ENVIRONMENTAL ASSESSMENT

Sloughhouse Solar Facility

Sacramento County, California

Sloughhouse Solar, LLC

U.S. Department of Agriculture
Rural Utilities Service (RUS)

DRAFT ENVIRONMENTAL ASSESSMENT

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Prepared for:
United States Department of Agriculture
Rural Utilities Service

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TABLE OF CONTENTS

Section **Page**

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

SYMBOLS, ACRONYMS, AND ABBREVIATIONS

%	percent
µg/m3	micrograms per cubic feet
AADT	Average Annual Daily Traffic
APE	area of potential effect
AC	alternating current
AMM	Avoidance and Minimization Measures
amsl	above mean sea level
APE	area of potential effect
BMP	Best Management Practice
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CARB	California Air Resources Board
CASQA	California Stormwater Quality Association
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CH_4	methane
CNEL	Community Noise Equivalent Level
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CPUC	California Public Utilities Commission
CWA	Clean Water Act
dB	decibel
dBA	A-weighted decibels
DC	direct current
DWR	Department of Water Resources
EA	Environmental Assessment
EIS	Environmental Impact Statement
EKI	EKI Environmental & Water
EMF	electromagnetic field
EO	Executive Order
EPA	US Environmental Protection Agency
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FMP	field management plan
FONSI	Finding of No Significant Impact
FPPA	Farmland Protection Policy Act
FRAP	Fire Resources Assessment Program
G	gauss
GHG	greenhouse gas
GWP	global warming potential
HVAC	heating, ventilation, and air conditioning
I-	interstate
IPaC	Information for Planning and Consultation
KOP	Key Observation Points
kV	kilovolt

Ldn	day-night average sound level
Leq	Sound Level Equivalents
m	meter
MBTA	Migratory Bird Treaty Act
MT	metric tons
MW	megawatts
MWh	megawatt hours
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NLCD	National Land Cover Dataset
NO_2	nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
NOx	nitrogen oxide
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
O_3	ozone
OHWM	ordinary high water mark
OSHA	Occupational Safety and Health Administration
Pb	lead
PM	particulate matter
PM_{10}	particulate matter whose particles are less than or equal to 10 micrometers
$PM_{2.5}$	particulate matter whose particles are less than or equal to 2.5 micrometers
ppb	parts per billion
ppm	parts per million
PV	photovoltaic
RD	Rural Development
REC	recognized environmental conditions
ROI	Region of Influence
ROG	reactive organic gases
RUS	Rural Utilities Service
RWQCBQ	Regional Water Quality Control Board
SC-	social cost of
SF_6	sulfur hexafluoride
SHPO	State Historical Preservation Officer
SIP	State Implementation Plan
SMAQMD	Sacramento Metropolitan Air Quality Management District
SMUD	Sacramento Municipal Utility District
SO_2	sulfur dioxide
SR	State Road
SSCHP	Sacramento County Habitat Conservation Plan
SVAB	Sacramento Valley Air Basin
SWPP	Stormwater Pollution Prevention Plan
TMDL	Total Maximum Daily Loads
U.S.C.	United States Code
US	United States
USACE	US Army Corps of Engineers
USCB	US Census Bureau
USDA	US Department of Agriculture

USFWS	US Fish and Wildlife Service
V	volts
VPFS	Vernal pool fairy shrimp
VPTS	Vernal pool tadpole shrimp
VOC	volatile organic compound
WSA	Water Supply Assessment
WOTUS	Waters of the US

CHAPTER 1

1.0 PURPOSE AND NEED FOR THE PROJECT

1.1 National Environmental Policy Act

Sloughhouse Solar, LLC (Sloughhouse Solar/Applicant) has requested long-term financing from the Rural Utilities Service (RUS), an agency of the United States (US) Department of Agriculture (USDA) Rural Development, for construction of the Proposed Action (see Section 1.2). RUS is considering financing the Proposed Action through a RUS guaranteed Federal Financing Bank loan, thereby making the Proposed Action a Federal action subject to review under the National Environmental Policy Act of 1969 (NEPA), and all applicable Federal environmental laws and regulations. RUS is the lead Federal agency for this NEPA analysis.

This Environmental Assessment (EA) has been prepared to analyze potential impacts to the natural and human environments associated with the Proposed Action in accordance with NEPA (42 United States Code [U.S.C.] 4321 et seq.) and its implementing regulations (40 Code of Federal Regulations [CFR] 1500–1508) promulgated by the Council on Environmental Quality (CEQ), Rural Development's (RD) NEPA Regulations (7 CFR Part 1970—Environmental Policies and Procedures), and RD Instructions 1970-Subpart C.

This EA also addresses other laws, regulations, executive orders (EOs), and guidelines promulgated to protect and enhance environmental quality including, but not limited to, the National Historic Preservation Act (NHPA), Endangered Species Act (ESA), Farmland Protection Policy Act (FPPA), Clean Water Act (CWA), and EOs governing floodplain management, protection of wetlands, and environmental justice.

The US Army Corps of Engineers (USACE) will coordinate with RUS, as the lead Federal agency, to comply with Section 106 of the NHPA of 1966 (54 U.S.C. § 306108), as amended, and its implementing regulations at 36 CFR Part 800 as well as in the formal ESA Section 7 Consultation with the US Fish and Wildlife Service (USFWS). See Chapter 3 for additional details.

The purpose of this EA is to analyze the potential environmental impacts of the Proposed Action Alternative and No Action Alternative to determine whether to prepare an Environmental Impact Statement (EIS) or a Finding of No Significant Impact (FONSI). The EA provides a detailed description of the Proposed Action, identifies natural resources within the Project Study Area, describes the purpose and need, and analyzes alternatives considered reasonable and feasible to accomplish the Proposed Action. Discussions of the affected environment, the environmental consequences of the Proposed Action, and the mitigation of the potential environmental impacts are also included. Based on the analysis contained in this document, RUS will decide:

1. Whether to proceed with either the Proposed Action Alternative or the No Action Alternative.
2. Whether or not the selected alternative would have a significant impact on the quality of the human environment.

If, after circulating the document for public and agency comment, RUS finds the Proposed Action will not have a significant impact on the quality of the human environment, it will prepare a FONSI. If at any point in the preparation of the EA, RUS determines the Proposed Action will have a significant impact on the quality of the human environment, it will initiate preparation of an EIS.

AECOM, on behalf of the Applicant, prepared this EA in accordance with RD Instruction 1970-C Exhibit B Guidance to Applicants for Preparing Environmental Assessments. In accordance with 7 CFR Part 1970, RUS has conducted an independent evaluation of the EA and finds that it accurately assesses the impacts of the Proposed Action.

1.2 Project Description

Sloughhouse Solar, LLC (Applicant) is proposing to develop a 50-megawatt (MW) solar energy facility on approximately 372 acres in the Cosumnes community of unincorporated Sacramento County in California (Figure 1-1). Approval of the proposed Sloughhouse Solar Project (Proposed Action) would result in the construction, operation, and eventual decommissioning of solar-energy generation, and electrical distribution facilities. Project parcels would be developed with solar panel arrays and ancillary facilities, energy storage facilities, an electrical substation, internal roads, retention basins, and distribution lines connecting to the regional power grid.

