological or historical remains or human burials be encountered during construction activities.

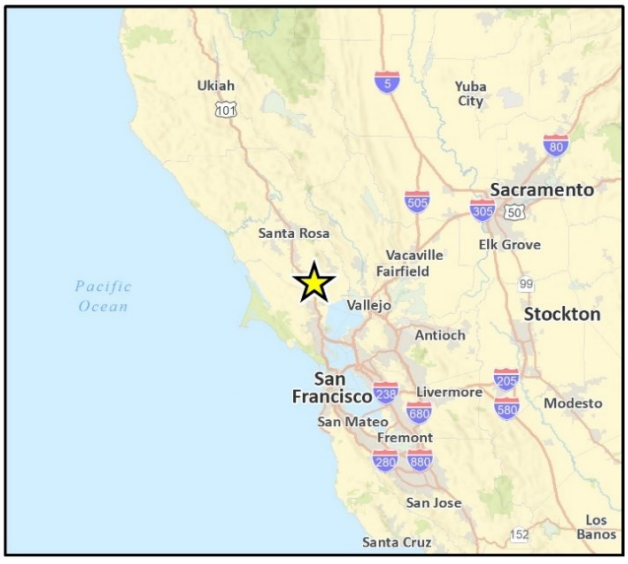
Figure 1 Project Location



Basemap provided by Esri and its licensors © 2022.

Project Location

N



3 Mitigation Monitoring Program Revisions

This Chapter presents only the revisions to the adopted 2002 Mitigation Monitoring Program, as modified in 2004, 2005, 2015, 2016, and July 2022, that are proposed in this EIR Addendum. Revisions are shown in strikeout and underline for ease of reference.

3.1 Measures Included in the Project

No revisions are proposed in this EIR addendum to the measures included in the Project.

3.2 Mitigation Measures

The following mitigation measure is revised to reflect current regulations and best management practices for the protection of special-status species.

BIO-1a **Special-status Species Protection Program**

Description: The City shall implement a Special-status Species Protection Plan, as follows:

- A Worker Environmental Awareness Training Program for construction personnel shall be provided that addresses sensitive habitats and special- status species that may be found on-site and outline procedures in the event a special-status species is encountered.
- Any ground-disturbing construction activity in Ellis Creek (i.e., in the bank or bed of the channel) or slough channel shall be 1) conducted when no or low freshwater flow from upstream into the work area (which will potentially be tidal at the time of construction) is occurring to avoid downstream transport of sediment and impacts on any migrating salmonid fish, or other rare aquatic species; and 2) conducted between coffer dams around which any tidal or stream flow shall be routed. Prior to coffer dam installation, a qualified biologist shall seine the area between the dams to determine if sensitive species are present. If sensitive species are present, they should be relocated in consultation with NMFS, USFWS, and CDFW consistent with federal and State regulations.
- Facilities shall be located and constructed using methods that minimize the loss of existing riparian or marsh vegetation. Unavoidable loss of riparian vegetation shall be mitigated by planting sufficient native riparian vegetation to compensate for the loss of shade and habitat.
- A 20-foot buffer zone from the top of the bank of Ellis Creek shall be established, where feasible, and fenced during construction.
- If aquatic habitat must be removed, create or restore like habitat on site at a compensatory ratio of 1:1 (1 acre of restored habitat for every 1 acre impacted) or as required by the Corps of Engineers or Regional Water Quality Control Board. Identify opportunities to improve current habitat conditions within Ellis Creek and implement, where feasible. Cropped upland is available as mitigation

sites for salt marsh, freshwater marsh, or stream impacts. Shollenberger Park also has sites available for mitigation for river habitat impacts.

- Best management practices shall be implemented to control erosion, sedimentation, and runoff of pollutants, and protect jurisdictional waters. As an appropriate example, best management practices are described in the Caltrans Storm Water Quality Handbooks: Construction Site Best Management Practices Manual (May 2017). Refer to PD-8 for a potential list. These shall be implemented as necessary under the supervision of the construction manager. Detailed specifications to protect Ellis Creek, wetlands, and tidal marsh shall be incorporated onto bid documents and construction drawings where construction activities occur within 50 feet of such a feature. If deemed appropriate by a qualified wetland scientist, wetland features shall be flagged prior to the start of construction for protection and avoidance if the construction activity does not warrant any of the BMPs listed in PD-8.
- Construction and grading activities that would affect Ellis Creek or upland areas that might erode into the creek or marsh, shall be restricted to the dry season.
- For work within or adjacent to the tidal marsh, temporary salt marsh harvest mouse exclusion fence shall be installed around the construction footprint and buried to a depth of 4 inches. The fence shall be constructed of heavy plastic sheeting curved outward at the top from the construction area to prevent mice from climbing or passing through. Fence height shall be at least 12 inches higher than adjacent vegetation. A qualified biologist shall inspect the fence as needed, to ensure there are no gaps or damage. Stakes shall be located on the inside of the exclusion fence (to deter mice from climbing stakes).
- Prior to any ground-disturbing construction activity, the City shall retain a qualified biologist to conduct pre-construction surveys to identify any American badger burrows/dens within open grassland areas and open agricultural fields within 500 feet of areas proposed for ground disturbance unless the qualified biologist determines that smaller buffers would be sufficient to avoid impacts. The survey shall be conducted no more than 14 days before construction commences. If occupied burrows are not found, further mitigation shall not be required. If occupied burrows are found, impacts to active badger dens shall be avoided by establishing exclusion zones around all active badger dens, within which construction-related activities shall be prohibited until denning activities are complete or the den is abandoned. (Construction activities outside the established exclusion zones shall be allowed to proceed.) A qualified biologist shall monitor each den once per week to track the status of the den and to determine when a den area has been cleared for construction.

Lead Agency: City of Petaluma

Implementing Agency: City of Petaluma

Timing: **Start:** Before starts of construction of the affected area
Completion: Completion of construction

Monitoring Agency: City of Petaluma and Construction Manager

Validation: Annual Report

4 Environmental Analysis

This Chapter consists of 14 sections, each of which presents the analysis of the proposed modification to the approved Project within a particular environmental discipline. The analysis refers back to the original evaluation of impacts contained in the 2002 Certified EIR and 2004 Addendum and identifies the change in impacts, if any, from the approved Project. If there are no changes to the previous impact evaluation, an explanation for this conclusion is provided. For those sections where a change in impacts is identified, the evaluation criteria taken directly from the 2002 Certified EIR are also provided. For ease of reference, the evaluation criteria table numbers remain the same as the numbering used in the 2002 Certified EIR.

Most of the information presented in the 2002 Certified EIR has not changed and is not repeated here. Please refer to the 2002 Certified EIR and subsequent addenda for descriptions of setting, discussion of methodology, and the complete identification and discussion of impacts.

4.1 Land Use

The land use designations identified in the 2002 Certified EIR for the ECWR Facility site were Public and Institutional on the east side of Ellis Creek and Land Extensive Agriculture on the west side of Ellis Creek, with those on the west side privately-owned and under County jurisdiction. The 2002 Certified EIR found that the approved Project facilities would be compatible with the Land Extensive Agriculture and Public and Institutional designations because public buildings and structures were considered conditional uses within the zoning designations. After certification of the EIR, the City purchased the parcels on the west side of Ellis Creek, changed the land use designation to Public and Institutional, and prezoned the site Planned Community District (as well as rezoned the parcel on the east side of Ellis Creek).

The floating solar array and its associated electrical infrastructure would be located within the boundary of the ECWR Facility. The floating solar array would be compatible with the permitted and conditional uses at the site because it would be ancillary infrastructure that supports the on-site uses through renewable electricity generation.

No change in impacts related to MRZ-2,[2] Community Separators, conversion of public open space, or loss of homes would occur due to the construction of the floating solar array and associated electrical infrastructure. Therefore, construction and use of the floating solar array and associated electrical infrastructure described in Chapter 2, *Project Description*, of this EIR Addendum would not cause new significant land use impacts or substantially more severe land use impacts than those identified in the 2002 Certified EIR.

[2] MRZ-2 refers to Mineral Resource Zone 2, which is an area mapped by the California Department of Conservation as being underlain by mineral deposits where geologic data and information show that significant measured, indicated, or inferred resources are present (California Department of Conservation. 2022. *Guidelines for Classification and Designation of Mineral Lands*. https://www.conservation.ca.gov/smgb/Guidelines/Documents/ClassDesig.pdf [accessed August 2022]).

4.2 Agriculture

The proposed modification to the approved Project does not require revisions to the evaluation of Agriculture. The 2002 Certified EIR identified a significant and unavoidable loss of agricultural land due to construction of the ECWR Facility, including all 149 acres of the site west of Ellis Creek. The floating solar array and associated electrical infrastructure would be located within a developed part of the ECWR Facility and is not farmland.

No change to the impacts on agricultural resources relative to Williamson Act land and glassy-winged sharpshooter populations would occur at the Project site as a result of the proposed floating solar array and associated electrical infrastructure. Therefore, construction and use of the floating solar array and associated electrical infrastructure described in Chapter 2, *Project Description*, of this EIR Addendum would not cause new significant agriculture impacts or substantially more severe agriculture impacts than those identified in the 2002 Certified EIR.

4.3 Geology, Soils, and Seismicity

The proposed modification to the approved Project does not require revisions to the evaluation of Geology, Soils and Seismicity. The entire site was evaluated in the 2002 Certified EIR, and the floating solar array and associated electrical infrastructure would not result in new impacts because the type of facilities, general location, and geologic setting remains the same. The floating solar array would not create the potential for additional or different geologic hazards. Project measures **PD-3 Liquefaction Protection, PD-4 Seismic Design to Resist Ground Shaking**, **PD-5 Standard Engineering Methods for Expansive Soils**, and **PD-6 Standard Engineering Methods for Corrosive Soils**, adopted as part of the approved Project to address liquefaction, ground shaking, and corrosive soils, would still be applicable to construction of the floating solar array and associated electrical infrastructure. Therefore, construction and use of the floating solar array and associated electrical infrastructure described in Chapter 2, *Project Description*, of this EIR Addendum would not cause new significant geology, soils, and seismicity impacts or substantially more severe geology, soils, and seismicity impacts than those identified in the 2002 Certified EIR.

4.4 Groundwater

The proposed modification to the approved Project does not require revisions to the evaluation of Groundwater. The 2002 Certified EIR found that the facilities at the ECWR Facility would have less-than-significant impacts to groundwater because they are in completely contained structures and would not utilize groundwater or interfere with groundwater recharge. The floating solar array and associated electrical infrastructure would not change this analysis because the floating solar array would be located on top of an existing oxidation pond (Pond No. 3) and would not require the use of groundwater. Therefore, construction and use of the floating solar array and associated electrical infrastructure described in Chapter 2, *Project Description*, of this EIR Addendum would not cause new significant groundwater impacts or substantially more severe groundwater impacts than those identified in the 2002 Certified EIR.

4.5 Surface Water Quality

The proposed modification to the approved Project does not require revisions to the evaluation of Surface Water Quality. The City's discharges and recycled water reuse would continue to meet standards set by federal, state, and regional agencies. On May 12, 2021, the Regional Water Quality Control Board San Francisco Bay Region approved the City's new National Pollutant Discharge Elimination System Permit CA0037810. The City would continue to comply with the conditions of the Permit, including inspection, monitoring, and reporting.

Similar to what was indicated in the 2002 Certified EIR for the approved Project, construction activities for the floating solar array and associated electrical infrastructure would have the potential to cause temporary sediment disturbance in proximity to wetlands and waters of the United States and State. Project measure **PD-8 Erosion, Stormwater Runoff, and Spill Control Measures**, adopted as part of the approved Project, would remain applicable to the construction of the floating solar array and associated electrical infrastructure, requiring the City to develop and implement measures designed to prevent significant construction impacts to water quality. In addition, the floating solar array and associated electrical infrastructure are designed to avoid direct impacts to wetlands and waters of the United States and State through location of project components and construction laydown/staging areas outside these resources, the use of directional boring for installation of the MV circuit below these resources and flagging of avoidance limits around these resources during construction activities (see Mitigation Measure BIO-1a, as revised in this EIR Addendum, in Section 3, *Mitigation Monitoring Program Revisions*). Therefore, construction and use of the floating solar array and associated electrical infrastructure described in Chapter 2, *Project Description*, of this EIR Addendum would not cause new significant surface water quality impacts or substantially more severe surface water quality impacts than those identified in the 2002 Certified EIR.

4.6 Hydrology

The proposed modification to the approved Project does not require revisions to the evaluation of Hydrology. There would be a minimal net increase of impervious surface associated with installation of the electrical equipment structure to the northeast of Pond No. 3 and the four single circuit vaults along the MV circuit alignment. However, the vaults would be relatively small in size (approximately 35 square feet each), and the electrical equipment structure would be elevated on structure support piles with pervious ground surface remaining underneath. As the volume of discharge into the watershed would not substantially change from that previously analyzed in the 2002 Certified EIR, no change to the flood elevation would result from installation of the floating solar array and associated electrical infrastructure. The proposed modification to the approved Project also would not include discharge or non-discharge components that could cause streambank erosion. Therefore, construction and use of the floating solar array and associated electrical infrastructure described in Chapter 2, *Project Description*, of this EIR Addendum would not cause new significant hydrology impacts or substantially more severe hydrology impacts than those identified in the 2002 Certified EIR.

4.7 Public Health and Safety

The proposed modification to the approved Project does not require revisions to the evaluation of Public Health and Safety. The floating solar array and associated electrical infrastructure would be constructed in an area of the ECWR Facility that is generally inaccessible to the public. The floating solar array would not change the production of recycled water, expose workers to hazardous waste, increase the use of hazardous materials, or increase exposure to disease vectors. While the solar PV panels may contain small quantities of hazardous materials, they would be completely encapsulated within the panels and would not be removed from the panels or exposed to air or water on site during operation. Therefore, construction and use of the floating solar array and associated electrical infrastructure described in Chapter 2, *Project Description*, of this EIR Addendum would not cause new significant public health and safety impacts or substantially more severe public health and safety severe impacts than those identified in the 2002 Certified EIR.

4.8 Biological Resources

The site of the proposed floating solar array and associated electrical improvements is fully contained within the boundary of the ECWR Facility and was included in the existing conditions assessment in the 2002 Certified EIR. The analyses conducted to support the 2002 Certified EIR identified five habitat types within the site of the proposed floating solar array and associated electrical improvements that included: 1) ruderal disturbed, 2) man-made drainage, 3) agriculture, 4) ornamental landscaping, and 5) riparian forest. The 2002 Certified EIR included an analysis of impacts from construction and maintenance activities associated with improvements to the ECWR Facility, which included activities within areas that fully encompass the site of the proposed floating solar array and associated electrical improvements.

A Jurisdictional Assessment report was prepared by Rincon Consultants, Inc. (Rincon) in May 2022, which is included as Appendix A.[3] The assessment included an evaluation of the project area for waters of the United States and State. In addition, during the field survey, the Rincon biologists verified existing site conditions for comparison with those documented in the 2002 Certified EIR. Based on the results of Rincon's 2022 field survey, site conditions have not substantially changed from the time of the 2002 assessments, with habitat generally unchanged. No new vegetation communities or land cover types were identified during Rincon's 2022 surveys, and the distribution of land cover remains essentially the same as that recorded in 2002.