The Proposed Action is situated on approximately 372 acres within the Project Study Area of 732 acres (see Figure 2-2). The Proposed Action Area is located south of Jackson Highway, southeast of the Cosumnes River, west of Dillard Road, and south of Meiss Road. More specifically, the Proposed Project Area is located southwest of the intersection of Meiss Road and Dillard Road, adjacent to an existing solar energy facility at 7794 Dillard Road. The county assessor parcel numbers are 126-0110-001-0000 and 126-0110-003-0000. The Consumnes River is located along the northwest portion of the project parcels.

1.2.1 Site Description

The Proposed Action Area is located on agricultural grazing lands. The topography at the site varies, but generally consists of rolling hills with gentle slopes. Elevations range from 100 feet above sea level at the river to 150 feet above sea level elsewhere onsite. The site gradually slopes towards a large offsite drainage pond along the southwest boundary of the site. Existing structures on the site include a farmstead that consists of a home, multiple barns, and equipment storage areas in the northern portion of the site. An existing adjacent solar field (Dillard Recurrent Solar Park) is comprised of approximately 73 acres in two parcels. As shown in Figure 1-2, one parcel is completely surrounded by the southern portion of the Proposed Action Area, the second parcel abuts the southern portion of the site. The existing facility is operated by another entity and is not part of the Proposed Action Area.

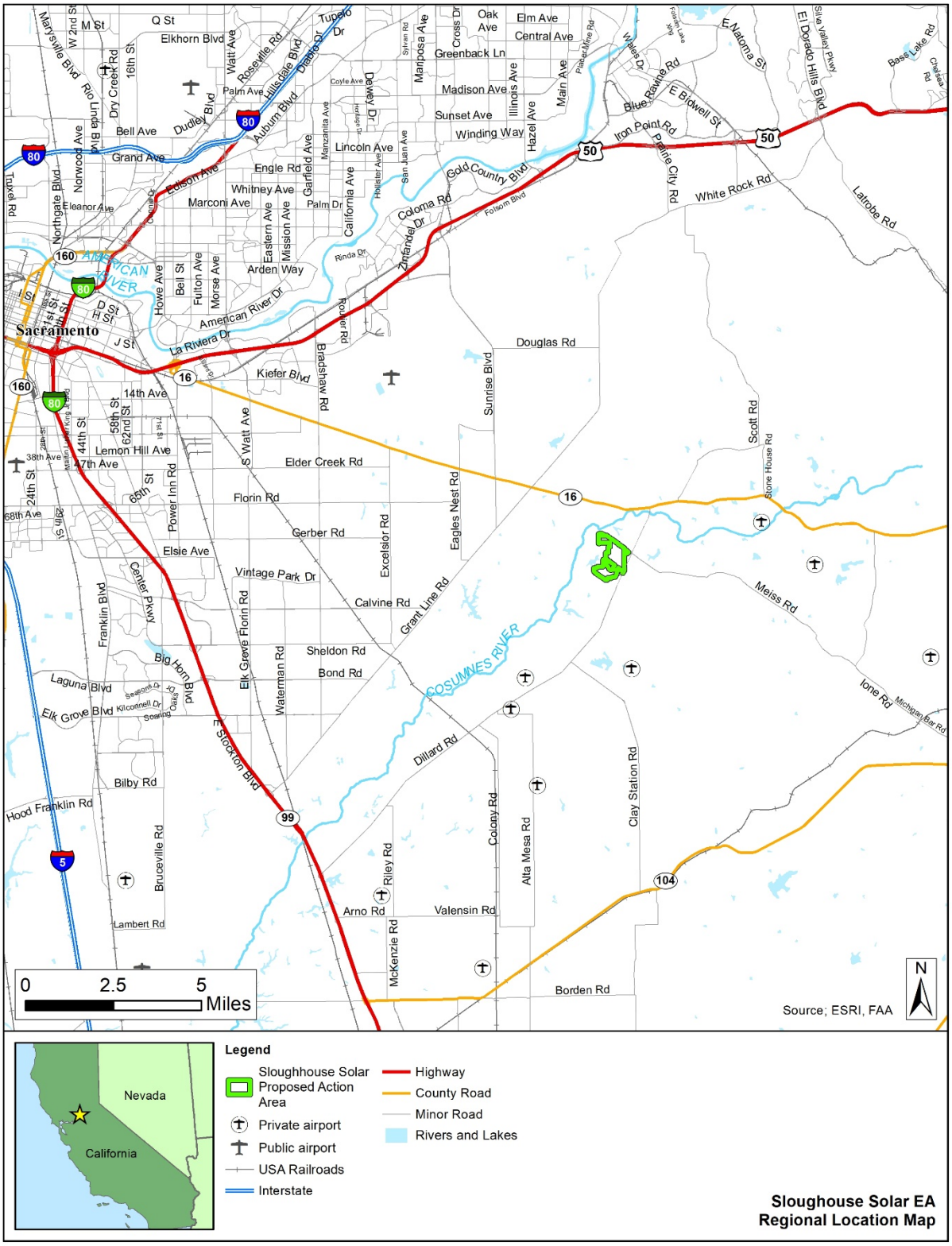

Figure 1-1. Regional Location Map

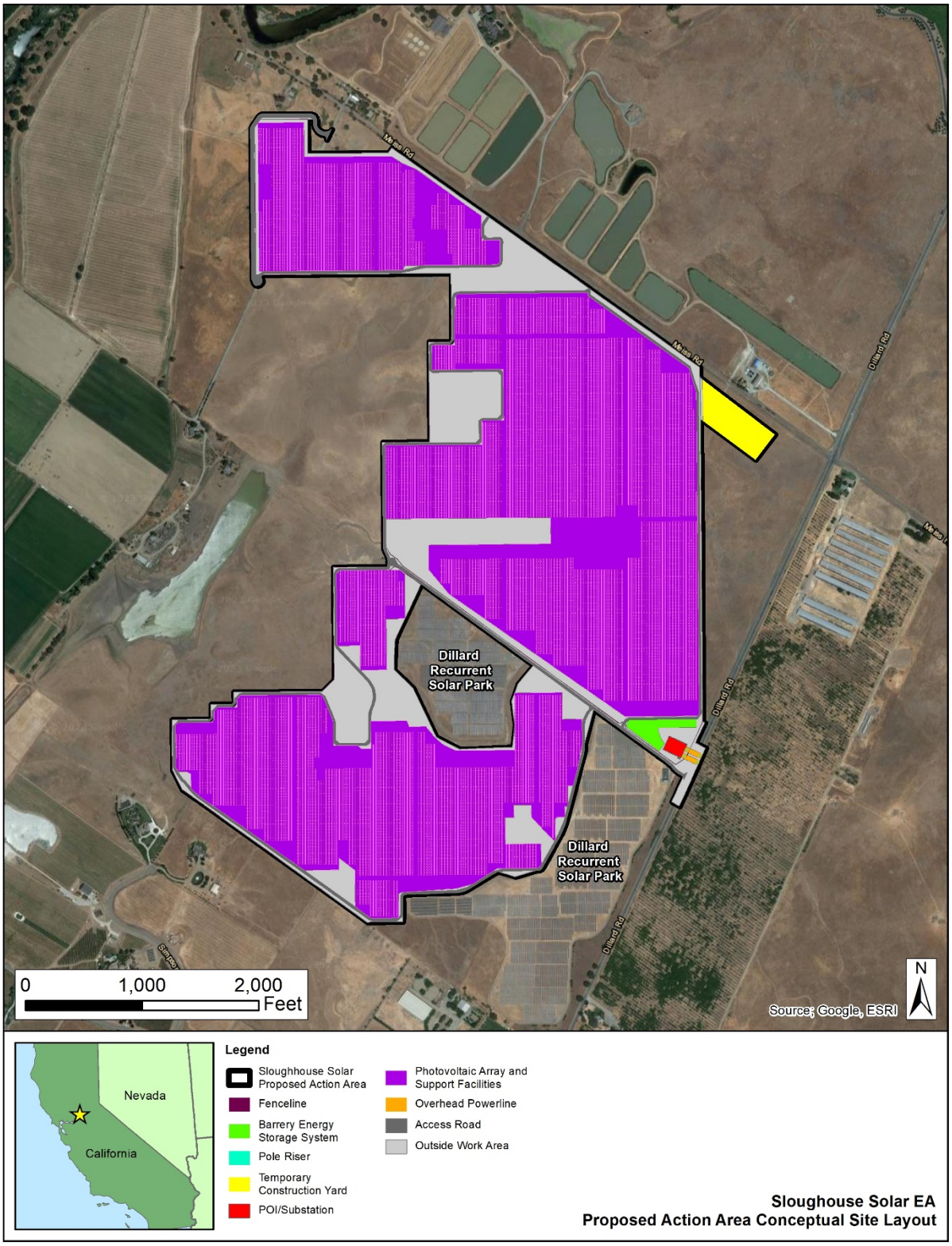

Figure 1-2. Sloughhouse Solar Proposed Action Area Conceptual Site Layout

Land uses immediately surrounding the project parcels include agricultural, rural residential, a solar energy facility, and electrical transmission facilities. There are residences on 20-acre parcels to the south and west of the Proposed Action Area. Farther south, there are agricultural-residential properties on 2- to 5-acre parcels. To the east of Dillard Road are agricultural properties of 80 acres or more. Northwest of the site, there is a mitigation bank for a variety of wetland and wildlife resources. The Cosumnes River borders the project parcels to the northwest and is approximately 500 feet from the nearest Proposed Action facilities.

1.2.2 Generating Facility Description

The electrical power provided by the Proposed Action would be supplied to the Sacramento Municipal Utility District (SMUD) using existing SMUD distribution facilities. The project will use photovoltaic (PV) technology to convert sunlight directly into direct current (DC) electricity. Groups of PV modules (environmentally sealed collections of PV cells) are wired together to form a PV array. The arrays would be mounted on fixed-tilt or tracker structures grouped in 1- to 2-MW arrays. A tracking system would align panel rows north and south, with the panels tracking the sun throughout the day, facing east in the morning, directly upward at noon, and west in the evening. A fixed tilt system would orient panel rows east and west, with the racking oriented at an angle facing south throughout the day without tracking the sun. The PV support structures would be installed on circular piers or I-beam posts of corrosion-resistant steel, aluminum, or equivalent members that would be driven into the prepared base grade of the site to a depth no greater than approximately 15 feet. Each rack would hold 80-90 panels and have a maximum height of approximately 12 feet above grade with minimum clearance at ground level of approximately 32 inches. The Proposed Action Area layout is shown on Figure 1-2 and additional details about the Proposed Action can be found in Chapter 2 Alternatives.

At each PV array, the DC produced by the array would be collected at inverters (power conversion devices) where the DC is converted to alternating current (AC). The voltage of the electricity would be increased by a transformer at each power conversion station to a medium voltage level, typically 34.5 kilovolts (kV). These facilities would be installed upon a concrete mat foundation, or on a series of steel pilings. Medium voltage electric lines located underground and/or overhead are used to collect the electricity from each transformer and transmit it to the existing SMUD substation, where the voltage would be further increased by a high voltage transformer to match the voltage for the electric grid, for export to the point of interconnection along Dillard Road (69 kV distribution system operated by SMUD). If installed underground, medium voltage electric lines would be installed at a depth approximately 36 to 48 inches. Alternatively, if installed aboveground, wooden poles typical of those seen for rural distribution lines, would be utilized to hold the medium voltage electric lines. These poles would be approximately 30-35 feet in height, with some potential variation based on topography. An existing power line adjacent to the existing Dillard solar facilities at the southeastern portion of the Proposed Action Area would be relocated to accommodate the project. It is anticipated that two new poles, would be placed to the east of Dillard Road, consistent with the existing transmission line which is approximately 50 feet tall. From the first structure, the transmission line would be routed through metering equipment that controls facility power injection from the Sloughhouse Solar facility into the grid adjacent to the SMUD substation, and would then be routed back to the east of Dillard Road to the second

structure where the existing transmission line would continue along its current route (Figures 1-2 and 1-3). The exact configuration is subject to change depending on additional coordination with SMUD.

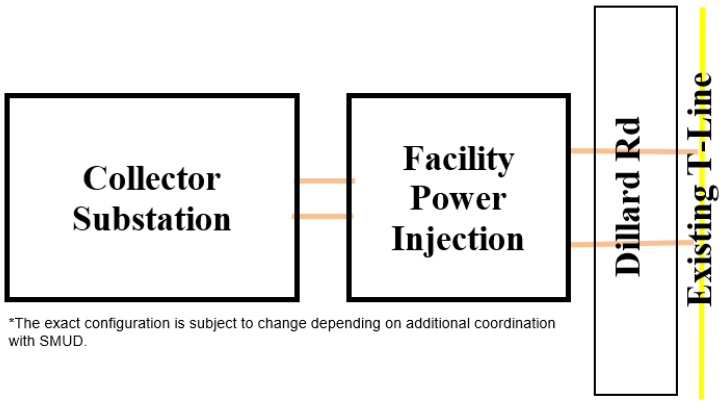

Figure 1-3. Schematic Diagram showing the Line/Substation Tie-in Configuration

An approximately 7-foot agricultural style fence would surround the perimeter of the Proposed Action as shown on Figure 1-2. This style fence would consist of metal or wooden posts spaced approximately 8 to 20 feet apart. The fence mesh is anticipated to consist of steel woven or woven game fence fabric that is rectangular in shape with openings of approximately 4 inches in size and extends 7 feet from the ground. A small opening is anticipated along the base of the fence to allow for passage of small animals under the fence. Signage on the perimeter fence would provide warning of high-voltage facilities. Controlled access would be provided at secured gates intersecting new interior access roads. Interior access roads would be unpaved with an aggregate base. Security lighting would provide operation and maintenance personnel with illumination in both normal and emergency conditions. The lighting system would be designed to provide the minimum illumination needed to achieve safety and security objectives and would be shielded and oriented to focus illumination on the desired areas to minimize light spillover. Lights would point downward.

Communication facilities would utilize telephone and internet services provided via overhead or underground lines, microwave tower, or via cellular service obtained from a local provider. Communication equipment such as microwave tower or cellular service would be contained within or directly adjacent to the existing SMUD substation and is not anticipated to be taller than other substation infrastructure. Any extension of fiber optics or internet services is subject to additional coordination from the local service provider, would be installed to all necessary specifications of the local provider, and would be coordinated prior to construction. The communication system may include above or below ground fiber optic cable. Permanent electrical service for auxiliary loads would be provided by SMUD.

The Proposed Action would also include additional facilities such as raw water/fire water storage, fire protection equipment, treated water storage, storm water retention basins, water filtration

buildings and equipment, and equipment control buildings, a small onsite septic system, and parking.