Special-Status Species

The potential for special-status plant and wildlife species to occur within the site of the proposed floating solar array and associated electrical improvements was updated for the purpose of this analysis with the current list of special-status plants and wildlife known to occur within the region, and the current extent of federally defined critical habitat was compared to that documented in the 2002 Certified EIR. A query of CDFW *California Natural Diversity Database* (CNDDB), the California Native Plant Society's online *Inventory of Rare Plants*, and the United States Fish and Wildlife Service (USFWS) *Information for Planning and Consultation* (IPaC) online database was conducted to update the special-status species with some potential to occur within the *Petaluma River* United States Geological Survey (USGS) 7.5-minute quadrangle (quad) and eight surrounding USGS quads

[3] Rincon Consultants, Inc. 2002. *Jurisdictional Assessment of the Ellis Creek Water Recycling Facility Floating Solar Array Project, in the City of Petaluma, Sonoma County, California*. May 24, 2022.

(*Sonoma*, *Cotati*, *Glen Ellen*, *Novato*, *San Geronimo*, *Petaluma Point*, *Petaluma*, and *Sears Point*).[4, 5, 6] See Appendix B for a full list of special-status species that have been reported in the region of the site of the Floating Solar Array Project, their habitat requirements, and an evaluation of their potential to occur on site.

Special-Status Plant Species

Fifty-eight special-status plant species have been reported in the region of the site of the Floating Solar Array Project. Of these, 25 special-status plant species were previously identified as having the potential to occur within the regional vicinity of the ECWR Facility in the 2002 Certified EIR and subsequent Addenda. Thirty-three additional special-status plant species have also been identified as having the potential to occur in the regional vicinity of the site of the Floating Solar Array Project. Most of the 58 special status plants with potential to occur in the regional vicinity are not expected to occur within or adjacent to the footprint of the Floating Solar Array Project due to the absence of suitable habitat. Based on the habitat requirements and known distributions of these species, one special-status plant species has a moderate potential to occur within or immediately adjacent to the site of the Floating Solar Array Project - congested-headed hayfield tarplant (*Hemizonia congesta* ssp. *congesta;* California Rare Plant Rank 1B.2) (Appendix B). This species is known to occur in fallow agricultural fields (similar to those present to the north of the project site) and in ruderal or disturbed areas along roadsides. Direct impacts to a small number of individuals could result from construction activities that require vegetation removal or ground disturbance if this species is present within the project site. However, congested-headed hayfield tarplant is not a state or federally listed species. Hundreds of known occurrences of this species are documented from Siskiyou County in the north to Los Angeles County in the south with their highest concentrations in the Bay Area, including Sonoma County.[7] Significant impacts (i.e., impacts that would reduce the viability of the local or regional population of this plant) from a project of this size are unlikely due to the relatively small disturbance footprint associated with the proposed bore pits and trenches. Impacts to this species would be less than significant. Therefore, construction and use of the floating solar array and associated electrical infrastructure described in Chapter 2, *Project Description*, of this EIR Addendum would not cause new significant impacts or substantially more severe impacts to special status species than those identified in the 2002 Certified EIR.

Special-Status Wildlife Species

Thirty-seven special-status wildlife species have been reported in the region of the site of the Floating Solar Array Project. Of these, 29 special-status wildlife species were previously identified as having the potential to occur within the regional vicinity of the ECWR Facility in the 2002 Certified EIR and subsequent Addenda, and eight additional special-status wildlife species have been identified to have potential to occur in the regional vicinity of the site of the Floating Solar Array Project.

Based on the habitat requirements for the 29 species previously identified in the ECWR Facility in the 2002 Certified EIR and subsequent Addenda, the availability and quality of suitable habitat, and known species' distributions, five special-status wildlife species are considered to have a high potential to occur and 10 special status species are considered to have a moderate potential to occur within or immediately adjacent to the site of the Floating Solar Array Project (Appendix B). Of

[4] CDFW. 2022. CNDDB, Rarefind V. https://apps.wildlife.ca.gov/rarefind/view/RareFind.aspx (accessed August 2022).
[5] CNPS. 2022. Inventory of Rare and Endangered Plants. https://rareplants.cnps.org/ (accessed August 2022).
[6] USFWS. 2022. IPaC, online Project Planning Tool. https://ecos.fws.gov/ipac/ (accessed August 2022).
[7] CalFlora. 2022. "Hemizonia congesta DC. ssp. congesta." https://www.calflora.org/app/taxon?crn=4068 (accessed November 2022).

the 15 special-status species with moderate to high potential to occur at the site, the following 14 species were previously analyzed in the 2002 Certified EIR and subsequent Addenda:

- Green sturgeon – southern distinct population segment (DPS) (*Acipenser medirostris* pop. 1); Federally Threatened
- California red-legged frog (*Rana draytonii*); Federally Threatened, CDFW Species of Special Concern (SSC)
- Western pond turtle (*Emys marmorata*); CDFW SSC
- Swainson's hawk (*Buteo swainsoni*); State Threatened
- White-tailed kite (*Elanus leucurus*); CDFW Fully Protected (FP) species
- Coho salmon – central California coast evolutionarily significant unit (ESU) (*Oncorhynchus kisutch* pop. 4); Federally and State Endangered
- Steelhead – central California coast DPS (*Oncorhynchus mykiss irideus* pop. 8); Federally Threatened
- Sacramento splittail (*Pogonichthys macrolepidotus*); CDFW SSC
- Longfin smelt (*Spirinchus thaleichthys*); Federal candidate for listing and State Threatened
- Burrowing owl (*Athene cunicularia*); CDFW SSC
- California horned lark (*Eremophila alpestris actia*); CDFW Watch List (WL) species
- Saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*); CDFW SSC
- Pallid bat (*Antrozous pallidus*); CDFW SSC
- American badger (*Taxidea taxus*); CDFW SSC

Direct and indirect impacts to these species could result from project activities including crushing of nests, crushing/removal of refugia or nests, general habitat disturbance or removal, disrupting breeding activities, and impairing water quality should stormwater runoff during construction activities enter nearby water bodies. Implementation of **Mitigation Measure BIO-1a Special-Status Species Program** would require pre-construction clearance surveys for the special-status species listed above with a potential to occur near or in Ellis Creek. In addition, **PD-8 Erosion, Stormwater Runoff, and Spill Control Measures**, adopted as part of the approved Project to prevent construction impacts to water quality, would remain applicable to the construction of the floating solar array and associated electrical infrastructure. As required by Mitigation Measure BIO-1a and PD-8, pre-construction clearance surveys along with avoidance and minimization measures for aquatic special-status species (if deemed necessary) as well as the stormwater control measures would reduce potential project impacts to special-status fish (green sturgeon, Coho salmon, steelhead, Sacramento splittail, longfin smelt), California red-legged frog, and western pond turtle. Pallid bat has a moderate potential to roost in the large trees in the riparian forest along Ellis Creek. However, construction activities would be sited to avoid the riparian zone along Ellis Creek by design and in accordance with Mitigation Measure BIO-1a, which requires a 20-foot buffer from construction around all riparian habitats. This would ensure construction activities would not occur within bat habitat, and impacts to bats potentially roosting along Ellis Creek would not occur. American badger was previously evaluated in subsequent Addenda to the 2002 Certified EIR; however, the species was determined to have a low potential to occur with the footprint of previously evaluated projects. Nevertheless, the open grassland and agricultural pasture adjacent to the ECWR Facility may provide suitable habitat for American badger because the species is known to use agricultural fields during foraging and dispersal. The Floating Solar Array Project is designed to impact only areas that have been previously disturbed and entirely avoids potentially suitable

habitat for American badger, but construction noise and vibration could disturb badger if occupying nearby suitable habitat. The updates made to Mitigation Measure BIO-1a proposed as a part of this EIR Addendum would require pre-construction surveys for American badger and avoidance and minimization for this species if an active den is located within the project site, which would minimize the potential for project impacts to this species. Finally, **Mitigation Measure BIO-2a Active Raptor and Migratory Bird Nest Protection Program** would reduce potential project impacts to special-status birds (Swainson's hawk, white-tailed kite, burrowing owl, California horned lark, and saltmarsh common yellowthroat) to less than significant levels by requiring pre-construction nesting bird surveys and avoidance measures for active nests.

Of the eight special status species not previously identified as having the potential to occur within the regional vicinity of the ECWR Facility in the 2002 Certified EIR and subsequent Addenda, seven species have low or no potential to occur based on the lack of suitable habitat. One special-status wildlife species has a moderate potential to occur within the vicinity of the site of the Floating Solar Array Project – western yellow-billed cuckoo (*Coccyzus americanus occidentalis*). The riparian and aquatic habitat along Ellis Creek provides suitable breeding and foraging habitat for this species. If actively nesting during construction activities, construction noise and activity could cause nest abandonment, an impact that would be considered a significant impact under CEQA. However, **Mitigation Measure BIO-2a Active Raptor and Migratory Bird Nest Protection Program** would reduce potential project impacts to this species to less than significant levels by requiring pre-construction nesting bird surveys and avoidance measures for active nests.

In summary, **Mitigation Measure BIO-1a Special-Status Species Protection Program** and **Mitigation Measure BIO-2a Active Raptor and Migratory Bird Nest Protection Program**, required for the approved Project to address potential impacts to special-status wildlife species, would be applicable for the Floating Solar Array Project, as updated in Section 3, *Mitigation Monitoring Program Revisions*. Mitigation Measure BIO-1a, as revised in this EIR Addendum, specifies general special-status species surveys and avoidance and minimization measures. Mitigation Measure BIO-2a specifies surveys and avoidance measures specifically targeted at special-status nesting and migratory birds that may occur within the vicinity of the site of the floating solar array and associated electrical infrastructure. With implementation of these mitigation measures previously identified in the 2002 Certified EIR, impacts to special-status wildlife species and their habitats would be reduced to a less-than-significant level, consistent with the approved Project.

Nesting Birds

The site of the Floating Solar Array project contains habitat with the potential to support special-status birds, including resident and migrant passerine species and raptors protected under the CFGC and the MBTA. Bird nesting habitat is present in the trees and shrubs occurring in the riparian habitats along Ellis Creek and adjacent to the project site, and raptors could nest within the taller trees within 0.25 mile of the site of the proposed Floating Solar Array project. Therefore, the project could result in direct or indirect impacts to nesting birds. Direct impacts may include physical impacts to active nests within the project site due to vegetation or tree removal or ground disturbing activities. Indirect impacts could result from noise, vibrations, and dust from construction activities throughout the project site. If construction activities occur during the nesting season (generally February 1 to September 15), noise, vibrations, and dust can potentially impact active nests. **Mitigation Measure BIO-2a Active Raptor and Migratory Bird Nest Protection Program**, required for the approved Project to address potential impacts to nesting birds, would be applicable to the Floating Solar Array Project. Implementation of Mitigation Measure BIO-2a requires pre-

construction surveys for nesting birds be conducted and avoidance of all active nests via construction exclusion zones until the end of the nesting season with monitoring of active nests by a qualified biologist during construction to evaluate and halt potential nesting disturbances caused by the construction activities. Adherence to this mitigation measure would reduce impacts to nesting birds to a less-than significant level, consistent with the approved Project.

Riparian Habitat, Critical Habitat, and Sensitive Natural Communities

The site of the floating solar array and associated electrical infrastructure is just north of critical habitat for both steelhead – Central California Coast DPS (*Oncorhynchus mykiss irideus* pop. 8) and green sturgeon.[8] As noted in Chapter 2, *Project Description*, construction activities would be sited to avoid aquatic features, including Ellis Creek, which would ensure construction activities would not occur within potential fish habitat. In addition, **PD-8 Erosion, Stormwater Runoff, and Spill Control Measures**, adopted as part of the approved Project to prevent construction impacts to water quality, would remain applicable to the construction of the floating solar array and associated electrical infrastructure. With implementation of PD-8 and Mitigation Measure BIO-1a, which requires aquatic habitat avoidance and best management practices, impacts to fish and critical habitat for these species would be reduced to a less-than-significant level, similar to the approved Project.

A portion of Ellis Creek and associated riparian habitat along the creek is located within the footprint of the proposed electrical infrastructure. The proposed electrical infrastructure is designed to avoid areas mapped as riparian along Ellis Creek, including the restoration area, by siting vaults outside mapped riparian habitat and utilizing directional boring to install the underground MV circuit below riparian areas with bore pits sited outside mapped riparian habitat. Additionally, **PD-8 Erosion, Stormwater Runoff, and Spill Control Measures**, adopted as part of the approved Project, would remain applicable to the construction of the Floating Solar Array Project to avoid any erosion or construction related runoff into these sensitive habitats. As such, indirect impacts to riparian habitats associated with installation of the proposed electrical infrastructure would remain less than significant.

Jurisdictional Waters

The Jurisdictional Assessment for the site of the floating solar array and associated electrical infrastructure identified areas that may require formal delineation and subsequent regulatory permitting if directly impacted. According to the assessment, there are 3.67 acres/3,045.65 linear feet of non-wetland waters of the United States, 10.22 acres of wetland waters of the United States, and 20.33 acres of waters and wetlands of the State within the study area (Appendix A).[9] All infrastructure associated with the floating solar array would be sited outside of waters and wetlands of the United States and the State. Therefore, the Floating Solar Array Project would avoid direct impacts to jurisdictional features. In addition, as described earlier, **PD-8 Erosion, Stormwater Runoff, and Spill Control Measures**, adopted as part of the approved Project, would remain applicable to the construction of the floating solar array and associated electrical infrastructure to avoid indirect impacts to water quality. Furthermore, directional boring for the proposed MV circuit would be completed at a depth that would avoid subsurface impacts to wetlands and waters of the U.S. and State. In addition, the project would be required to implement BMPs to provide additional protection of jurisdictional waters, such as flagging avoidance limits of potentially jurisdictional

[8] USFWS. 2022. Critical Habitat Portal. https://ecos.fws.gov/ecp/report/table/critical-habitat.html (accessed August 2022).
[9] Rincon Consultants, Inc. 2002. *Jurisdictional Assessment of the Ellis Creek Water Recycling Facility Floating Solar Array Project, in the City of Petaluma, Sonoma County, California*. May 24, 2022.

waters prior to the start of construction (see Mitigation Measure BIO-1a, as revised in this EIR Addendum, in Section 3, *Mitigation Monitoring Program Revisions*) and . As such, impacts to jurisdictional wetlands and waters associated with the Floating Solar Array Project would remain less than significant.

Summary

Based on the information provided above, the proposed project would not result in additional impacts to special-status species, riparian areas, sensitive habitat, trees, migration corridors, or streams beyond those identified in the 2002 Certified EIR. Construction of the Floating Solar Array Project would abide by the same restrictions and be subject to the same project measures and mitigation measures as the previous construction of the ECWR Facility. These measures include **Mitigation Measures BIO-1a Special-status Species Protection Program, BIO-1b Rare, Threatened and Endangered Plan Protection Program**, and **BIO-2a Active Raptor and Migratory Bird Nest Protection Program** as well as project measure **PD-8 Erosion, Stormwater Runoff, and Spill Control Measures**. Therefore, construction and use of the floating solar array and associated electrical infrastructure described in Chapter 2, *Project Description*, of this EIR Addendum would not cause new significant biological resources impacts or substantially more severe biological resources impacts than those identified in the 2002 Certified EIR.

4.9 Transportation

The proposed modification to the approved Project does not require revisions to the evaluation of Transportation. Construction traffic would temporarily increase traffic volumes on Lakeville Highway due to construction worker commutes and the delivery of floating solar array and electrical equipment components during the six- to eight-month construction period. Given the size and nature of the proposed floating solar array and associated electrical infrastructure, the volume of anticipated construction traffic would be significantly less than the 300 construction trips per day evaluated in the 2002 Certified EIR. In addition, operation of the unmanned and remotely-operated floating solar array would result in a minimal increase in operational traffic associated only with as-needed maintenance. Therefore, construction and use of the floating solar array and associated electrical infrastructure described in Chapter 2, *Project Description*, of this EIR Addendum would not cause new significant transportation impacts or substantially more severe transportation impacts than those identified in the 2002 Certified EIR.