The Proposed Action would incorporate battery energy storage facilities, as well as energy storage housed within the project inverters. Battery storage systems provide additional reliability by providing consistent energy during potential cloudy periods throughout the day when solar production drops and during periods of high energy demand. The battery storage component would be housed in a warehouse type structure (either centralized or located adjacent to the substation or switchgear) or alternatively in smaller modular structures, similar in size to cargo shipping containers. These containers would be located either adjacent to the SMUD substation or dispersed throughout the site adjacent to individual power conversion centers. The battery storage structure(s) would be self-contained and supported on a concrete mat foundation. Standard battery system technologies used in many existing solar energy facilities such as lithium ion and other technologies such as iron, nickel, sodium ion, or similar battery types may be utilized. These batteries would be placed on racking structures within the designated housing container. Inverters would be utilized between the batteries and the collector substation to step up and step down power, as necessary, for use by the electric grid.

1.2.3 Site Preparation and Construction

Construction is expected to take eight months, with an average of 150 workers per day. Construction is anticipated to commence in 2023 and be completed within 8 months. The in-service date and construction start date is dependent upon the permits being obtained from applicable regulatory agencies. Typical construction work hours are expected to be from 6:00 am to 4:00 pm. Work at night would be performed occasionally within some areas of the site. Delivery of equipment and supplies would range from 5-40 trips per day averaging approximately 10 daily trips during the construction period. Grading of the site would be minimized to the extent feasible and would focus on hydrological design; however, fill of seasonal wetlands is proposed. Approximately 0.08 acre of permanent fill to aquatic resources is anticipated from the Proposed Action. Excess grading material that cannot be used as fill onsite would be transported offsite to an existing, permitted disposal or borrow facility. PV support structures would be installed with driven piles. Soil compaction may be required to support the PV structures, ancillary structures, and traffic loads. Site access would be provided off Meiss Road and Dillard Road. The limits of disturbance during construction, including the point of interconnection to the SMUD substation, would not extend beyond the Proposed Action Area boundary. Temporary construction lay down areas, construction trailers, and parking areas would be provided within the Proposed Action Area. Temporary electrical service would be obtained for primary construction areas. Generator power may be used for temporary construction trailer(s) and/or commissioning. Existing farmstead structures would be demolished. Construction activities would utilize existing onsite wells and approximately 96 acre-feet of groundwater.

Landscaping would be installed and maintained along Meiss Road. Landscape vegetation would consist of a mix of native plantings, including live oak thickets and hedgerows planted along Meiss Road to screen the solar panels from view. Landscaping and entry monumentation would be maintained at the entrance to the Proposed Action Area and along Dillard Road. This landscaping would consist of very low water use plants such as western redbud, interior live oak, manzanita,

buckbrush, California coffeeberry, and an annual grass and wildflower mix. Installed landscaping would receive supplementary drip irrigation, typically for the first 3 to 5 years to ensure establishment and facilitate growth and accelerate visual screening.

1.2.4 Operations and Maintenance

Upon completion of construction, operations at the Proposed Action Area are expected to generate 4 to 10 trips per day for maintenance and security personnel. The facility would be primarily operated remotely through a local solar operations and maintenance company, facilitated by the Project Supervisory Control and Data Acquisition system. The Proposed Action Area will be fenced (as described previously), and security lighting (if installed) would be placed in strategic areas to minimize light pollution. A landscaped corridor would be installed and maintained along Dillard Road.

Panel washing may occur several times per year, if warranted, to maintain the efficiency of the PV system. Typical panel washing activities would occur over 1-2 weeks and involve up to 10 workers. Water used during operation would be used primarily for dust control. The annual water consumption required for operations is estimated to be approximately 2 acre-feet per year (Dudek 2022a) and would be provided from onsite groundwater wells.

1.2.5 Project Permits

The Proposed Action would be compliant with the following federal, state, and local regulations outlined in Table 1-1. State, regional, and county requirements and compliance efforts are beyond the scope of this NEPA document and will not be discussed further.

Table 1-1. Sloughhouse Solar Permits and Compliance

Agency	Permit, Regulatory Compliance, or Coordination
Federal	
US Fish and Wildlife Service (USFWS)	Endangered Species Act Section 7 Consultation and Incidental Take Statement Terms and Conditions Compliance
US Army Corps of Engineers (USACE)	Section 404 Nationwide Permit 51, Land-Based Renewable Energy Generation Facilities
USDA – Natural Resources Conservation Service (NRCS)	Farmland Conversion– Form AD-1006
California State Historic Preservation Officer / Indian Tribes	National Historic Preservation Act Section 106 Consultation
State / Regional	
California Governor's Office of Planning and Research and State Clearinghouse	California Environmental Quality Act (CEQA) Public Resources Code Section 21000 and following; CEQA Guidelines California Code of Regulations, Title 14, Section 15000 and following
California Department of Fish and Wildlife	Streambed Alteration Agreement

Table 1-1. Sloughhouse Solar Permits and Compliance

Agency	Permit, Regulatory Compliance, or Coordination
Regional Water Quality Control Board – Central Valley Region	CWA Section 401 Water Quality Certification; CWA Section 402 National Pollutant Discharge Elimination System Permit; Waste Discharge Permit
Sacramento Metropolitan Air Quality Management District	Fugitive Dust Prevention and Control Plan
County	
Sacramento County Board of Supervisors	Final CEQA Environmental Impact Report Certification, Use Permit, Special Development Permit and Design Review. Review of Planning Commission decisions.
Sacramento County Planning Commission	Recommendation to the Board of Supervisors regarding Use Permit, and Special Development Permit, Design and Site Plan Review.
Sacramento Municipal Utility District	Power Purchase Agreement, Interconnection and Operating Agreement
County of Sacramento Site Improvement Section	Grading Permit or Improvement Plans
County of Sacramento Building Permits Inspection Division	Building Permits
County of Sacramento Department of Transportation	Encroachment Permit
Sacramento County Environmental Management Department	Onsite Wastewater Disposal Permit or Well Certification and Permits

1.2.6 Decommissioning and Reclamation

The planned operational life of the facility is approximately 35 years. A draft decommissioning plan has been prepared that describes measures to remove the Proposed Action facilities and all appurtenances, and to implement activities necessary to restore the site equivalent to its current condition. Approval of the Proposed Action by Sacramento County is expected to be conditioned upon implementation of the final decommissioning plan at the end of the operational period.

The County requires a decommissioning plan including, but not limited to:

- Description of the proposed decommissioning measures for the facility and for all appurtenances constructed as part of the facility.
- Description of the activities necessary to restore the site to its previous condition.
- Presentation of the costs associated with the proposed decommissioning measures.
- Discussion of conformance with applicable regulations and with local and regional plans.

The applicant has provided a draft decommissioning plan to achieve these requirements, which is included as Appendix A. During decommissioning, the Proposed Action components that are no longer needed would be removed from the site and recycled or abandoned in place for all underground conductors. The majority of glass and steel that may be recycled would be processed for transportation and delivery to an offsite recycling center. All steel, aluminum, and copper would be recycled, and panels would be recycled in accordance with the PV manufacturer recycling program. The concrete, to a minimum of 12 inches below grade, foundation, and parking area would be broken up and removed from the site to an appropriately licensed disposal facility. Transformers using insulating oils would be removed from the site and recycled or disposed of at an appropriately licensed recycling and disposal facility. Personnel involved in handling these decommissioning activities would be trained appropriately in accordance with applicable regulations handling.