4.10 Air Quality

The proposed modification to the approved Project does not require revisions to the evaluation of Air Quality. Construction of the floating solar array and associated electrical infrastructure would require the use of construction equipment that would be expected to generate similar or lower levels of dust and equipment exhaust as the equipment evaluated in the 2002 Certified EIR. In addition, the proposed modification to the approved Project would not require soil export or import. In addition, project measure **PD-14 Construction Air Quality Controls**, which incorporates best management practices into the approved Project to address air pollutant emissions during construction, would remain applicable to the floating solar array and associated electrical infrastructure. As a result, as indicated in the 2002 Certified EIR, construction activities would not have the potential to generate emissions that expose people to high levels of dust and equipment exhaust. Operation of the floating solar array would generate minor new air emissions associated with as-needed maintenance trips, which would be infrequent and would not require the use of

heavy equipment. These emissions would not have the potential to result in an exceedance of the operational air emission thresholds published by the Bay Area Air Quality Management District.[10] Therefore, construction and use of the floating solar array and associated electrical infrastructure described in Chapter 2, *Project Description*, of this EIR Addendum would not cause new significant impacts or substantially more severe impacts than those identified in the 2002 Certified EIR.

4.11 Noise

The proposed site of the floating solar array and primary electrical equipment structure is approximately 4,000 feet from the nearest sensitive receptors with intervening topography and vegetation. At this distance, construction noise would be barely audible. The northwestern bore pit for the MV circuit could be located as close as approximately 50 feet from the nearest sensitive receptors, which are residences to the north across Lakeville Highway. These receptors were identified in the 2002 Certified EIR as being potentially impacted by high construction noise levels during construction of the approved Project. Construction of the floating solar array and associated electrical infrastructure would require the use of similar construction equipment as that evaluated in the 2002 Certified EIR and thus would generate similarly high noise levels at these sensitive receptors. However, installation of the underground MV circuit would require directional boring with a horizontal directional drill, which was not an equipment type included in noise analysis of the 2002 Certified EIR. Noise levels at the entry and exit pits for the directional boring would be approximately 103 to 115 decibels (dBA) L_W (sound power level) at a distance of approximately three feet, which equates to sound pressure levels of approximately 85 to 97 L_{eq} at three feet. [11, 12, 13] Assuming a standard distance attenuation of 6 dBA per doubling of distance, directional boring would generate noise levels of approximately 60 to 73 dBA L_{eq} at 50 feet. These noise levels fall within the range of construction noise levels contemplated by the 2002 Certified EIR, which ranged from approximately 68 to 98 dBA L_{eq} at 50 feet. Therefore, construction noise levels associated with directional boring would not be substantially higher than those identified in the 2002 Certified EIR for the approved Project.

Furthermore, project measure **PD-17 Construction Noise Mitigation Measures**, which incorporates construction noise mitigation measures related to scheduling and equipment use into the approved Project to address construction noise, would remain applicable to the floating solar array and associated electrical infrastructure. PD-17 would reduce construction noise impacts to a less-than-significant level, similar to the approved Project. Construction traffic would be much less than that evaluated for the approved Project, as noted above in Section 4.9, *Transportation*. Operation of the electrical infrastructure associated with the floating solar array, such as the transformer and inverters, would produce low noise levels. Electrical equipment produces a discrete low-frequency humming noise. The noise from transformers is specifically produced by alternating current flux in the core, which causes it to vibrate. However, these project components would be located

[10] Bay Area Air Quality Management District. 2017. *California Environmental Quality Act Air Quality Guidelines*. May 2017. https://www.baaqmd.gov/~/media/files/planning-and-research/ceqa/ceqa_guidelines_may2017-pdf.pdf?la=en&rev=f7c859e6ce5141aea26fb7fdd8f3d4ca (accessed August 2022).

[11] SLR. 2017. *Pigg River Crossing HDD Noise Impact Report*, September 2017. http://www.mountainvalleypipeline.info/wp-content/uploads/2019/04/Attachment-IP-33-Pigg-River-Crossing-HDD-Noise-Report.pdf (accessed August 2022).

[12] Sound levels are described as either a "sound power level" or a "sound pressure level," which are two distinct characteristics of sound. Both share the same unit of measurement, the dB. However, sound power (expressed as L_{pw}) is the energy converted into sound by the source. As sound energy travels through the air, it creates a sound wave that exerts pressure on receivers, such as an eardrum or microphone, which is the sound pressure level. Sound measurement instruments only measure sound pressure, and noise level limits are typically expressed as sound pressure levels.

[13] L_{eq} is one of the most frequently used noise metrics; it considers both duration and sound power level. The L_{eq} is defined as the single steady-state A-weighted sound level equal to the average sound energy over a time period.

approximately 4,000 feet from the nearest sensitive receptors with intervening topography and vegetation. At this distance, the low levels of noise generated by the inverters and transformer would be barely audible, if all, at these sensitive receptors and thus would not expose the public to high noise levels. Therefore, construction and use of the floating solar array and associated electrical infrastructure described in Chapter 2, *Project Description*, of this EIR Addendum would not cause new significant noise impacts or substantially more severe noise impacts than those identified in the 2002 Certified EIR.

Certain project construction activities, such as directional boring and vibratory pile driving, could have the potential to generate vibration. High levels of groundborne vibration may cause damage to nearby buildings or structures; at lower levels, groundborne vibration may cause minor cosmetic (i.e., non-structural damage) such as cracks. The nearest structures of concern for vibration impacts are the historic building within the Masciorini Ranch and the oxidation pond levees. The proposed MV circuit would be installed at least 25 feet (as measured horizontally, vertically, or a combination thereof) from the building located within Masciorini Ranch. At this distance, vibration levels would be approximately 0.089 in/sec PPV, which would not exceed the FTA's construction damage criteria of 0.12 in/sec PPV for "buildings extremely susceptible to vibration damage" (see Appendix D for vibration modeling).[14, 15] In addition, the ultimate foundation design for the elevated electrical equipment structure to the northeast of Pond No. 3 would be such that vibration levels at the nearest oxidation pond levee also do not exceed 0.12 in/sec PPV, which would minimize the potential for vibration to compromise the structural integrity of the levee. Therefore, construction and use of the floating solar array and associated electrical infrastructure described in Chapter 2, *Project Description*, of this EIR Addendum would not cause new significant vibration impacts or substantially more severe vibration impacts than those identified in the 2002 Certified EIR.

4.12 Cultural Resources

The proposed modification to the approved Project does not require revisions to the evaluation of Cultural Resources. The entire ECWR Facility site was evaluated in the 2002 Certified EIR. The proposed new floating solar array project and associated electrical infrastructure is within the footprint previously evaluated in the 2002 Certified EIR and would not result in any new impacts. The proposed MV circuit would be installed underground via directional boring near (but not below) the farmhouse complex (Masciorini Ranch) located adjacent to Lakeville Highway, immediately north of the secondary clarifiers. Although Masciorini Ranch was originally determined not eligible for listing in the National Register of Historic Places or the California Register of Historical Resources in the 2002 Certified EIR, it was determined to constitute a cultural landscape with ties to the agricultural heritage of the local community. In addition, as detailed in the July 2005 Addendum to the 2002 Certified EIR, the California State Historic Preservation Officer concluded that Masciorini Ranch is eligible for listing in the National Register of Historic Places and the California Register of Historical Resources and is therefore a historical resource under CEQA. **PD 19, Protection of Historic and Archaeological Resources,** requires that the City maintain the Masciorini residence in its current condition, or rehabilitate it in accordance with the Secretary of the Interior's Standards for

[14] FTA. 2018. *Transit Noise and Vibration Impact Assessment Manual*. September 2018. https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf (accessed October 2022).

[15] Vibration levels from directional boring were conservatively estimated using vibration reference levels for caisson drilling published by the California Department of Transportation in their 2020 *Transportation and Construction Vibration Guidance Manual (CT-HWANP-RT-20-365.01.01)*.

the Treatment of Historic Properties, to prevent loss of historical integrity. Because the proposed MV circuit would be installed via directional boring, no aboveground structures or landscaping associated with the Masciorini Ranch would be directly impacted. Directional boring may create vibrations at the surface that could have the potential to indirectly result in cosmetic and/or structural damage to the Masciorini residence. However, the proposed MV circuit would be installed at least 25 feet (as measured horizontally, vertically, or a combination thereof) from the building located within Masciorini Ranch. At this distance, vibration levels would be approximately 0.089 in/sec PPV, which would not exceed the FTA's construction damage criteria of 0.12 in/sec PPV for "buildings extremely susceptible to vibration damage" (see Appendix D for vibration modeling).[16, 17] As a result, impacts to historic resources would be less than significant, similar to the approved Project.

The 2002 Certified EIR indicated that there is a moderate likelihood of encountering subsurface archaeological resources within the portion of the ECWR Facility in which the western bore pit of the MV circuit would be excavated. As such, project measure **PD-20 Protection of Previously Undiscovered Historic and Archaeological Resources**, remains included in the approved Project and would be applicable to the Floating Solar Array Project to address unknown cultural resources if encountered during construction. Therefore, construction and use of the floating solar array and associated electrical infrastructure described in Chapter 2, *Project Description*, of this EIR Addendum would not cause new significant cultural resources impacts or substantially more severe cultural resources impacts than those identified in the 2002 Certified EIR.

4.13 Visual Resources

The proposed modification to the approved Project does not require revisions to the evaluation of Visual Resources. The proposed new floating solar array would be located on Pond No. 3 approximately 810 feet south of Lakeville Highway and outside the foreground viewshed of any private residences. The floating solar array and electrical equipment structure would not be visible from Lakeville Highway due to intervening vegetation and topography that shields views of the oxidation ponds from this vantage point. In addition, the remaining electrical infrastructure would be located underground or in existing ECWR Facility buildings. As a result, the floating solar array and associated electrical infrastructure would not affect foreground or middle-ground views from Lakeville Highway or foreground views from private residences. The proposed modification to the approved Project does not include new lighting, and no impact related to new light sources would occur. Therefore, construction and use of the floating solar array and associated electrical infrastructure described in Chapter 2, *Project Description*, of this EIR Addendum would not cause new significant visual resources impacts or substantially more severe visual resources impacts than those identified in the 2002 Certified EIR.

[16] FTA. 2018. *Transit Noise and Vibration Impact Assessment Manual*. September 2018. https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf (accessed October 2022).

[17] Vibration levels from directional boring were conservatively estimated using vibration reference levels for caisson drilling published by the California Department of Transportation in their 2020 *Transportation and Construction Vibration Guidance Manual (CT-HWANP-RT-20-365.01.01)*.

4.14 Public Services and Utilities

The proposed modification to the approved Project does not require revisions to the evaluation of Public Services and Utilities. The floating solar array and associated electrical infrastructure would not change the potential disruption of emergency services that was analyzed in the 2002 Certified EIR. The introduction of a new solar array and aboveground electrical equipment would incrementally increase demand for fire protection and police protection services at the ECWR Facility; however, this minimal increase would not inhibit their ability to maintain accepted service standards. Emergency vehicles would still be able to access the ECWR Facility from two locations: from Cypress Drive and directly from Lakeville Highway. Therefore, construction and use of the floating solar array and associated electrical infrastructure described in Chapter 2, *Project Description*, of this EIR Addendum would not cause new significant impacts or substantially more severe impacts than those identified in the 2002 Certified EIR.

5 Alternatives to the Proposed Project

The proposed modification to the approved Project is minor and would not affect the relative comparison of alternatives presented in the 2002 Certified EIR. The proposed modification does not require the consideration of new or revised alternatives because the environmental impacts are not substantially greater than previously identified in the 2022 Certified EIR, and there are no new significant effects.

6 CEQA Required Sections

6.1 Growth Inducing Impacts of the Project

The potential for growth inducement would not increase due to the proposed floating solar array and associated electrical infrastructure because the renewable electricity generated would be used on-site to supply the existing ECWR Facility's demand and would not increase the capacity of the Facility.

6.2 Significant and Unavoidable Adverse Impacts

There are no new significant unavoidable environmental impacts as a result of the proposed modification to the approved Project. The one significant unavoidable impact from the approved Project remains:

- **Impact AG-1:** Loss of approximately 149 acres of farmland on Parcels A and B

When the Project was approved in August of 2002, a statement of overriding considerations was adopted, explaining the City's reasons for approving the Project despite the significant impact on farmland. The approved Project has since been constructed and the loss of farmland has occurred.

6.3 Environmentally Superior Alternative

The 2002 Certified EIR identified the Environmentally Superior Alternatives as both Alternative 4 (Hopper Street) and the proposed project (Extended Aeration) because they would have similar levels of environmental impacts and therefore both qualify as the Environmentally Superior Alternative. The proposed project has since been constructed.

There are no new impacts related to the construction and operation of the floating solar array and associated electrical infrastructure; therefore, the relative comparison of alternatives does not change and there is no need to evaluate further alternatives related to this minor change in the approved Project.

7 Preparers

7.1 Lead Agency

The City of Petaluma is the lead agency under CEQA for the preparation of Addendum No. 8 to the *Water Recycling Facility and River Access Improvements EIR* for the Floating Solar Array Project.

Staff Member	Role
Diane Ramirez	Project Manager, Petaluma Department of Public Works & Utilities

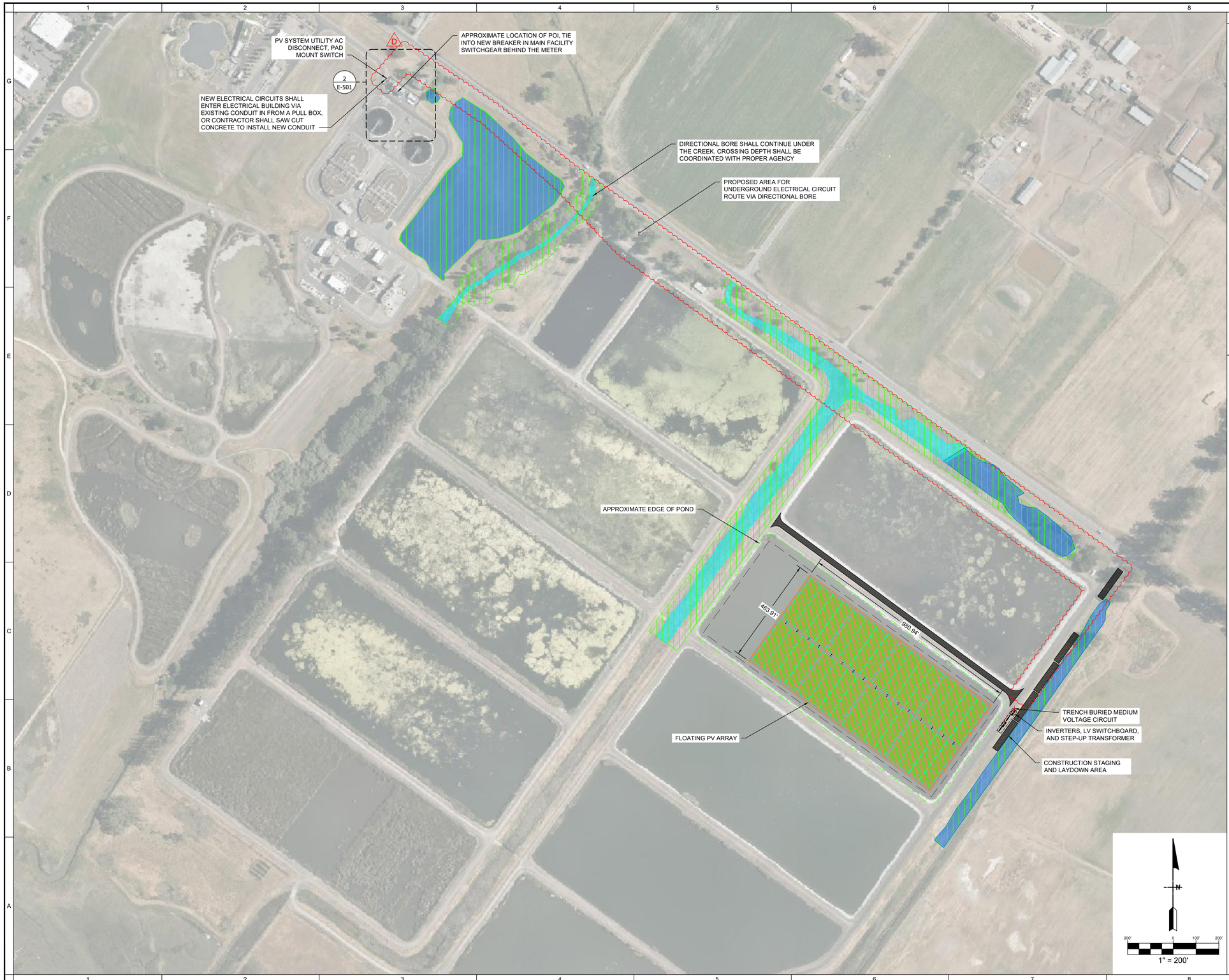
7.2 Document Preparation

Rincon Consultants, Inc.

Staff Member	Role
Brenda Eells	Director, Environmental Planning – Renewable Energy Infrastructure / Principal-in-Charge
David Daitch, Ph.D.	Principal, Natural Resources / Renewable Energy
Annaliese Miller	Senior Environmental Planner / Project Manager
Virginia Dussell	Associate Environmental Planner
Kristi Asmus	Senior Biologist
Beth Wilson	Biologist
Isabelle Radis	GIS Analyst
Alvin Flores	Publishing Specialist

Appendix A

Preliminary Project Site Plans



VICINITY MAP

SYSTEM SUMMARY	
SYSTEM DC STC CAPACITY (kW)	5,832.0
SYSTEM AC RATING (kW)	4,000
DC/AC RATIO	1.46
INTERCONNECTION VOLTAGE	12.00kV
LATITUDE	38.2223°
LONGITUDE	-122.5737°
DESIGN TEMPERATURE MIN./MAX. (°C)	-4.9 / 28.0
PV ARRAY	
MODULE TYPE	ELITE / ET-M772BH540TW
MODULE RATING (W @ STC)	540
MODULE QUANTITY TOTAL	10,800
STRING QUANTITY TOTAL	400
STRING SIZE	27
MAX. STRING VOLTAGE	1500
RACKING CONFIGURATION	SAT
AZIMUTH	126°
MAX. TILT ANGLE	12.5°
INVERTER	
INVERTER MAKE / MODEL	CHINT / SCH125KTL-DO/US-600
INVERTER AC POWER RATING (kW)	4,000
INVERTER QUANTITY	32 @ 125KW
RACKING QUANTITIES	
RACKING MODEL	FLOATING ARRAY
ROW-TO-ROW PITCH (FT)	9.29
ROW-TO-ROW CLEAR SPACE (FT)	1.37
GROUND COVERAGE RATIO (%)	80.1

LEGEND	
WETLANDS AND WATERS OF THE STATE	
NON-WETLAND WATERS OF THE U.S.	
WETLAND WATERS OF THE U.S.	
MV CIRCUIT IN TRENCH	
MV CIRCUIT DIRECTIONAL BORE	

OWNER: WhitePine RENEWABLES

BUILDER: SUMMIT Energy

ENGINEER: GREEN RIVER ENGINEERING & CONSULTING

FOR BID ONLY
NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION
-	03.07.22	PRELIM LAYOUT
A	03.25.22	UTILITY COMMENTS
B	05.25.22	ADDED WETLAND LAYERS
C	06.30.22	BORE LOCATION CHANGE, ARRAY ADJUSTMENT, ADDED DIMENSIONS
D	07.27.22	REVISED MV CIRCUIT ROUTE

PROJECT:

ELLIS CREEK WATER RECYCLING FACILITY - FLOATING SOLAR ARRAY

3890 CYPRESS DR.
PETALUMA, CA 94954

DATE:	11.29.2021
DRAWN BY:	TDM
CHECKED BY:	DN

OVERALL SITE PLAN

E-101

PRINTED ON: July 27, 2022

POND COVERAGE CALCS

DESCRIPTION	(SQ FT)	(ACRES)
ARRAY AREA	455069	10.45
POND AREA	717315	16.47
PERCENTAGE	63.44%	

OWNER: WhitePine RENEWABLES

BUILDER: SUMMIT Energy

ENGINEER: GREEN RIVER ENGINEERING & CONSULTING

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PROJECT:

ELLIS CREEK WATER RECYCLING FACILITY - FLOATING SOLAR ARRAY

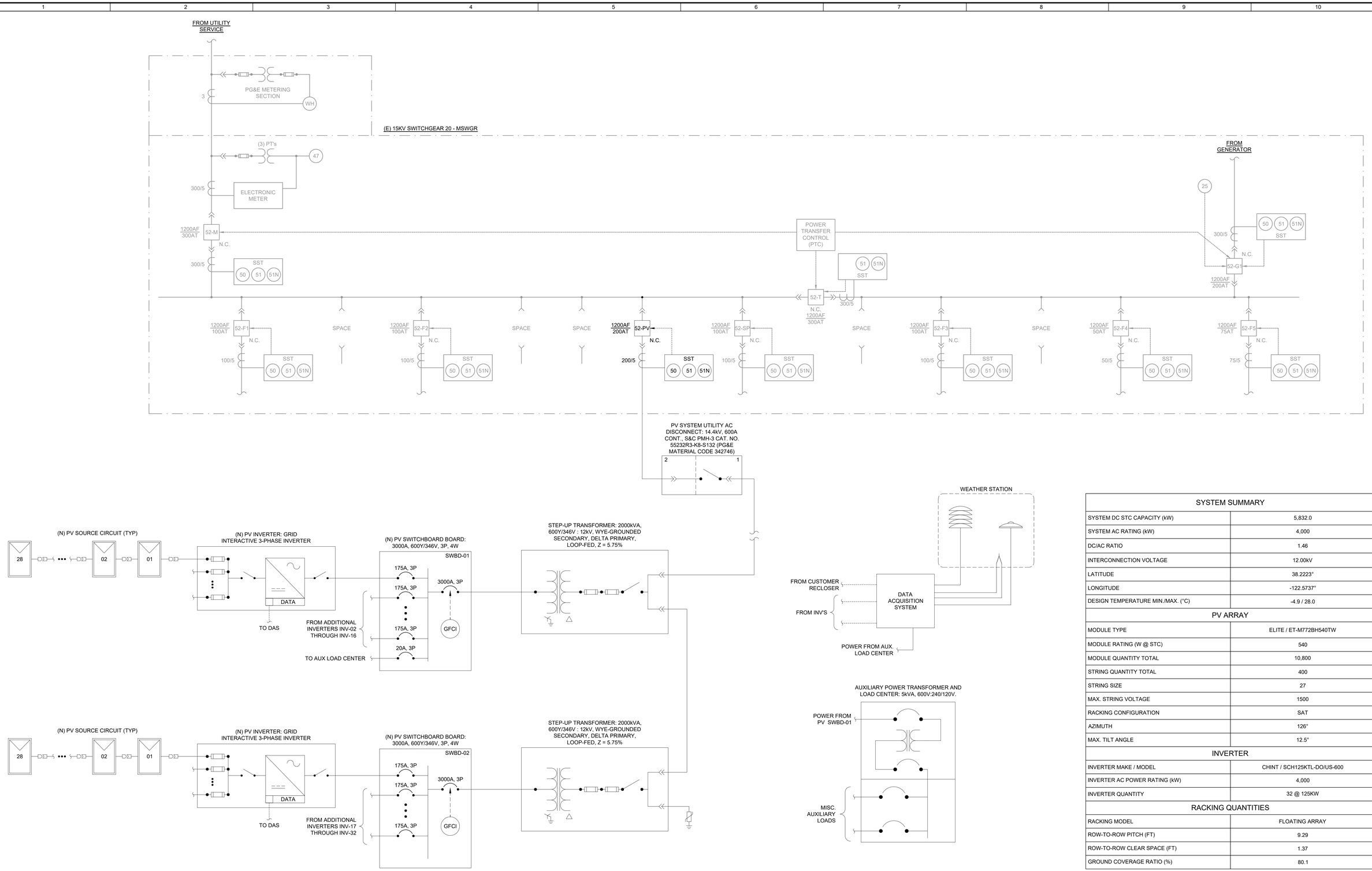
3890 CYPRESS DR.
PETALUMA, CA 94954

DATE:	11.29.2021
DRAWN BY:	TDM
CHECKED BY:	DN

ARRAY PLAN

E-102

PRINTED ON: July 27, 2022



SYSTEM SUMMARY	
SYSTEM DC STC CAPACITY (kW)	5,832.0
SYSTEM AC RATING (kW)	4,000
DC/AC RATIO	1.46
INTERCONNECTION VOLTAGE	12.00kV
LATITUDE	38.2223°
LONGITUDE	-122.5737°
DESIGN TEMPERATURE MIN./MAX. (°C)	-4.9 / 28.0
PV ARRAY	
MODULE TYPE	ELITE / ET-M772BH540TW
MODULE RATING (W @ STC)	540
MODULE QUANTITY TOTAL	10,800
STRING QUANTITY TOTAL	400
STRING SIZE	27
MAX. STRING VOLTAGE	1500
RACKING CONFIGURATION	SAT
AZIMUTH	126°
MAX. TILT ANGLE	12.5°
INVERTER	
INVERTER MAKE / MODEL	CHINT / SCH125KTL-DO/US-600
INVERTER AC POWER RATING (kW)	4,000
INVERTER QUANTITY	32 @ 125KW
RACKING QUANTITIES	
RACKING MODEL	FLOATING ARRAY
ROW-TO-ROW PITCH (FT)	9.29
ROW-TO-ROW CLEAR SPACE (FT)	1.37
GROUND COVERAGE RATIO (%)	80.1

OWNER: WhitePine RENEWABLES

BUILDER: SUMMIT Energy

ENGINEER: GREEN RIVER ENGINEERING & CONSULTING

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D	07.27.22	REVISED MV CIRCUIT ROUTE

PROJECT:

ELLIS CREEK WATER RECYCLING FACILITY - FLOATING SOLAR ARRAY

3890 CYPRESS DR.
PETALUMA, CA 94954

DATE:	11.29.2021
DRAWN BY:	TDM
CHECKED BY:	DN

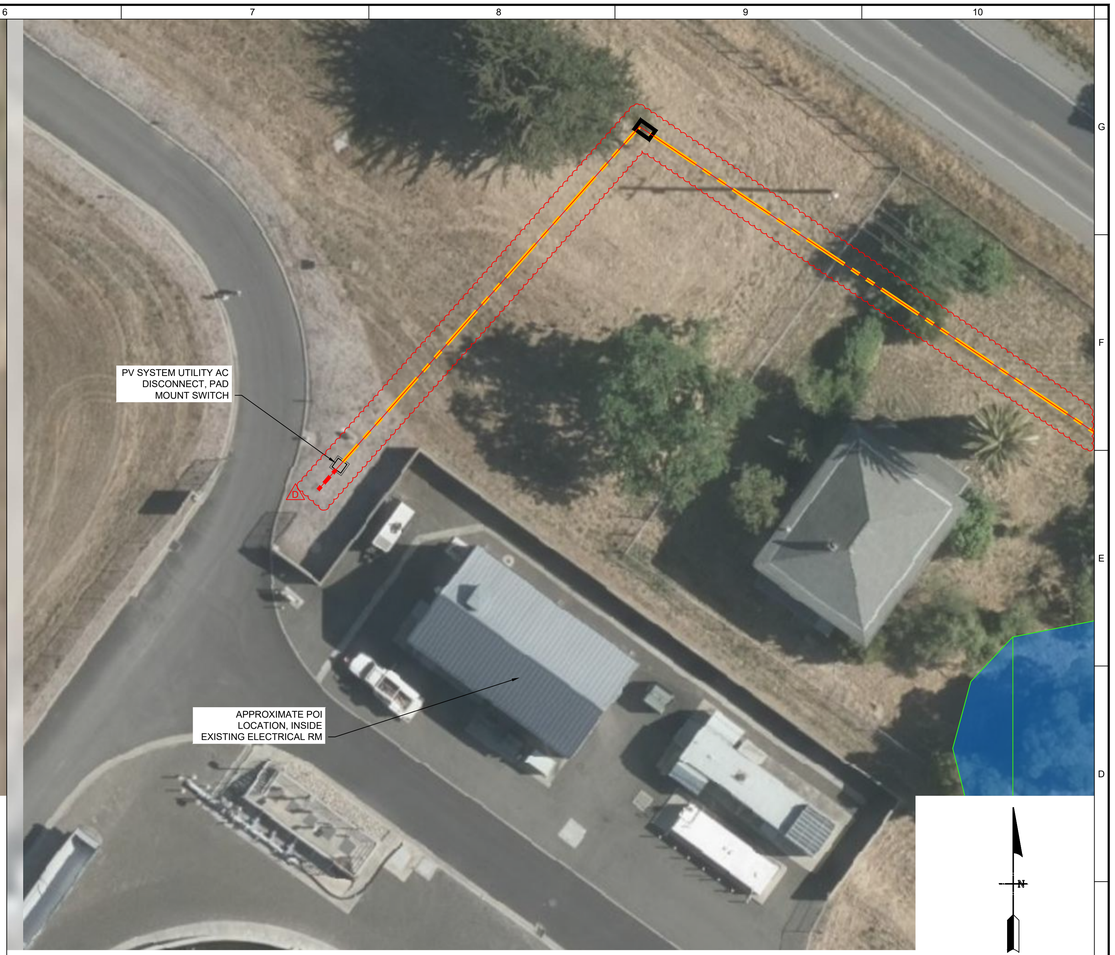
SINGLE LINE DIAGRAM

E-201

PRINTED ON: July 27, 2022

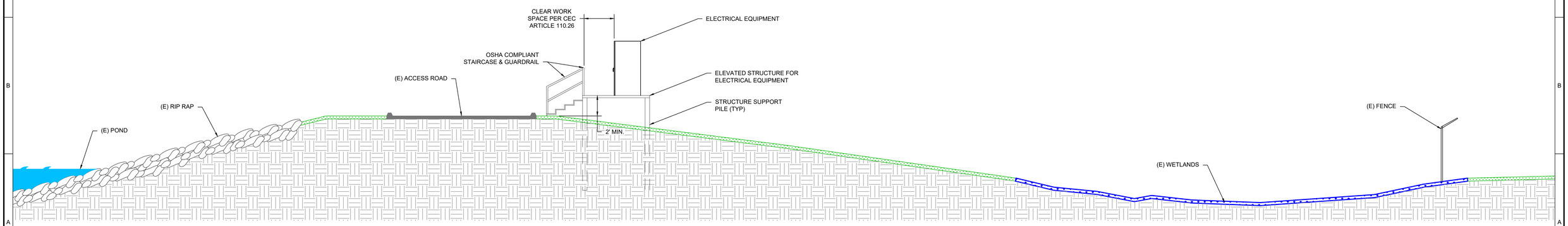
1 ENLARGED PLAN - MAIN EQUIPMENT AREA

Scale: 1" = 10'



2 ENLARGED PLAN - POI LOCATION

Scale: 1" = 20'



3 EQUIPMENT ELEVATION

Scale: 1" = 5'

OWNER: WhitePine RENEWABLES

BUILDER: SUMMIT Energy

ENGINEER: GREEN RIVER ENGINEERING & CONSULTING

FOR BID ONLY
NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION
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D	07.27.22	REVISED MV CIRCUIT ROUTE