As part of the preparation for closure, the Spill Containment and Countermeasures Plan for the site would be updated to cover spill prevention and countermeasures for handling these materials during decommissioning. Procedures to decrease the potential for release of contaminants to the environment and contact with stormwater would be specified in a decommissioning Stormwater Pollution Prevention Plan (SWPPP).

Restoration activities would return the Proposed Action Area to the existing agriculture use (i.e., livestock grazing), and would include the following:

- Returning the land to agricultural use including ensuring soil nutrient content is at pre-construction levels and aerating the soils through proper decompaction techniques, as necessary.
- Restoration of landform features, vegetative cover, and hydrologic function after closure of the facility to ensure the site would support agriculture use (i.e., livestock grazing) or similar useful purposes.
- If soils are determined to be compacted at levels that would affect successful restoration, decompaction would occur. The method of decompaction would depend on how compacted the soil has become over the life of the project.
- A combination of seeding, planting of nursery stock, transplanting of local vegetation within the proposed disturbance areas, and staging of decommissioning activities enabling direct transplanting, would be considered. Native vegetation would be used for revegetating to establish a composition consistent with the form, line, color, and texture of the surrounding undisturbed landscape.

The success of the restoration effort would be based on the development of the target vegetation communities relative to undisturbed reference sites. The reference sites should represent intact, native vegetative communities with similar species composition and conditions that occurred prior to impacts. Visual inspections would be conducted to document germination, growth, and survival of seeded species, and growth and survival of transplanted succulents. Data collected would include species composition and cover, general size and vigor of the plants, percent live versus dead plants for succulents, observed soil erosion, evidence of wildlife use, and any other

information that would be useful in evaluating success. The monitoring program would also include photographic documentation at permanent photo locations.

Similar to construction, an estimated total of 96 acre-feet of water would be used for decommissioning activities (Dudek 2022a).

1.3 RUS Purpose and Need

USDA Rural Development is a mission area that includes three Federal agencies: Rural Business Cooperative Service; Rural Housing Service; and RUS. The agencies have an excess of 50 programs that provide financial assistance and a variety of technical and educational assistance to eligible rural and tribal populations, eligible communities, individuals, cooperatives, and other entities with a goal of improving the quality of life, sustainability, infrastructure, economic opportunity, development, and security in rural America. Financial assistance can include direct loans, guaranteed loans, and grants in order to accomplish program objectives.

For the Proposed Action, the Applicant has requested RUS Electric Program loan funds as authorized under the Rural Electrification Act of 1936, as amended. Electric Program loans finance the construction of electric distribution, transmission, and generation facilities, including system improvements and replacement required to furnish and improve electric service in rural areas, as well as demand side management, energy efficiency and conservation programs, and on-grid and off-grid renewable energy systems.

Supporting renewable energy projects, such as Sloughhouse Solar, meets both RUS's goal to support infrastructure development in rural communities and USDA's support for voluntary actions to increase energy independence.

1.4 Sloughhouse Solar Purpose and Need

The purpose of the Proposed Action is to generate and supply renewable solar electric energy to assist the regional utility, SMUD, in achieving SMUD's targets established by the 2030 Zero Net Carbon Plan (Net Zero Plan) and as described in the Integrated Resource Plan (SMUD 2019, SMUD 2021a), and to achieve the other objectives described below. SMUD's 2030 Net Zero Plan (April 2021) describes SMUD's goal of eliminating all carbon emissions from its power supply as soon as possible, but no later than 2030. To meet the standards in the Net Zero Plan, one of the key provisions is SMUD will need to rely on near-term implementation of utility-scale solar projects. The Net Zero Plan states that solar energy has the largest potential for resource development, is the lowest cost proven clean technology available and has potential for local development (SMUD 2021a).

The SMUD 2021 Board Monitoring Report (SMUD Board Report) determined it must procure renewable energy resources to meet or exceed the state's mandate of 33 percent of SMUD's retail sales by 2020, 44 percent by 2024, 52 percent by 2027, and 60 percent of its retail sales by 2030 and thereafter. The SMUD Board Report further states that approximately 90 percent of the new procurement of proven clean technologies will come from solar energy facilities (SMUD 2021b).

The Proposed Action is also proposed to assist SMUD in complying with the State of California's Renewables Portfolio Standards that require at least 60 percent of electricity retail sales to come from renewable sources by 2030. Senate Bill 100, the 100 percent Clean Energy Act of 2017, creates the policy of planning to meet all of California's retail electricity supply with zero greenhouse gas (GHG) emissions sources by 2045. The Applicant has entered into an agreement with SMUD to develop the Proposed Action and provide the energy generated and stored to SMUD. As a result, project implementation would help SMUD meet their renewable energy targets and further support SMUD's attainment of the California 2030 Renewable Portfolio Standards. In addition, the Proposed Action would provide a local supply of solar energy for the Sacramento County region and facilitate implementation of the Sacramento County General Plan goals applicable to renewable energy.

In summary, the Proposed Action would satisfy the following objectives:

- Provide cost-effective commencement of delivery of local utility-scale solar energy to support attainment of SMUD's 2030 Zero Net Carbon Plan targets, and Integrated Resource Plan targets.
- Support SMUD region in attainment of state 2030 Renewable Portfolio Standards.
- Provide a local supply of solar energy for the Sacramento County region to implement the County of Sacramento General Plan applicable to renewable energy.
- Comply with SMUD Integrated Resource Plan siting and size criteria for local utility-scale solar facilities.
- Optimize use of existing electrical distribution and other infrastructure with existing capacity to minimize environmental impacts of new construction.
- Provide local employment and training opportunities for a variety of building trades.

1.5 Public and Agency Involvement

Public involvement is an integral part of the NEPA process. RUS engaged in consultation with Federal agencies during development of the Draft EA. Those agencies are listed in Chapter 6. Additionally, local newspaper advertisements announcing the availability of the EA and participation under Section 106 of the NHPA were published in The Sacramento Bee and Sacramento Observer. A copy of the EA was available for public review at https://www.rd.usda.gov/resources/environmental-studies/assessments. The comment period for the Draft EA is 14 days from publication of the notice of availability.

As part of the site development process, Sacramento County has prepared an Environmental Impact Report for the Proposed Action in compliance with California Environmental Quality Act (CEQA) guidelines. CEQA requires public agencies to consider the effects of their actions on historical resources, unique archaeological resources, and tribal cultural resources. Sacramento County is the lead agency for the CEQA process that includes agency and public scoping separate from the NEPA process.

CHAPTER 2

2.0 ALTERNATIVES EVALUATED INCLUDING THE PROPOSED ACTION

This chapter describes each alternative evaluated for the project (including the Proposed Action and the No Action Alternative), as required by NEPA. These details serve as the basis for the environmental impact assessment presented in Chapter 3.

2.1 Alternative Site Identification Process

Sloughhouse Solar is proposing to construct, operate and decommission a solar generation and energy storage facility on approximately 372 acres (inclusive of solar field, energy storage, substation(s), roads, retention basins, etc.) in Sacramento County, California. The alternative site selection process began with SMUD's regional evaluation of the availability and feasibility of sites to locate utility-scale solar energy facilities necessary to achieve the 2030 Net Zero Plan targets. The SMUD Integrated Resource Plan (April 2019) identified approximately 1,000 MW of utility-scale solar as a potential resource type considered to be available in Sacramento County (SMUD 2019). If developed in high solar resource areas, solar energy generation is among the lowest cost of the various renewable technologies. The Proposed Action Area is located in a high solar resource area (SMUD 2019). The Resources Planning Report documents that suitable land for development of new solar resources within the SMUD service territory is scarce and contributes to limiting the size of any single utility-scale solar installation, as well limiting the overall local capacity potential (SMUD 2019).

Infrastructure requirements (e.g., road access, proximity to transmission facilities), land use, and environmental constraints limit the areas in the county and the SMUD service area where it is feasible to site utility-scale solar energy facilities. The availability of sufficient land to establish a solar energy facility is further limited by the practical and legal need for private solar developers to obtain the agreement of willing landowners. SMUD's identification of potential land available for solar energy generation within the Sacramento area was based on consideration of (1) parcels zoned as industrial or agricultural, (2) parcels located on low-grade agricultural or otherwise disturbed land, (3) parcel sizes sufficient to accommodate a utility-scale solar facility and (4) location within 5 miles of a 69 kV feeder capable of accepting the proposed 50 MW of AC nameplate capacity. The Proposed Action meets all of these criteria, which makes the site a highly desirable and unique site that is available from a willing landowner to construct a utility-scale solar facility.

Sloughhouse Solar initiated a preliminary site review to identify potential locations for development of the solar facility. Potential sites were considered and accepted or eliminated based on the Resources Planning Report (SMUD 2019) and the following specific siting criteria.

Environmental Impact – Site should have relatively flat topography requiring minimal grading. Preferred sites include land that has been and continues to be utilized for agricultural uses and thus provides low habitat suitability for supporting sensitive environmental resources. Feasible sites should be located immediately adjacent to necessary supporting infrastructure including

transmission lines and paved public roads which minimizes the need for offsite construction and disturbance.

Site Suitability – The site must have excellent solar attributes, providing high direct normal irradiance, both because of its elevation and because the climate zone provides hot summers and mild winters, which is also beneficial for solar energy production. Identifying a landowner for suitable lands, who is willing to either sell or lease their land to accommodate the solar project is also essential.

Availability of Infrastructure – The proposed selected site must provide the ability to interconnect into existing SMUD infrastructure immediately adjacent to the site.

General Plan Consistency – State and county policies enacted to reduce the reliance on non-renewable energy are intended to support the development and use of renewable sources of energy, including solar energy. An action taken by Sacramento County to further advance this policy was the passage of a resolution by the county Board of Supervisors to encourage SMUD to consider using renewable sources of energy. The proposed project should be connected directly to the SMUD network, providing a local supply of solar energy for the Sacramento County region that would implement the Sacramento County General Plan policies applicable to renewable energy generation.

Reasonable Site Access – The proposed site must be accessible via suitable transportation infrastructure for the construction, operations, maintenance, and decommissioning of the proposed Project.

Reasonable Period of Time – Achieving SMUD's 2030 net zero goals requires implementation of 1,000 MW of solar capacity by 2025. The proposed site must be suitable to develop and reach operational status by 2025 to achieve SMUD's 2030 Net Zero targets. The Proposed Action is one of four solar projects with power purchase agreements and in a position to achieve the 2025 goal.

2.2 Alternative Site Selection

Early in the site selection process, the Applicant explored alternative locations throughout the Sacramento region that were located adjacent to SMUD infrastructure with capacity for interconnection, with minimal land use and environmental resource constraints, and that minimize environmental impacts using the criteria described above. A suitable site and willing landowner were identified directly adjacent to SMUD infrastructure on previously disturbed lands at the proposed Project Study Area (described in Section 2.3).

More distant sites were not analyzed further. More distant sites not adjacent to SMUD infrastructure would increase project costs. Additionally, these more distant sites would likely increase potential environmental impacts due to the need for a new transmission line route to interconnect the project to SMUD infrastructure. Finally, identification of alternative sites would be difficult to develop and permit on a timeline that meets SMUD's 2030 Net Zero Plan goals. Ultimately, the Applicant does not own or have the ability to easily acquire other sites in the region in order to provide a viable alternative site location.

2.3 Sloughhouse Solar Project Study Area

Following the siting area selection process described above, the Project Study Area shown in Figure 2-1 of 732 acres was initially identified as the most suitable site. The site is owned by a landowner who was willing to execute a lease agreement for their land to construct and operate the Sloughhouse solar facility. The Project Study Area is relatively flat as compared to much of Sacramento County, and in recent years has been used primarily for grazing making it low quality habitat for supporting sensitive environmental resources, except for the presence of vernal pools. The ability to interconnect to SMUD facilities directly adjacent to the Project Study Area would eliminate the need to construct new powerlines to connect to SMUD facilities as compared to more distant parcels. The Project Study Area has excellent solar attributes as it provides high direct normal irradiance, both because of its elevation and because the area climate zone provides hot summers and mild winters, which is also beneficial for solar energy production.

2.4 Sloughhouse Solar Development Area – Proposed Action

As described in Section 1.2.3, as part of the site development process, Sacramento County is in the process of preparing an Environmental Impact Report for the project in compliance with CEQA guidelines. During the CEQA process, Sloughhouse Solar revised the Project Study Area footprint to avoid and minimize impacts to environmental resources. The reduced footprint is the Preferred Alternative for this NEPA evaluation. The Proposed Action is situated on approximately 372 acres within the Project Study Area of 732 acres (Figure 2-2). Figure 1-2 shows the conceptual site layout for the Proposed Action. Table 2-1 shows the Project component acreage for the Proposed Action.

Table 2-1. Proposed Action Project Component Acreage

Project Component	Acreage
Access Road	13.42
Array Footing / Pile	0.46
Battery Energy Storage	1.56
Fenceline	0.46
Outside Work Area	58.77
Overhead Powerline	0.26
Photovoltaic Array	213.50
Photovoltaic Module	78.45
Substation	0.49
Pole Riser	0.02
Road - Water Crossing	0.07
Temporary Construction Yard	4.27
TOTAL	**371.7***

*Rounded to the nearest one-tenth acre.