PROJECT:

ELLIS CREEK WATER RECYCLING FACILITY - FLOATING SOLAR ARRAY

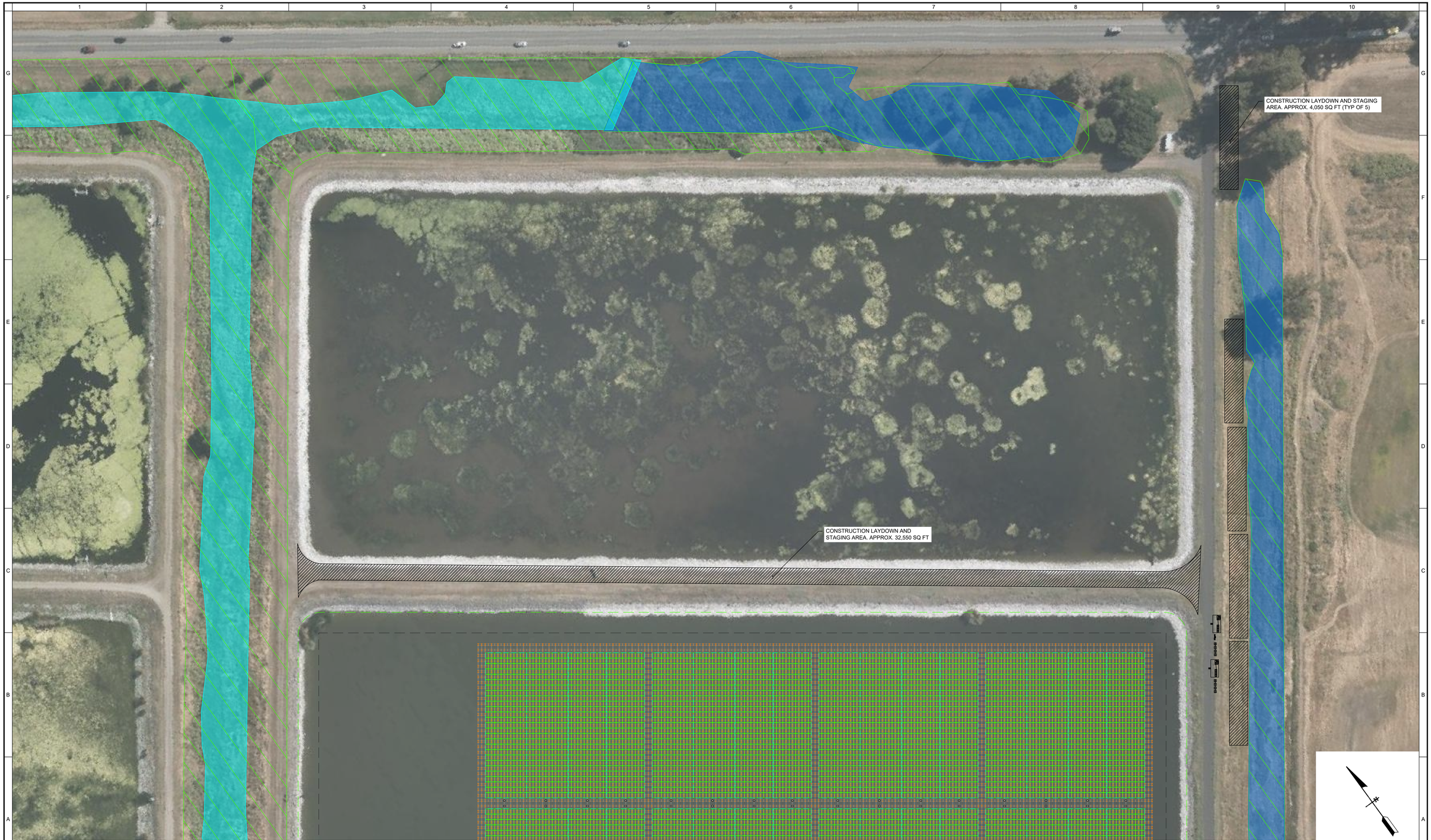
3890 CYPRESS DR.
PETALUMA, CA 94954

DATE:	11.29.2021
DRAWN BY:	TDM
CHECKED BY:	DN

MAIN PV EQUIPMENT PLAN

E-501

PRINTED ON: July 27, 2022



1 ENLARGED PLAN - LAYDOWN AREAS

Scale: 1" = 60'

OWNER: WhitePine RENEWABLES

BUILDER: SUMMIT Energy

ENGINEER: GREEN RIVER ENGINEERING & CONSULTING

FOR BID ONLY
NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION
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A	03.25.22	UTILITY COMMENTS
B	05.25.22	ADDED WETLAND LAYERS
C	06.30.22	BORE LOCATION CHANGE, ARRAY ADJUSTMENT, ADDED DIMENSIONS
D	07.27.22	REVISED MV CIRCUIT ROUTE

PROJECT:

ELLIS CREEK WATER RECYCLING FACILITY - FLOATING SOLAR ARRAY

3890 CYPRESS DR.
PETALUMA, CA 94954

DATE:	11.29.2021
DRAWN BY:	TDM
CHECKED BY:	DN

LAYDOWN AREAS

E-502

PRINTED ON: July 27, 2022

Appendix B

Special Status Species Potential to Occur Tables

Special-Status Plant Species in the Regional Vicinity (Nine Quads) of the Floating Solar Array Project Site

Scientific Name Common Name	Status Fed/State ESA G-Rank/S-Rank CRPR	Habitat Requirements	Potential for Impact	Rationale
Allium peninsulare var. *franciscanum* Franciscan onion	None/None G5T2/S2 1B.2	Perennial bulbiferous herb. Cismontane woodland, valley and foothill grassland. Clay, Serpentinite (often), volcanic. Elevations: 170-1000ft. (52-305m.) Blooms (Apr)May-Jun.	Not Expected; Identified in 2002 EIR	No suitable habitat is present within the project site.
Amorpha californica var. *napensis* Napa false indigo	None/None G4T2/S2 1B.2	Perennial deciduous shrub. Broad-leafed upland forest, chaparral, cismontane woodland. Openings in forest or woodland or in chaparral. 30-735 m. Elevations: 165-6560ft. (50-2000m.) Blooms Apr-Jul.	Not Expected; Identified in 2002 EIR	No suitable habitat is present within the project site.
Amsinckia lunaris bent-flowered fiddleneck	None/None G3/S3 1B.2	Annual herb. Cismontane woodland, coastal bluff scrub, valley and foothill grassland. Elevations: 10-1640ft. (3-500m.) Blooms Mar-Jun.	Low Potential	Some suitable grassland habitat is present along Lakeville Highway at the western end of the project site by the ECWR Facility. However, this area is heavily disturbed by human impact and reduces the potential for the species to occur at the project site.
Arctostaphylos montana ssp. *montana* Mt. Tamalpais manzanita	None/None G3T3/S3 1B.3	Perennial evergreen shrub. Chaparral, valley and foothill grassland. Rocky, serpentinite. Elevations: 525-2495ft. (160-760m.) Blooms Feb-Apr.	Not Expected	No suitable habitat is present within the project site.
Arctostaphylos virgata Marin manzanita	None/None G2/S2 1B.2	Perennial evergreen shrub. Broad-leafed upland forest, chaparral, closed-cone coniferous forest, north coast coniferous forest. Granitic (sometimes), sandstone (sometimes). Elevations: 195-2295ft. (60-700m.) Blooms Jan-Mar.	Not Expected	No suitable habitat is present within the project site.
Astragalus tener var. *tener* alkali milk-vetch	None/None G2T1/S1 1B.2	Annual herb. Playas, valley and foothill grassland, vernal pools. Alkaline. Elevations: 5-195ft. (1-60m.) Blooms Mar-Jun.	Not Expected; Identified in 2002 EIR	No suitable habitat is present within the project site.
Balsamorhiza macrolepis big-scale balsamroot	None/None G2/S2 1B.2	Perennial herb. Chaparral, cismontane woodland, valley and foothill grassland. Serpentinite (sometimes). Elevations: 150-5100ft. (45-1555m.) Blooms Mar-Jun.	Not Expected	No suitable habitat is present within the project site.
Blennosperma bakeri Sonoma sunshine	FE/SCE G1/S1 1B.1	Annual herb. Valley and foothill grassland, vernal pools. Vernal pools and swales. Elevations: 35-360ft. (10-110m.) Blooms Mar-May.	Not Expected; Identified in 2002 EIR	No suitable habitat is present within the project footprint. Wetlands on site are planned to be completely avoided.

Scientific Name Common Name	Status Fed/State ESA G-Rank/S-Rank CRPR	Habitat Requirements	Potential for Impact	Rationale
Brodiaea leptandra narrow-anthered brodiaea	None/None G3?/S3? 1B.2	Perennial bulbiferous herb. Broad-leafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest, valley and foothill grassland. Volcanic. Elevations: 360-3000ft. (110-915m.) Blooms May-Jul.	Not Expected	No suitable habitat is present within the project site.
Cardamine angulata seaside bittercress	None/None G4G5/S3 2B.2	Perennial herb. Lower montane coniferous forest, north coast coniferous forest. Streambanks. Elevations: 50-3000ft. (15-915m.) Blooms (Jan)Mar-Jul.	Not Expected	No suitable habitat is present within the project site.
Castilleja affinis var. *neglecta* Tiburon paintbrush	FE/SCT G4G5T1T2/S1S2 1B.2	Perennial herb (hemiparasitic). Valley and foothill grassland. Rocky serpentine sites. Elevations: 195-1310ft. (60-400m.) Blooms Apr-Jun.	Not Expected	No suitable habitat is present within the project site.
Ceanothus confusus Rincon Ridge ceanothus	None/None G1/S1 1B.1	Perennial evergreen shrub. Chaparral, cismontane woodland, closed-cone coniferous forest. Serpentinite (sometimes), volcanic (sometimes). Elevations: 245-3495ft. (75-1065m.) Blooms Feb-Jun.	Not Expected	No suitable habitat is present within the project site.
Ceanothus decornutus Nicasio ceanothus	None/None G1/S1 1B.2	Perennial shrub. Chaparral. Clay (sometimes), Rocky, serpentinite. Elevations: 770-950ft. (235-290m.) Blooms Mar-May.	Not Expected	No suitable habitat is present within the project site.
Ceanothus masonii Mason's ceanothus	None/SCR G1/S1 1B.2	Perennial evergreen shrub. Chaparral. Serpentine ridges or slopes in chaparral or transition zone. Elevations: 755-1640ft. (230-500m.) Blooms Mar-Apr.	Not Expected; Identified in Subsequent Addenda to the 2002 EIR	No suitable habitat is present within the project site.
Ceanothus sonomensis Sonoma ceanothus	None/None G2/S2 1B.2	Perennial evergreen shrub. Chaparral. Sandy, serpentine or volcanic soils. Elevations: 705-2625ft. (215-800m.) Blooms Feb-Apr.	Not Expected	No suitable habitat is present within the project site.
Centromadia parryi ssp. *parryi* pappose tarplant	None/None G3T2/S2 1B.2	Annual herb. Chaparral, coastal prairie, marshes and swamps, meadows and seeps, valley and foothill grassland. Alkaline (often). Elevations: 0-1380ft. (0-420m.) Blooms May-Nov.	Not Expected	No suitable habitat is present within the project site.

Scientific Name Common Name	Status Fed/State ESA G-Rank/S-Rank CRPR	Habitat Requirements	Potential for Impact	Rationale
Chloropyron maritimum ssp. *palustre* Point Reyes salty bird's-beak	None/None G4?T2/S2 1B.2	Annual herb (hemiparasitic). Marshes and swamps. Usually in coastal salt marsh with Salicornia, Distichlis, Jaumea, Spartina, etc. Elevations: 0-35ft. (0-10m.) Blooms Jun-Oct.	Not Expected; Identified in 2002 EIR	No suitable habitat is present within the project site.
Chloropyron molle ssp. *molle* soft salty bird's-beak	FE/SCR G2T1/S1 1B.2	Annual herb (hemiparasitic). Marshes and swamps. In coastal salt marsh with Distichlis, Salicornia, Frankenia, etc. Elevations: 0-10ft. (0-3m.) Blooms Jun-Nov.	Not Expected; Identified in 2002 EIR	No suitable habitat is present within the project site.
Chorizanthe valida Sonoma spineflower	FE/SCE G1/S1 1B.1	Annual herb. Coastal prairie. Sandy soil. Elevations: 35-1000ft. (10-305m.) Blooms Jun-Aug.	Not Expected; Identified in 2002 EIR	No suitable habitat is present within the project site.
Cirsium hydrophilum var. *vaseyi* Mt. Tamalpais thistle	None/None G2T1/S1 1B.2	Perennial herb. Broadleafed upland forest, chaparral, meadows and seeps. Seeps, serpentinite. Elevations: 785-2035ft. (240-620m.) Blooms May-Aug.	Not Expected	No suitable habitat is present within the project site.
Delphinium bakeri Baker's larkspur	FE/SCE G1/S1 1B.1	Perennial herb. Broadleafed upland forest, coastal scrub, valley and foothill grassland. Only site occurs on NW-facing slope, on decomposed shale. Historically known from grassy areas along fencelines too. Elevations: 260-1000ft. (80-305m.) Blooms Mar-May.	Not Expected; Identified in Subsequent Addenda to the 2002 EIR	No suitable habitat is present within the project site.
Delphinium luteum golden larkspur	FE/SCR G1/S1 1B.1	Perennial herb. Chaparral, coastal prairie, coastal scrub. North-facing rocky slopes. Elevations: 0-330ft. (0-100m.) Blooms Mar-May.	Not Expected; Identified in 2002 EIR	No suitable habitat is present within the project site.
Dirca occidentalis western leatherwood	None/None G2/S2 1B.2	Perennial deciduous shrub. Broad-leafed upland forest, chaparral, cismontane woodland, closed-cone coniferous forest, north coast coniferous forest, riparian forest, riparian woodland. On brushy slopes, mesic sites; mostly in mixed evergreen and foothill woodland communities. Elevations: 80-1395ft. (25-425m.) Blooms Jan-Mar(Apr).	Not Expected	No suitable habitat is present within the project site.
Downingia pusilla dwarf downingia	None/None GU/S2 2B.2	Annual herb. Valley and foothill grassland, vernal pools. Vernal lake and pool margins with a variety of associates. In several types of vernal pools. Elevations: 5-1460ft. (1-445m.) Blooms Mar-May.	Not Expected; Identified in 2002 EIR	No suitable habitat is present within the project site.

Scientific Name Common Name	Status Fed/State ESA G-Rank/S-Rank CRPR	Habitat Requirements	Potential for Impact	Rationale
Entosthodon kochii Koch's cord moss	None/None G1/S1 1B.3	Moss. Cismontane woodland. Moss growing on soil on river banks. Elevations: 590-3280ft. (180-1000m.)	Not Expected	No suitable habitat is present within the project site.
Eriogonum luteolum var. *caninum* Tiburon buckwheat	None/None G5T2/S2 1B.2	Annual herb. Chaparral, cismontane woodland, coastal prairie, valley and foothill grassland. Serpentine soils; sandy to gravely sites. Elevations: 0-2295ft. (0-700m.) Blooms May-Sep.	Not Expected; Identified in Subsequent Addenda to the 2002 EIR	No suitable habitat is present within the project site.
Fritillaria lanceolata var. *tristulis* Marin checker lily	None/None G5T2/S2 1B.1	Perennial bulbiferous herb. Coastal bluff scrub, coastal prairie, coastal scrub. Occurrences reported from canyons and riparian areas as well as rock outcrops; often on serpentine. Elevations: 50-490ft. (15-150m.) Blooms Feb-May.	Not Expected	No suitable habitat is present within the project site.
Fritillaria liliacea fragrant fritillary	None/None G2/S2 1B.2	Perennial bulbiferous herb. Cismontane woodland, coastal prairie, coastal scrub, valley and foothill grassland. Often on serpentine; various soils reported though usually on clay, in grassland. Elevations: 10-1345ft. (3-410m.) Blooms Feb-Apr.	Not Expected; Identified in 2002 EIR	No suitable habitat is present within the project site.
Gilia capitata ssp. *tomentosa* woolly-headed gilia	None/None G5T2/S2 1B.1	Annual herb. Coastal bluff scrub, valley and foothill grassland. Rocky outcrops, sometimes serpentine. Elevations: 35-720ft. (10-220m.) Blooms May-Jul.	Not Expected	No suitable habitat is present within the project site.
Hemizonia congesta ssp. *congesta* congested-headed hayfield tarplant	None/None G5T2/S2 1B.2	Annual herb. Valley and foothill grassland. Grassy valleys and hills, often in fallow fields; sometimes along roadsides. Elevations: 65-1835ft. (20-560m.) Blooms Apr-Nov.	Moderate Potential; Identified in Subsequent Addenda to the 2002 EIR	Some suitable habitat may be present within the project site along the roadway margins and in the fallow fields near the project site. Two occurrences of this species within five miles of the project site are recorded in the California Natural Diversity Database (California Department of Fish and Wildlife [CDFW] 2022).

Scientific Name Common Name	Status Fed/State ESA G-Rank/S-Rank CRPR	Habitat Requirements	Potential for Impact	Rationale
Hesperolinon congestum Marin western flax	FT/SCT G1/S1 1B.1	Annual herb. Chaparral, valley and foothill grassland. In serpentine barrens and in serpentine grassland and chaparral. Elevations: 15-1215ft. (5-370m.) Blooms Apr-Jul.	Not Expected; Identified in 2002 EIR	No suitable habitat is present within the project site.
Horkelia tenuiloba thin-lobed horkelia	None/None G2/S2 1B.2	Perennial herb. Broad-leafed upland forest, chaparral, valley and foothill grassland. Sandy soils; mesic openings. Elevations: 165-1640ft. (50-500m.) Blooms May-Jul(Aug).	Not Expected	No suitable habitat is present within the project site.
Lasthenia burkei Burke's goldfields	FE/SCE G1/S1 1B.1	Annual herb. Meadows and seeps, vernal pools. Most often in vernal pools and swales. Elevations: 50-1970ft. (15-600m.) Blooms Apr-Jun.	Not Expected; Identified in 2002 EIR	No suitable habitat is present within the project site.
Lasthenia conjugens Contra Costa goldfields	FE/None G1/S1 1B.1	Annual herb. Cismontane woodland, playas, valley and foothill grassland, vernal pools. Vernal pools, swales, low depressions, in open grassy areas. Elevations: 0-1540ft. (0-470m.) Blooms Mar-Jun.	Not Expected; Identified in Subsequent Addenda to the 2002 EIR	No suitable habitat is present within the project site.
Legenere limosa legenere	None/None G2/S2 1B.1	Annual herb. Vernal pools. In beds of vernal pools. 1-. Elevations: 5-2885ft. (1-880m.) Blooms Apr-Jun.	Not Expected; Identified in 2002 EIR	No suitable habitat is present within the project site.
Leptosiphon jepsonii Jepson's leptosiphon	None/None G2G3/S2S3 1B.2	Annual herb. Chaparral, cismontane woodland, valley and foothill grassland. Open to partially shaded grassy slopes. On volcanics or the periphery of serpentine substrates. Elevations: 330-1640ft. (100-500m.) Blooms Mar-May.	Not Expected	No suitable habitat is present within the project site.
Lessingia micradenia var. *micradenia* Tamalpais lessingia	None/None G2T2/S2 1B.2	Annual herb. Chaparral, valley and foothill grassland. Usually on serpentine, in serpentine grassland or serpentine chaparral. Often on roadsides. Elevations: 330-1640ft. (100-500m.) Blooms (Jun)Jul-Oct.	Not Expected	No suitable habitat is present within the project site.
Lilium pardalinum ssp. *pitkinense* Pitkin Marsh lily	FE/SCE G5T1/S1 1B.1	Perennial bulbiferous herb. Cismontane woodland, marshes and swamps, meadows and seeps. Saturated, sandy soils with grasses and shrubs. Elevations: 115-215ft. (35-65m.) Blooms Jun-Jul.	Not Expected; Identified in Subsequent Addenda to the 2002 EIR	No suitable habitat is present within the project site.

Scientific Name Common Name	Status Fed/State ESA G-Rank/S-Rank CRPR	Habitat Requirements	Potential for Impact	Rationale
Limnanthes vinculans Sebastopol meadowfoam	FE/SCE G1/S1 1B.1	Annual herb. Meadows and seeps, valley and foothill grassland, vernal pools. Swales, wet meadows and marshy areas in valley oak savanna; on poorly drained soils of clays and sandy loam. Elevations: 50-1000ft. (15-305m.) Blooms Apr-May.	Not Expected; Identified in 2002 EIR	No suitable habitat is present within the project site.
Lomatium repostum Napa lomatium	None/None G2G3/S2S3 1B.2	Perennial herb. Chaparral, cismontane woodland. Rocky areas in volcanic and serpentine soils with mixed chaparral and black oak woodland communities. Elevations: 295-3380ft. (90-1030m.) Blooms Mar-Jun.	Not Expected	No suitable habitat is present within the project site.
Lupinus sericatus Cobb Mountain lupine	None/None G2?/S2? 1B.2	Perennial herb. Broad-leafed upland forest, chaparral, cismontane woodland, lower montane coniferous forest. In stands of knobcone pine-oak woodland, on open wooded slopes in gravelly soils; sometimes on serpentine. Elevations: 900-5005ft. (275-1525m.) Blooms Mar-Jun.	Not Expected	No suitable habitat is present within the project site.
Microseris paludosa marsh microseris	None/None G2/S2 1B.2	Perennial herb. Cismontane woodland, closed-cone coniferous forest, coastal scrub, valley and foothill grassland. Elevations: 15-1165ft. (5-355m.) Blooms Apr-Jun(Jul).	Low Potential	Some suitable grassland habitat is present along Lakeville Highway at the western end of the project site by the ECWR Facility. However, this area is heavily disturbed by human impact and reduces the potential for the species to occur at the project site.
Navarretia leucocephala ssp. *bakeri* Baker's navarretia	None/None G4T2/S2 1B.1	Annual herb. Cismontane woodland, lower montane coniferous forest, meadows and seeps, valley and foothill grassland, vernal pools. Vernal pools and swales; adobe or alkaline soils. Elevations: 15-5710ft. (5-1740m.) Blooms Apr-Jul.	Not Expected; Identified in 2002 EIR	No suitable habitat is present within the project site.
Navarretia rosulata Marin County navarretia	None/None G2/S2 1B.2	Annual herb. Chaparral, closed-cone coniferous forest. Dry, open rocky places; can occur on serpentine. Elevations: 655-2085ft. (200-635m.) Blooms May-Jul.	Not Expected	No suitable habitat is present within the project site.
Plagiobothrys mollis var. *vestitus* Petaluma popcornflower	None/None G4?TX/SX 1A	Perennial herb. Marshes and swamps, valley and foothill grassland. Wet sites in grassland, possibly coastal marsh margins. Elevations: 35-165ft. (10-50m.) Blooms Jun-Jul.	Not Expected; Identified in 2002 EIR	No suitable habitat is present within the project site.

Scientific Name Common Name	Status Fed/State ESA G-Rank/S-Rank CRPR	Habitat Requirements	Potential for Impact	Rationale
Pleuropogon hooverianus North Coast semaphore grass	None/SCT G2/S2 1B.1	Perennial rhizomatous herb. Broadleafed upland forest, meadows and seeps, north coast coniferous forest. Wet grassy, usually shady areas, sometimes freshwater marsh; associated with forest environments. Elevations: 35-2200ft. (10-671m.) Blooms Apr-Jun.	Not Expected; Identified in 2002 EIR	No suitable habitat is present within the project site.
Quercus parvula var. *tamalpaisensis* Tamalpais oak	None/None G4T2/S2 1B.3	Perennial evergreen shrub. Lower montane coniferous forest. Elevations: 330-2460ft. (100-750m.) Blooms Mar-Apr.	Not Expected	No suitable habitat is present within the project site.
Rhynchospora globularis round-headed beaked-rush	None/None G4/S1 2B.1	Perennial rhizomatous herb. Marshes and swamps. Freshwater marsh. Elevations: 150-195ft. (45-60m.) Blooms Jul-Aug.	Not Expected	No suitable habitat is present within the project site.
Sidalcea calycosa ssp. *rhizomata* Point Reyes checkerbloom	None/None G5T2/S2 1B.2	Perennial rhizomatous herb. Marshes and swamps. Freshwater marshes near the coast. Elevations: 10-245ft. (3-75m.) Blooms Apr-Sep.	Not Expected; Identified in 2002 EIR	No suitable habitat is present within the project site.
Sidalcea hickmanii ssp. *napensis* Napa checkerbloom	None/None G3T1/S1 1B.1	Perennial herb. Chaparral. Rhyolitic substrates. Elevations: 1360-2000ft. (415-610m.) Blooms Apr-Jun.	Not Expected	No suitable habitat is present within the project site.
Sidalcea hickmanii ssp. *viridis* Marin checkerbloom	None/None G3TH/SH 1B.1	Perennial herb. Chaparral. Serpentine or volcanic soils; sometimes appears after burns. Elevations: 165-1410ft. (50-430m.) Blooms May-Jun.	Not Expected	No suitable habitat is present within the project site.
Streptanthus anomalus Mount Burdell jewelflower	None/None G1/S1 1B.1	Annual herb. Cismontane woodland. Openings, Serpentinite. Elevations: 165-490ft. (50-150m.) Blooms May-Jun.	Not Expected	No suitable habitat is present within the project site.
Streptanthus batrachopus Tamalpais jewelflower	None/None G2/S2 1B.3	Annual herb. Chaparral, closed-cone coniferous forest. Talus serpentine outcrops. Elevations: 1000-2135ft. (305-650m.) Blooms Apr-Jul.	Not Expected	No suitable habitat is present within the project site.
Streptanthus glandulosus ssp. *pulchellus* Mt. Tamalpais bristly jewelflower	None/None G4T2/S2 1B.2	Annual herb. Chaparral, valley and foothill grassland. Serpentine slopes. Elevations: 490-2625ft. (150-800m.) Blooms May-Jul(Aug).	Not Expected	No suitable habitat is present within the project site.

Scientific Name Common Name	Status Fed/State ESA G-Rank/S-Rank CRPR	Habitat Requirements	Potential for Impact	Rationale
Trifolium amoenum two-fork clover	FE/None G1/S1 1B.1	Annual herb. Coastal bluff scrub, valley and foothill grassland. Sometimes on serpentine soil, open sunny sites, swales. Most recently cited on roadside and eroding cliff face. Elevations: 15-1360ft. (5-415m.) Blooms Apr-Jun.	Not Expected; Identified in 2002 EIR	Some suitable grassland habitat is present along Lakeville Highway at the western end of the project site by the ECWR Facility. However, this area is heavily disturbed by human impact and reduces the potential to occur at the project site.
Trifolium hydrophilum saline clover	None/None G2/S2 1B.2	Annual herb. Marshes and swamps, valley and foothill grassland, vernal pools. Mesic, alkaline sites. Elevations: 0-985ft. (0-300m.) Blooms Apr-Jun.	Not Expected	No suitable habitat is present within the project site.
Trifolium polyodon Pacific Grove clover	None/SCR G1/S1 1B.1	Annual herb. Closed-cone coniferous forest, coastal prairie, meadows and seeps, valley and foothill grassland. Along small springs and seeps in grassy openings. Elevations: 15-1395ft. (5-425m.) Blooms Apr-Jun(Jul).	Not Expected	No suitable habitat is present within the project site.
Viburnum ellipticum oval-leaved viburnum	None/None G4G5/S3? 2B.3	Perennial deciduous shrub. Chaparral, cismontane woodland, lower montane coniferous forest. Elevations: 705-4595ft. (215-1400m.) Blooms May-Jun.	Not Expected	No suitable habitat is present within the project site.

Scientific Name Common Name	Status Fed/State ESA G-Rank/S-Rank CRPR	Habitat Requirements	Potential for Impact	Rationale

Regional Vicinity refers to within the *Petaluma River*, California USGS 7.5-minute quadrangle and the eight surrounding quadrangles.

FE = Federally Endangered FT = Federally Threatened

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

G-Rank/S-Rank = Global Rank and State Rank as per NatureServe and CDFW's California Natural Diversity Database RareFind5.

California Rare Plant Rank (California Native Plant Society)

1A = Presumed Extinct in California

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

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

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

3 = Need more information (a Review List)

4 = Plants of Limited Distribution (a Watch List)

CRPR Threat Code Extension

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

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

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

Source: California Native Plant Society 2022; CDFW 2022; United States Fish and Wildlife Service 2022

Special-Status Animal Species in the Regional Vicinity (Nine Quad) of the Project Site

Scientific Name Common Name	Status Fed/State ESA G-Rank/S-Rank CDFW	Habitat Requirements	Potential for Impact	Potential for Occurrence
Invertebrates				
Syncaris pacifica California freshwater shrimp	FE/SE G2/S2	Endemic to Marin, Napa, and Sonoma counties. Found in low elevation, low gradient streams where riparian cover is moderate to heavy. Shallow pools away from main streamflow. Winter: undercut banks with exposed roots. Summer: leafy branches touching water.	Not Expected; Identified in 2002 EIR	No suitable shallow pool habitat sheltered from stream flows is present within the project site.
Fish				
Acipenser medirostris pop. 1 green sturgeon - southern DPS	FT/None G3T1/S1	Spawning site fidelity. Spawns in the Sacramento, Feather, and Yuba Rivers. Presence in upper Stanislaus and San Joaquin Rivers may indicate spawning. Non-spawning adults occupy marine/estuarine waters. Delta Estuary is important for rearing juveniles. Spawning occurs primarily in cool (11-15 °C) sections of mainstem rivers in deep pools (8-9 meters) with substrate containing small to medium sized sand, gravel, cobble, or boulder.	High Potential; Identified in Subsequent Addenda to the 2002 EIR t	Critical habitat for this species is in and along Petaluma River and in the surrounding marsh area just south of the project site.
Eucyclogobius newberryi tidewater goby	FE/None G3/S3	Brackish water habitats along the California coast from Agua Hedionda Lagoon, San Diego County to the mouth of the Smith River. Found in shallow lagoons and lower stream reaches, they need fairly still but not stagnant water and high oxygen levels.	Low Potential; Identified in 2002 EIR	No occurrences of this species are recorded within five miles of the project site; however, there are historical records of this species in San Francisco Bay drainages including Novato Creek, Corte Madera Creek, and Aquatic Park in Berkeley. Tidewater goby could occur in the tidally influenced portion of Ellis Creek or in the Petaluma River and Petaluma Marsh near the project site.
Hesperoleucus venustus subditus southern coastal roach	None/None GNRTNR/S2 SSC	Found in the drainages of Tomales Bay and northern San Francisco Bay in the north, and drainages of Monterey Bay in the south.	Not Expected	No suitable habitat for this species is present within the project site and the project site is outside of the known range for this species.