Figure 2-1. Project Study Area Footprint

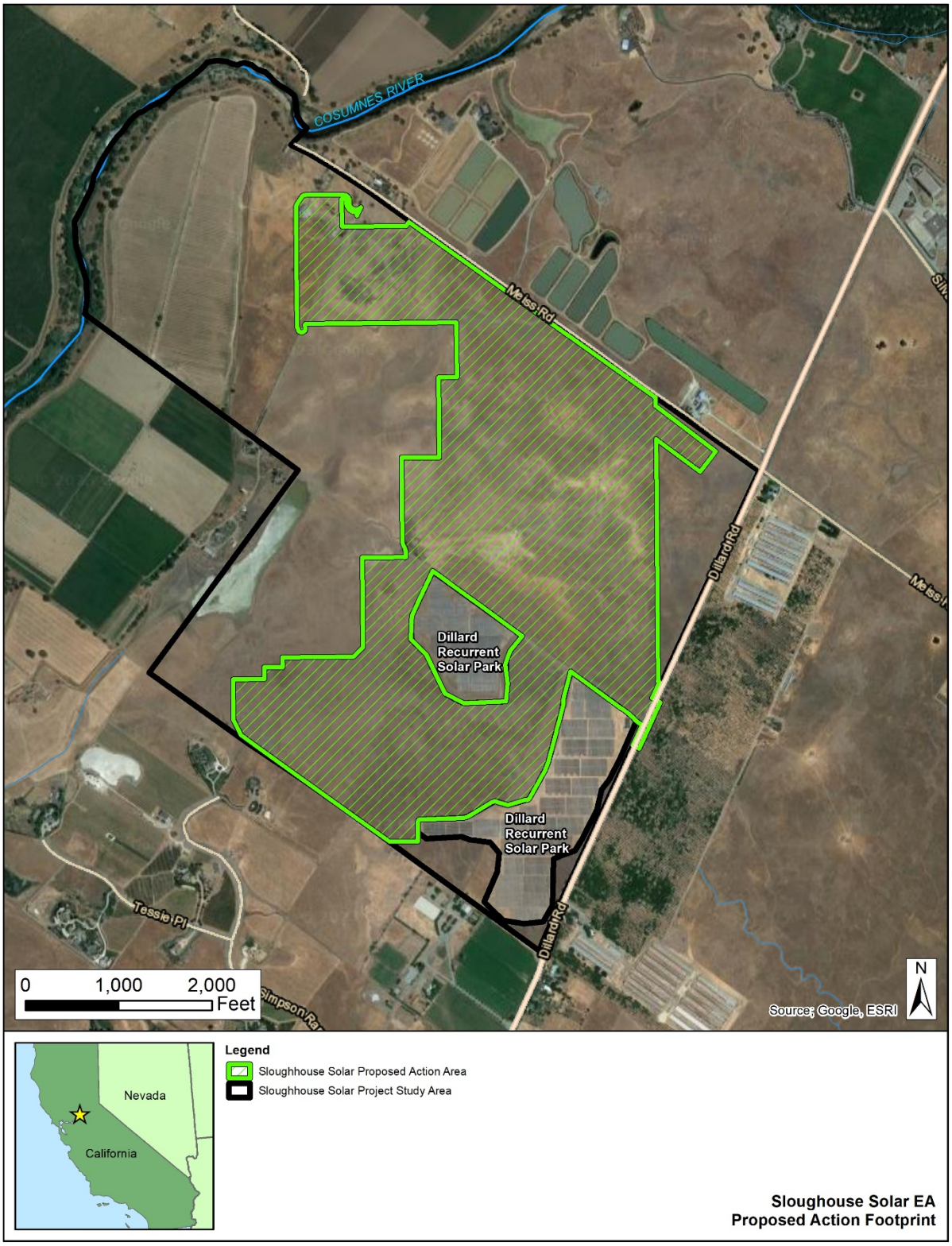

Figure 2-2. Sloughhouse Proposed Action Footprint

2.5 Project Alternatives Considered But Eliminated

2.5.1 Alternative Sites

As described in Section 2.2, more distant sites not adjacent to SMUD infrastructure were dismissed because these locations would increase project costs, would likely increase potential environmental impacts due to the need for a new transmission line route to interconnect the project to SMUD infrastructure, and would not be feasible to develop and permit on a timeline that meets SMUD's 2030 Net Zero Plan goals. Ultimately, the Applicant does not own or have the ability to easily acquire other sites in the region in order to provide a viable alternative site location.

Additionally, as described in Section 2.3, the Applicant also reviewed the larger 732-acre Project Study Area and eliminated portions of the study area to avoid and minimize impacts to environmental resources.

2.5.2 Distributed Power Generation

Distributed Power Generation is an alternative technology option to provide solar generation through rooftop solar installations. Given recent averages for rooftop solar installations, the sheer number of new installations required to deliver up to an additional 50 MW of solar electricity by 2023 render this alternative infeasible from a practical timing perspective. SMUD's Net Zero Plan and Integrated Resource Plan studies document that SMUD will not be able to achieve its near-term renewable energy goals exclusively with rooftop solar.

2.6 No Action Alternative

Under the No Action Alternative, RUS would not provide long-term financing for the project, and the Applicant would seek other funding sources. For the purposes of the No Action analysis, it is assumed the project would not be constructed. This provides a baseline comparison for the impacts analysis in this EA. Assuming the project would not be constructed, Sloughhouse Solar would not execute their lease option on the parcels comprising the Proposed Action Area. Existing conditions would likely remain unchanged (i.e., property would remain as predominantly disturbed agricultural land) and agricultural activities would likely continue. Under the No Action Alternative, there would be no project-related changes to land use, natural resources, or socioeconomics in the immediate future. However, if the project were not constructed, the State of California would not benefit from the project's contribution towards meeting the state and SMUD's renewable energy goals and the opportunity to reduce carbon emissions would be lost.

CHAPTER 3

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

The affected environment is discussed for the Proposed Action shown on Figure 1-2. Environmental consequences are discussed for the disturbance area within the Proposed Action's perimeter fenceline. Coastal resources are not discussed herein since the Proposed Action is not located in a Coastal Zone Management Area and would not affect Coastal Barrier Resource System areas.

Potential effects were evaluated based on the following characteristics and determined on a case-by-case basis for each environmental resource: ***Short-term or long-term*.** These characteristics do not refer to any rigid time period. Short-term impacts would be those that are temporary and short-lived. Long-term impacts would be those that would be more likely to be persistent and chronic.

***Direct or indirect*.** A direct impact would be caused by and occur contemporaneously at or near the location of the action. An indirect impact would be caused by a proposed action and might occur later in time or be farther removed in distance but could still be a reasonably foreseeable outcome of the action.

***Negligible, minor, moderate, or major*.** These relative terms are used to characterize the magnitude or intensity of an impact. Negligible impacts would generally be perceptible but would be at the lower level of detection. A minor impact would be slight, but detectable. A moderate impact would be readily apparent, but less than major. A major impact would be significant; an impact having major unfavorable or undesirable outcomes on the man-made or natural environment.

***Beneficial*.** A beneficial impact would be one having positive outcomes on the man-made or natural environment. A single act might result in major impacts on one environmental resource and beneficial impacts on another resource.

Federal actions such as approval of a RUS guaranteed Federal Financing Bank loan are subject Federal environmental laws and regulations. However, projects also must comply with applicable state and local regulations. The impact analysis addresses federal, state and local requirements where applicable in the various environmental resource sections that follow. Impacts are evaluated based on the more stringent of the regulations where applicable.

3.1 Land Use

This section provides an overview of the existing land use at and surrounding the Proposed Action Area and describes potential impacts to land use associated with the Proposed Action and No Action Alternative. The Proposed Action Area is located in unincorporated Sacramento County generally south of Jackson Highway, southeast of the Cosumnes River, west of Dillard Road, and south of Meiss Road. The site is approximately 3.5 miles to the southwest of the community of Rancho Murieta and approximately 18 miles southeast of the City of Sacramento.

3.1.1 Affected Environment – Land Use

The Proposed Action Area consists of gently rolling topography that slopes to the south and west towards a central drainage feature, which in turn flows into an approximately 16-acre offsite pond. Most of the site has been in use as grazing land since at least the 1930s. Portions of the site have also been used for irrigated pasture and cultivation of alfalfa hay for livestock feed. Seasonal wetlands, vernal pools, and ephemeral drainages are scattered throughout the property. The distance to the Cosumnes River ranges from approximately 150 feet in the northwest corner of the Proposed Action Area, to more than 0.5 miles in the southwest corner.