Scientific Name Common Name	Status Fed/State ESA G-Rank/S-Rank CDFW	Habitat Requirements	Potential for Impact	Potential for Occurrence
Oncorhynchus kisutch pop. 4 coho salmon - central California coast ESU	FE/SE G5T2T3Q/S2	Federal listing = populations between Punta Gorda and San Lorenzo River. State listing = populations south of Punta Gorda. Require beds of loose, silt-free, coarse gravel for spawning. Also need cover, cool water and sufficient dissolved oxygen.	Moderate Potential; Identified in 2002 EIR	No suitable habitat for spawning or juvenile rearing currently exists in lower Ellis Creek, owing to siltation and other damage to Ellis Creek from many years of agricultural forms of land use. However, individuals of this species may be seasonally present in Ellis Creek during migration.
Oncorhynchus mykiss irideus pop. 8 steelhead - central California coast DPS	FT/None G5T2T3Q/S2S3	DPS includes all naturally spawned populations of steelhead (and their progeny) in streams from the Russian River to Aptos Creek, Santa Cruz County, California (inclusive). Also includes the drainages of San Francisco and San Pablo Bays. .	Moderate Potential; Identified in 2002 EIR	Suitable habitat for spawning or rearing does not currently exist in lower Ellis Creek but may still exist somewhere in the upper watershed. Therefore, individuals of this species may be present in Ellis Creek during migration.
Pogonichthys macrolepidotus Sacramento splittail	None/None GNR/S3 SSC	Endemic to the lakes and rivers of the Central Valley, but now confined to the Delta, Suisun Bay and associated marshes. Slow moving river sections, dead end sloughs. Requires flooded vegetation for spawning and foraging for young.	Moderate Potential; Identified in 2002 EIR	Suitable habitat is present within the portion of Ellis Creek running through the project site, and the species is known to occur in the Petaluma River estuary. Adults and/or juveniles may be present in lower Ellis Creek at any time of the year.
Spirinchus thaleichthys longfin smelt	FC/ST G5/S1	Euryhaline, nektonic and anadromous. Found in open waters of estuaries, mostly in middle or bottom of water column. Prefer salinities of 15-30 parts per trillion, but can be found in completely freshwater to almost pure seawater.	Moderate Potential; Identified in 2002 EIR	Suitable freshwater habitat for spawning is present within Ellis Creek, and individuals may be present in the creek during migration.
Amphibians				
Ambystoma californiense pop. 3 California tiger salamander - Sonoma County DPS	FE/ST G2G3T3/S2 WL	Lives in vacant or mammal-occupied burrows throughout most of the year; in grassland, savanna, or open woodland habitats. Need underground refuges, especially ground squirrel burrows, and vernal pools or other seasonal water sources for breeding.	Low Potential; Identified in 2002 EIR	No suitable breeding pools or seasonal wetlands available within the project site. The upland areas may provide small mammal burrows for refuge, but the heavy disturbance at the site and agricultural practices surrounding the site reduces the likelihood of occupation significantly.

Scientific Name Common Name	Status Fed/State ESA G-Rank/S-Rank CDFW	Habitat Requirements	Potential for Impact	Potential for Occurrence
Dicamptodon ensatus California giant salamander	None/None G3/S2S3 SSC	Known from wet coastal forests near streams and seeps from Mendocino County south to Monterey County, and east to Napa County. Aquatic larvae found in cold, clear streams, occasionally in lakes and ponds. Adults known from wet forests under rocks and logs near streams and lakes.	Low Potential	Stream habitat present in Ellis Creek provides some suitable breeding habitat for this species. However, heavy disturbance at the site and agricultural practices surrounding the site reduces the likelihood of occupation significantly.
Rana boylii foothill yellow-legged frog	None/SE G3/S3 SSC	Partly-shaded, shallow streams and riffles with a rocky substrate in a variety of habitats. Needs at least some cobble-sized substrate for egg-laying. Needs at least 15 weeks to attain metamorphosis.	Low Potential; Identified in 2002 EIR	The portion of Ellis Creek running through the project site does not provide suitable rocky substrate as habitat for this species. However, suitable habitat exists just north of the project site at the confluence of Ellis Creek and Higgins Creek, and dispersing individuals may occur within the project site.
Rana draytonii California red-legged frog	FT/None G2G3/S2S3 SSC	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. Requires 11-20 weeks of permanent water for larval development. Must have access to estivation habitat.	High Potential; Identified in 2002 EIR	This species is known to occur in the reach of Ellis Creek running through the project site. This species was observed during surveys conducted in 1995 in the densely vegetated and wooded area of the creek within the project site.
Taricha rivularis red-bellied newt	None/None G2/S2 SSC	Coastal drainages from Humboldt County south to Sonoma County, inland to Lake County. Isolated population of uncertain origin in Santa Clara County. Lives in terrestrial habitats, juveniles generally underground, adults active at surface in moist environments. Will migrate over 1 km to breed, typically in streams with moderate flow and clean, rocky substrate.	Low Potential; Identified in Subsequent Addenda to the 2002 EIR	The portion of Ellis Creek running through the project site does not provide suitable rocky substrate as habitat for this species. However, suitable habitat exists just north of the project site at the confluence of Ellis Creek and Higgins Creek, and dispersing individuals may occur within the project site.
Reptiles				
Emys marmorata western pond turtle	None/None G3G4/S3 SSC	A thoroughly aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches, usually with aquatic vegetation, below 6000 ft elevation. Needs basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.5 km from water for egg-laying.	High Potential; Identified in 2002 EIR	This species is known to occur in the reach of Ellis Creek running through the project site as well as the oxidation ponds on site.

Scientific Name Common Name	Status Fed/State ESA G-Rank/S-Rank CDFW	Habitat Requirements	Potential for Impact	Potential for Occurrence
Birds				
Agelaius tricolor tricolored blackbird	None/ST G1G2/S1S2 SSC	Highly colonial species, most numerous in Central Valley and vicinity. Largely endemic to California. Requires open water, protected nesting substrate, and foraging area with insect prey within a few km of the colony.	Low Potential; Identified in 2002 EIR	This species may forage on site; however, breeding habitat is not present within the project site.
Ammodramus savannarum grasshopper sparrow	None/None G5/S3 SSC	Dense grasslands on rolling hills, lowland plains, in valleys and on hillsides on lower mountain slopes. Favors native grasslands with a mix of grasses, forbs and scattered shrubs. Loosely colonial when nesting.	Not Expected	No suitable nesting habitat is present within the project site, and this species is not recorded within five miles of the project site (CDFW 2022).
Aquila chrysaetos golden eagle	None/None G5/S3 FP WL	Rolling foothills, mountain areas, sage-juniper flats, and desert. Cliff-walled canyons provide nesting habitat in most parts of range; also, large trees in open areas.	Not Expected	No suitable nesting habitat is present within the project site, and this species is not recorded within five miles of the project site (CDFW 2022).
Athene cunicularia burrowing owl	None/None G4/S3 SSC	Open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, most notably, the California ground squirrel.	Moderate Potential; Identified in 2002 EIR	The agricultural fields surrounding the project site may provide suitable burrowing habitat for this species.
Buteo regalis ferruginous hawk	None/None G4/S3S4 WL	Open grasslands, sagebrush flats, desert scrub, low foothills and fringes of pinyon and juniper habitats. Eats mostly lagomorphs, ground squirrels, and mice. Population trends may follow lagomorph population cycles.	Low Potential; Identified in 2002 EIR	The agricultural fields surrounding the project site may provide suitable foraging habitat for this species; however, ferruginous hawk is unlikely to nest within or near the project site.
Buteo swainsoni Swainson's hawk	None/ST G5/S3	Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, and agricultural or ranch lands with groves or lines of trees. Requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations.	High Potential; Identified in Subsequent Addenda to the 2002 EIR	The project site and agricultural fields surrounding it provide suitable foraging habitat for this species. Additionally, the large mature trees along Ellis Creek may provide suitable nesting habitat for this species, and several occurrences of this species are recorded in the California Natural Diversity Database and eBird (CDFW 2022; Cornell Lab of Ornithology 2022).

Scientific Name Common Name	Status Fed/State ESA G-Rank/S-Rank CDFW	Habitat Requirements	Potential for Impact	Potential for Occurrence
Charadrius nivosus nivosus western snowy plover	FT/None G3T3/S2 SSC	Sandy beaches, salt pond levees and shores of large alkali lakes. Needs sandy, gravelly or friable soils for nesting.	Not Expected	No suitable nesting habitat is present within the project site, and this species is not recorded within five miles of the project site (CDFW 2022).
Coccyzus americanus occidentalis western yellow-billed cuckoo	FT/SE G5T2T3/S1	Riparian forest nester, along the broad, lower flood-bottoms of larger river systems. Nests in riparian jungles of willow, often mixed with cottonwoods, with lower story of blackberry, nettles, or wild grape.	Moderate Potential	Suitable nesting habitat is present within the riparian areas along Ellis Creek within the project site.
Coturnicops noveboracensis yellow rail	None/None G4/S1S2 SSC	Summer resident in eastern Sierra Nevada in Mono County. Freshwater marshlands.	Not Expected	The project site is outside of this species known range.
Cypseloides niger black swift	None/None G4/S2 SSC	Coastal belt of Santa Cruz and Monterey counties; central and southern Sierra Nevada; San Bernardino and San Jacinto mountains. Breeds in small colonies on cliffs behind or adjacent to waterfalls in deep canyons and sea-bluffs above the surf; forages widely.	Not Expected	No suitable habitat is present within the project site, and the project site is outside of this species' known range.
Elanus leucurus white-tailed kite	None/None G5/S3S4 FP	Rolling foothills and valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodland. Open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching.	High Potential; Identified in 2002 EIR	Suitable nesting habitat is present within the riparian areas along Ellis Creek within the project site, and agricultural fields surrounding the project site provide suitable forage for this species. Additionally, several recorded occurrences are documented within and near the project site in the California Natural Diversity Database and eBird (CDFW 2022; Cornell Lab of Ornithology 2022).
Eremophila alpestris actia California horned lark	None/None G5T4Q/S4 WL	Coastal regions, chiefly from Sonoma County to San Diego County. Also main part of San Joaquin Valley and east to foothills. Short-grass prairie, "bald" hills, mountain meadows, open coastal plains, fallow grain fields, alkali flats.	Moderate Potential; Identified in 2002 EIR	The nearby agricultural fields and grasslands near the project site may provide suitable foraging and nesting habitat for this species.

Scientific Name Common Name	Status Fed/State ESA G-Rank/S-Rank CDFW	Habitat Requirements	Potential for Impact	Potential for Occurrence
Geothlypis trichas sinuosa saltmarsh common yellowthroat	None/None G5T3/S3 SSC	Resident of the San Francisco Bay region, in fresh and saltwater marshes. Requires thick, continuous cover down to water surface for foraging; tall grasses, tule patches, willows for nesting.	Moderate Potential; Identified in 2002 EIR	Willows within the riparian zone along Ellis Creek may provide suitable breeding and foraging habitat for this species. Additionally, this species is known to occur within the marsh habitat to the south of the project site.
Laterallus jamaicensis coturniculus California black rail	None/ST G3T1/S1 FP	Inhabits freshwater marshes, wet meadows and shallow margins of saltwater marshes bordering larger bays. Needs water depths of about 1 inch that do not fluctuate during the year and dense vegetation for nesting habitat.	Low Potential; Identified in 2002 EIR	This species is likely to nest in the salt marsh habitats near the project site; however, the project site itself does not provide suitable nesting habitat for this species. This species may use the project site for perching or during dispersal.
Melospiza melodia samuelis San Pablo song sparrow	None/None G5T2/S2 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.	Low Potential; Identified in 2002 EIR	This species is likely to nest in the salt marsh habitats near the project site; however, the project site itself does not provide suitable nesting habitat or vegetation required for this species. This species may use the project site for perching or during dispersal.
Rallus obsoletus obsoletus California Ridgway's rail	FE/SE G3T1/S1 FP	Salt water and brackish marshes traversed by tidal sloughs in the vicinity of San Francisco Bay. Associated with abundant growths of pickleweed, but feeds away from cover on invertebrates from mud-bottomed sloughs.	Low Potential; Identified in 2002 EIR	This species is likely to nest in the salt marsh habitats near the project site, however, the project site itself does not provide suitable nesting habitat or vegetation required for this species. This species may use the project site for perching or during dispersal.
Riparia riparia bank swallow	None/ST G5/S2	Colonial nester; nests primarily in riparian and other lowland habitats west of the desert. Requires vertical banks/cliffs with fine-textured/sandy soils near streams, rivers, lakes, ocean to dig nesting hole.	Not Expected; Identified in Subsequent Addenda to the 2002 EIR	No suitable cliff or bank habitat is present for this species within the project site. Additionally, the current distribution of this species is restricted and does not include the project site.

Scientific Name Common Name	Status Fed/State ESA G-Rank/S-Rank CDFW	Habitat Requirements	Potential for Impact	Potential for Occurrence
Mammals				
Antrozous pallidus pallid bat	None/None G4/S3 SSC	Found in a variety of habitats including deserts, grasslands, shrublands, woodlands, and forests. Most common in open, dry habitats with rocky areas for roosting. Roosts in crevices of rock outcrops, caves, mine tunnels, buildings, bridges, and hollows of live and dead trees which must protect bats from high temperatures. Very sensitive to disturbance of roosting sites.	Moderate Potential; Identified in 2002 EIR	Large trees in the Ellis Creek riparian zone within the project site may provide suitable habitat for this species. However, heavy human disturbance in the vicinity somewhat reduces the potential to occur.
Aplodontia rufa phaea Point Reyes mountain beaver	None/None G5T2/S2 SSC	Coastal area of Point Reyes in areas of springs or seepages. North-facing slopes of hills and gullies in areas overgrown with sword ferns and thimbleberries.	Not Expected; Identified in 2002 EIR	This species is not likely to occur due to a restricted range that is outside of the project site and a lack of suitable habitat.
Corynorhinus townsendii Townsend's big-eared bat	None/None G4/S2 SSC	Occurs throughout California in a wide variety of habitats. Most common in mesic sites, typically coniferous or deciduous forests. Roosts in the open, hanging from walls & ceilings in caves, lava tubes, bridges, and buildings. This species is extremely sensitive to human disturbance.	Not Expected; Identified in 2002 EIR	No suitable roosting habitat is present within the project site, and the heavy human disturbance at the site significantly reduces its potential to occur.
Reithrodontomys raviventris salt-marsh harvest mouse	FE/SE G1G2/S1S2 FP	Only in the saline emergent wetlands of San Francisco Bay and its tributaries. Pickleweed is primary habitat but may occur in other marsh vegetation types and in adjacent upland areas. Does not burrow; builds loosely organized nests. Requires higher areas for flood escape.	Not Expected; Identified in 2002 EIR	No suitable salt marsh habitat is present within the project site.
Sorex ornatus sinuosus Suisun shrew	None/None G5T1T2Q/S1S2 SSC	Tidal marshes of the northern shores of San Pablo and Suisun bays. Require dense low-lying cover and driftweed and other litter above the mean hightide line for nesting and foraging.	Not Expected; Identified in 2002 EIR	No suitable salt marsh habitat is present within the project site. Nearest documented occurrence is over five miles from the project site (CDFW 2022).
Taxidea taxus American badger	None/None G5/S3 SSC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Needs sufficient food, friable soils and open, uncultivated ground. Preys on burrowing rodents. Digs burrows.	Moderate Potential; Identified in Subsequent Addenda to the 2002 EIR	Suitable habitat is present immediately adjacent to the project site in the open grassland and agricultural fields to the north. This species may occur on site during dispersal.

Scientific Name Common Name	Status Fed/State ESA G-Rank/S-Rank CDFW	Habitat Requirements	Potential for Impact	Potential for Occurrence

Regional Vicinity refers to within the *Petaluma River*, California USGS 7.5-minute quadrangle and the eight surrounding quadrangles.

FT = Federally Threatened
FC = Federal Candidate Species
FE = Federally Endangered
FS=Federally Sensitive
SE = State Endangered
ST = State Threatened
SR = State Rare
SS=State Sensitive

G-Rank/S-Rank = Global Rank and State Rank as per NatureServe and CDFW's within and near the project site RareFind5

SSC = CDFW Species of Special Concern

FP = Fully Protected

WL = Watch List

Source: CDFW 2022; United States Fish and Wildlife Service 2022

Appendix C

Jurisdictional Assessment

Rincon Consultants, Inc.

449 15th Street, Suite 303
Oakland, California 94612

510 834 4455 OFFICE

info@rinconconsultants.com
www.rinconconsultants.com

May 24, 2022
Project No: 21-12666

Evan Riley, CEO
White Pine Renewables
Via email: evan@whitepinerenew.com

Subject: Jurisdictional Assessment of the Ellis Creek Water Recycling Facility Floating Solar Array Project, in the City of Petaluma, Sonoma County, California

Dear Mr. Riley:

This memorandum has been prepared by Rincon Consultants, Inc. (Rincon) to assist White Pine Renewables (White Pine) with project planning and design for the proposed Ellis Creek Water Recycling Facility Floating Solar Array Project (project). The project would consist of approximately 13 acres of solar panels which will float in an oxidation pond at the Ellis Creek facility. Additional components, including inverters, transmission poles, and a construction staging area, would also be established near the oxidation pond.

The purpose of this report is to identify areas within the study area that may require formal delineation and subsequent regulatory permitting if directly impacted and provide White Pine with preliminary mapping of the limits of jurisdictional areas for planning and design purposes only. This analysis does not meet the specifications of a formal jurisdictional delineation required for regulatory permitting; however, it does provide White Pine with information to support development pf a project design that avoid impacts to jurisdictional features, or to confirm that project development will require regulatory permitting.

This Jurisdictional Assessment identified three intermittent drainages and four seasonal wetlands that are anticipated to be subject to agency jurisdiction under Section 404 and Section 401 of the Clean Water Act for the United States Army Corps of Engineers (USACE) and the Regional Water Quality Control Board (RWQCB). This assessment and the accompanying GIS data presents the extent of potential jurisdiction pursuant to the Porter-Cologne Water Quality Control Act, and the California Department of Fish and Wildlife (CDFW) jurisdiction pursuant to California Fish and Game Code (CFGC) Section 1600 *et seq*.

Methods

Rincon generally followed current federal and state methods and guidelines typically used to identify and delineate potential jurisdictional areas to develop a preliminary delineation of the limits of jurisdictional areas at the project site. Potential wetland features were evaluated for presence of wetland indicators, specifically including predominance of hydrophytic vegetation, hydric soils, and wetland hydrology, and non-wetland features were evaluated for presence of positive indicators for the Ordinary High Water Mark (OHWM) according to routine delineation procedures. Within the limits of the study area, all aquatic resources were preliminarily delineated in accordance with the following:

- *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987);
- *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (USACE 2008a);
- *Regulatory Guidance Letter No. 05-05: Ordinary High Water Mark Identification* (USACE 2005);
- *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (USACE 2008b); and
- Code of Federal Regulations sections that pertain to factors constituting the OHWM for non-wetland waters ("other waters") (33 CFR 328.3 and 33 CFR 328.4).
- Section 1602(a) of the CFGC for CDFW jurisdiction.

Literature Review and Field Survey

The study area, as shown in figures in Appendix A, encompasses the areas of the water recycling facility where project components may be installed. A desktop review of the study area was conducted to identify potential wetlands and other waters that may be present at the study area prior to the field visit. Existing materials reviewed included online geospatial wetlands information provided by the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) (USFWS 2021), and current and historical aerial imagery including Google Earth (2021). The *Petaluma River, California* U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle map (USGS 2022a) was also reviewed. Soil types in the study area were identified using the Web Soil Survey, a resource provided by the U.S. Department of Agriculture Natural Resources Conservation Service (USDA NRCS) (USDA NRCS 2022).

Rincon imported the study area boundary overlaid on high resolution aerial imagery onto an Android® tablet equipped with ESRI ArcCollector® software. The tablet was paired with a handheld Geode™ Global Positioning System (GPS) capable of sub-meter accuracy for navigation and data collection in the field. Field work for the delineation was conducted on April 20, 2022, by Rincon biologists Kristin Asmus and Anastasia Ennis.

Field Results and Discussion

There are seven potentially jurisdictional features in the study area: Ellis Creek, two intermittent drainages (RPW1 and RPW2), and four seasonal wetlands (A, B, C, and D) (Figure 1 and Figure 2). All features are likely subject to USACE, RWQCB, and CDFW jurisdiction.

Ellis Creek

Ellis Creek is an intermittent drainage that flows through the northern end of the study area. It enters the study area through a culvert that crosses under SR 116. Ellis Creek drains the southern slopes of the Sonoma Mountains, located approximately three miles to the north of the study area, via various tributaries and converges with the Petaluma River approximately one mile downstream from the study area. Water was flowing in Ellis Creek during the site visit. A riparian woodland forms a canopy over Ellis Creek.

Ellis Creek has a defined bed and bank and an OHWM distinguished by a break in bank slope, and a change in the density of vegetation. The OHWM averages approximately 24 feet in width. Ellis Creek has a continuous surface connection to a Traditional Navigable Water (TNW), the Petaluma River, and is considered a water of the U.S., likely subject to the jurisdiction of USACE pursuant to Section 404 of the

CWA. The RWCQB and CDFW would take jurisdiction of Ellis Creek as well as the riparian woodlands to the top of bank or to the furthest extent of riparian vegetation adjacent to Ellis Creek.

Intermittent Drainages

The two intermittent drainages, which would be considered relatively permanent waters (RPWs) by the USACE, also enter the study area via culverts under SR 116. As shown in Figure 1 and Figure 2, RPW1 and RPW2 appear to drain runoff from agricultural lands to the north of SR 116. Where RPW1 flows out of the culvert and starts out as a relatively narrow channel that widens as it curves to the southeast, and even wider as it curves to the southwest, where it runs between the oxidation ponds. The OHWM averages approximately 51 feet in width. Where RPW1 widens, it is filled with tule (*Schoenoplectus acutus*) and other freshwater emergent wetland vegetation. To the southeast of RPW1, RPW2 appears to enter the study area through a culvert and forms a wide broad channel slightly lower in elevation than the surrounding marsh areas.

Both RPW1 and RPW2 have a defined bed and bank, and the OHWM is marked by a change in vegetation. The OHWM for RPW2 averages approximately 72 feet in width. It is filled with tule and other vegetation its entire length as it extends to the northwest before its confluence with RPW1 where RPW1 curves to the southwest between the oxidation ponds. Less than a mile southwest of the study area, RPW1 flows into the Petaluma River, a TNW. Because both RPW1 and RPW2 have a direct surface connection to a TNW, they are considered waters of the U.S. and are likely subject to the jurisdiction of USACE pursuant to Section 404 of the CWA. Areas above the OHWM for RPW1 and RPW2 are unlikely to meet the USACE's three-parameter wetland criteria; however, CDFW and RWQCB would take jurisdiction to top of bank or furthest extent of riparian vegetation (Figure 2).

Seasonal Wetlands

Four seasonal wetlands (A, B, C, and D) are present within the study area (Figure 1 and Figure 2). The seasonal wetlands were field identified by hydrology (low elevation), changes in vegetation, and/or examination of soil samples for indicators of wetland hydrology. Wetland A is marked by a sharp vegetation change, in both plant density and species composition, from the surrounding upland species, indicating regular presence of ponding water. Wetland B is also distinguished from surrounding annual grassland by the change in grass species frequencies and presence of vernal pool plant species at its southern edge. Wetland hydrology was visible on historical aerial imagery during the wet season with darker green and standing water present in these locations during typical (non-drought) years of rainfall, which is a recognized indicator of hydrology by the USACE. Wetland C is similarly marked by a change in vegetation and elevation from surrounding grasslands. Wetland C includes tule and freshwater emergent vegetation as well as stands of willows (*Salix* spp.) in saturated soils. Wetland D is a linear feature at the eastern edge of the study area situated below the levee road constructed around the oxidation ponds exhibiting wetland hydrology. Soil sample points were taken to confirm hydric soils were present, and hydrophytic vegetation was present throughout much of the feature, with some upland species prevalent at the northern end of the feature, likely due to ongoing drought conditions.

Of these four seasonal wetlands, only Wetland C abuts RPW2 and thus has a direct surface connection to a TNW (Petaluma River) within the study area. Wetland D has a continuous surface connection to the Petaluma River via channels running through the marshes to the south Although there is no obvious direct surface connection between Wetlands A and B and Ellis Creek, under wet conditions there are presumable hydrologic surface connections from Wetlands A and B to Ellis Creek, which has a direct surface connection to the TNW (the Petaluma River). Federally listed species, including the endangered

Pitkin Marsh lily, salt marsh harvest mouse, and California Ridgway's rail, are known to occur in marshes abutting the Petaluma River south of the study area (CDFW 2022). Thus, changes in and impacts to the watershed have the potential to impact habitat for these endangered species where they may occur downstream of the study area. In addition, movement of water from these wetlands can carry pollutants and sediments into the adjacent marshes and further downstream, where they would flow through sensitive tidal marsh habitat into the river and San Francisco Bay. Due to these factors, it is reasonable to conclude that Wetlands A and B have a significant nexus with a TNW, the Petaluma River, and are thereby likely subject to the jurisdiction of USACE pursuant to Section 404 of the CWA. The RWQCB would also likely take jurisdiction of all four wetland features. CDFW would take jurisdiction of Wetlands C and D, but since Wetlands A and B have no association with a stream or lake, the CDFW would likely not take jurisdiction of those features.

Conclusions and Recommendations

The onsite features meet the definitions of Waters of the United States in Sections 401 and 404 of the Clean Water Act, Waters of the State in the Porter-Cologne Water Quality Control Act, and stream/channel/bank in the CFGC. Direct impacts to these features would require regulatory permitting. Regulatory permitting would involve authorization from the USACE, RWQCB and CDFW. Rincon has provided GIS data for the purposes of developing a site design that avoids impacts. If impacts cannot be avoided, Rincon can provide further support with the regulatory permitting process.

The regulatory processes under USACE, RWQCB and CDFW are separate applications submitted to each agency. The fee for preparation/coordination of all three processes is generally in the $18,000-$22,000 range. We can provide a detailed scope and fee proposal if it is determined that regulatory permitting will be necessary. The agency permitting and application costs as well as the mitigation cost for the impacts will be variable based on location and type of impact. Permit issuance is contingent on completion of CEQA. Once the CEQA document is completed and submitted, it is anticipated the agencies will take 3-6 months to process/issue.

Thank you for the opportunity to provide environmental services for this important project. Please let us know if you have any questions.

Sincerely,
Rincon Consultants, Inc.

Anastasia G. Ennis, M.S.
Biologist

David Daitch, Ph.D.
Vice President/Senior Ecologist

Attachments
Attachment A Figures

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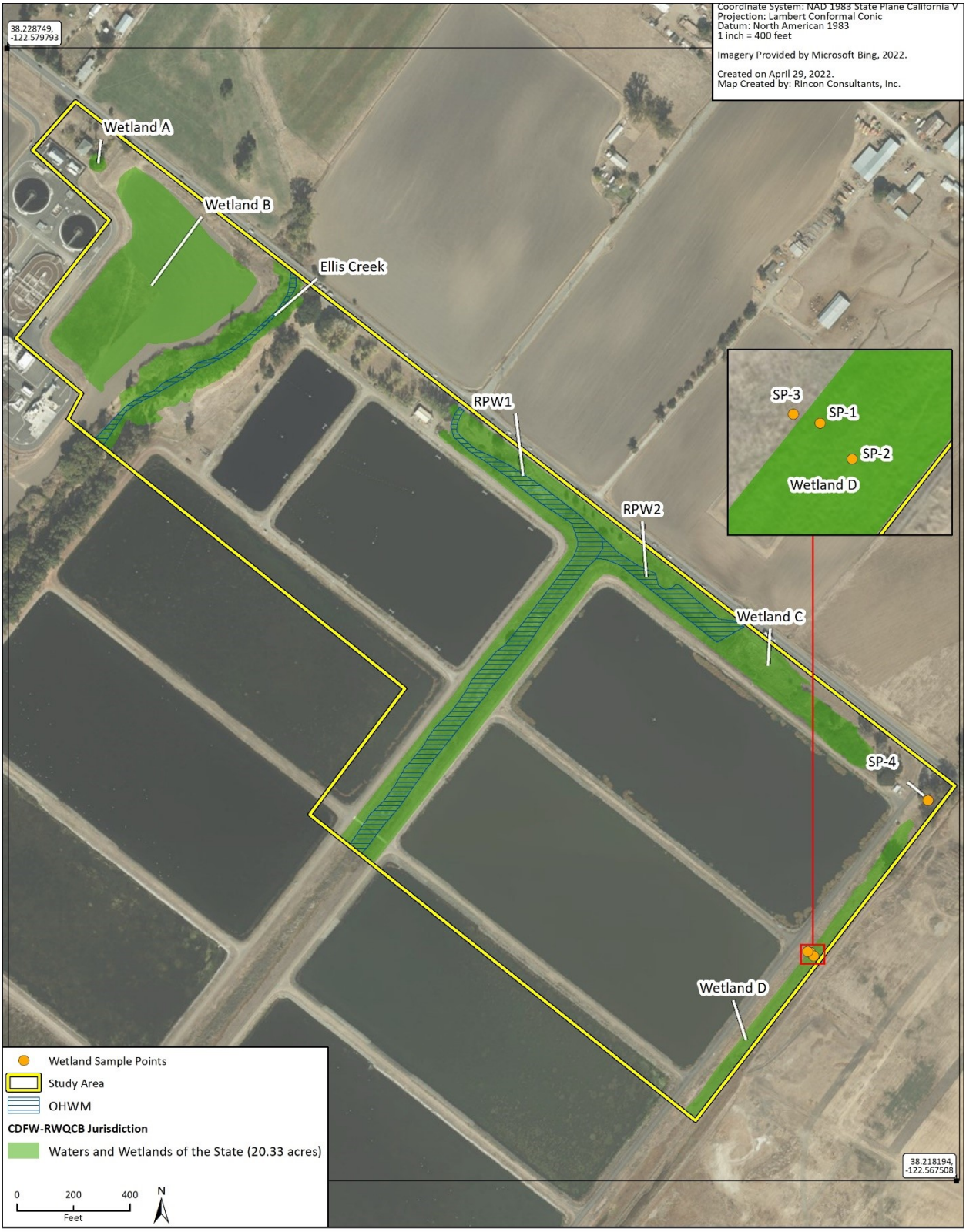
Attachment A

Figures

Figure 1 Aquatic Resources Delineation Waters of the U.S.

Figure 2 Jurisdictional Assessment Waters of the State/CDFW Streambed and Riparian Habitats



Appendix D

Vibration Modeling

Groundborne Noise and Vibration Modeling

Notes
The reference distance is measured from the nearest anticipated point of construction equipment to the nearest structure.

	Reference Level Inputs			
Equipment	**PPV_{ref} (in/sec)**	**Lv_{ref} (VdB)**	**RMS_{ref} (in/sec)**	**Reference Distance**
Caisson drilling	0.089	87	0.022	25

	Vibration Level at Receiver			
Equipment	**Distance (feet)**	**PPV_x (in/sec)**	**Lv_x (VdB)**	**RMS_x (in/sec)**
Caisson drilling	25	0.0890	87	0.022

Source
California Department of Transportation (Caltrans). 2020. Transportation and Construction Vibration Guidance Manual (CT-HWANP-RT-20-365.01.01). April. https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tcvgm-apr2020-a11y.pdf. Last Updated: 10/19/2020