The Proposed Action Area is designated general agricultural (GA-80) by the Sacramento County General Plan Land Use Element and both project parcels are zoned AG-20 (Sacramento County 2020). The site is surrounded by scattered rural residential, commercial development, and open space generally comprised of annual grassland and agricultural fields. Specifically, a caviar aquaculture farm is located to the north, orchards and a turkey farm are located to the east, and the Consumes River corridor is to the west. Simpson Ranch, which includes nine houses on 20-acre agricultural lots, is located approximately 0.4 miles south of the southern boundary of the Proposed Action Area and is the closest established residential community. Mather Airport is approximately 7.3 miles northwest of the site. There are also two smaller local airports in the vicinity: Rancho Murieta Airport (approximately 3.5 miles to the northeast), and the Sky Way Estates Airport (approximately 4.6 miles to the southwest). Figure 3.1-1 illustrates the National Land Cover Database (NLCD) land cover classification within the Proposed Action Area. Table 3.1-1 provides the acreages for each land cover classification onsite.

Table 3.1-1. National Land Cover Database Classification

NLCD Classification	Acres
Developed - Low Intensity	0.19
Developed - Medium Intensity	0.16
Developed - Open Space	3.38
Herbaceous	356.2
Shrub/Scrub	11.78
Total	**371.7**

Source: NLCD 2019

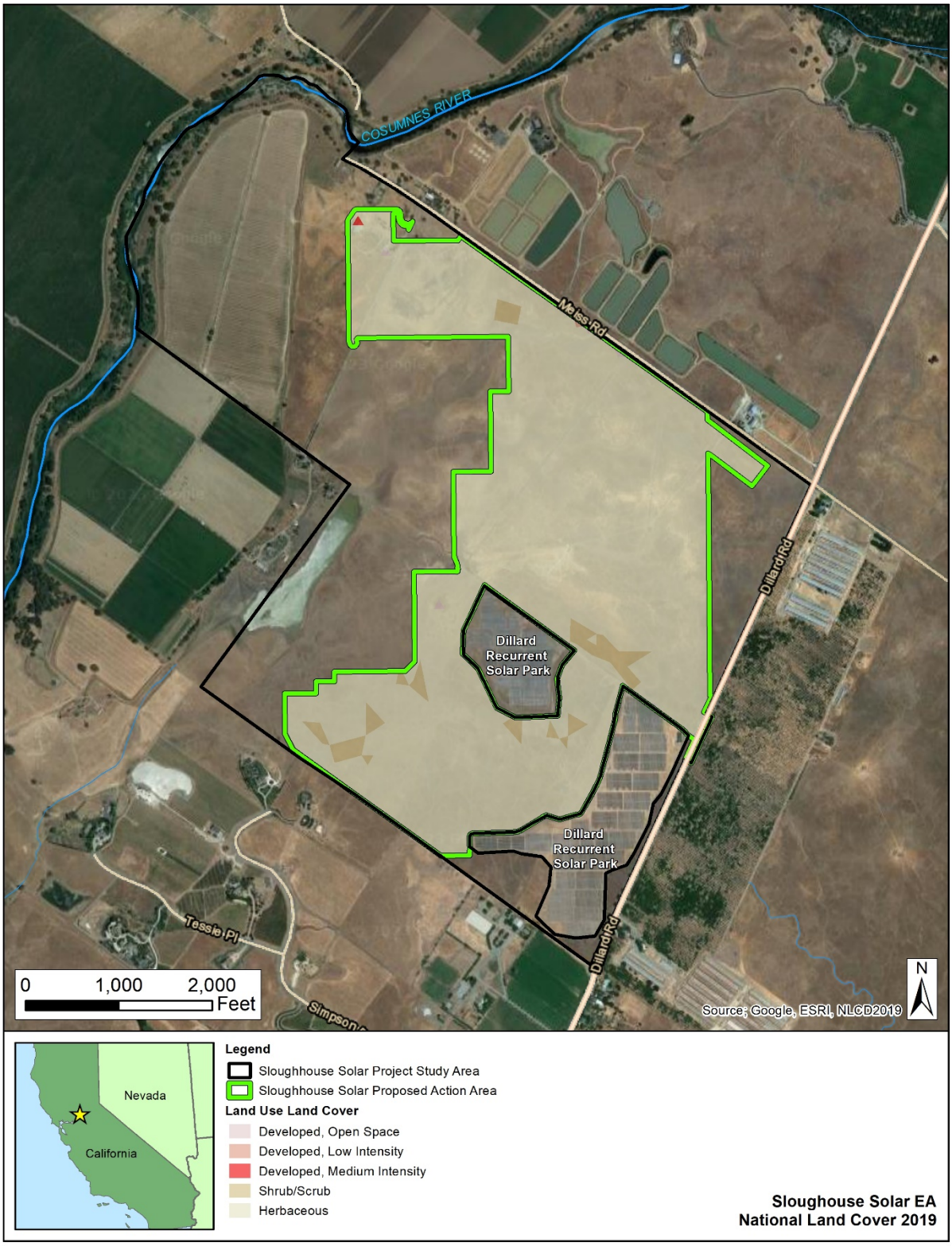

Figure 3.1-1. National Land Cover Database Classification

Farmland

The FPPA (7 U.S.C. Part 4201 *et seq.*) requires federal agencies to consider the adverse effects of their actions on prime or unique farmlands. The purpose of the Act is "to minimize the extent to which Federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses."

Within the 732-acre Project Study Area, the Proposed Action Area is approximately 372 acres. The site includes 24.5 acres of Prime and Unique Farmland and 129.3 acres of Farmland of Statewide or Local Importance (Figure 3.1-2). This represents 0.0493 percent of farmland in the county (Appendix B). The remainder of the site (approximately 218 acres) is designated as Other Land (Dudek 2021). In addition, the northern portion of project parcel APN 126-0110-001, outside of the site, is designated as prime farmland and is actively farmed. Figure 3.1-3 shows the location of farmland of local importance within the site.

3.1.2 Environmental Consequences – Land Use

This section describes the potential impacts to land use should the Proposed Action or No Action Alternative be implemented.

3.1.2.1 Proposed Action

Land Use

The Proposed Action would be constructed, operated, and maintained on a 372-acre site; impacts to land use would be expected on the site. Land use on the Proposed Action Area would continue in grazing uses and grazed by sheep to maintain agricultural and biological resource values on grazing land (e.g. foraging habitat for Swainson's hawks). The Sacramento County agricultural zoning designation for the site allows solar energy land uses. The activities associated with the Proposed Action would not have any indirect effects on land use. All necessary federal, state, and local construction and zoning permits would be obtained prior to construction.

As a small portion of a very large land use category (agricultural) in the vicinity would be temporarily converted to non-agricultural uses. The Proposed Action includes continuation of grazing uses within the area of the solar arrays in accordance with the Agricultural Management Plan. At the end of the project life, the Applicant will decommission the site to restore it to allow for pre-project agricultural uses. The Proposed Action would have an overall negligible adverse impact on land use. Decommissioning of the solar facility would remove aboveground equipment, concrete pads and foundations, pilings, and below ground electrical connections from the site. Some underground utilities may be abandoned in place. Reclamation activities, including breaking up soil in compacted areas, could allow the majority of the site to be returned to agricultural/grazing use after decommissioning.

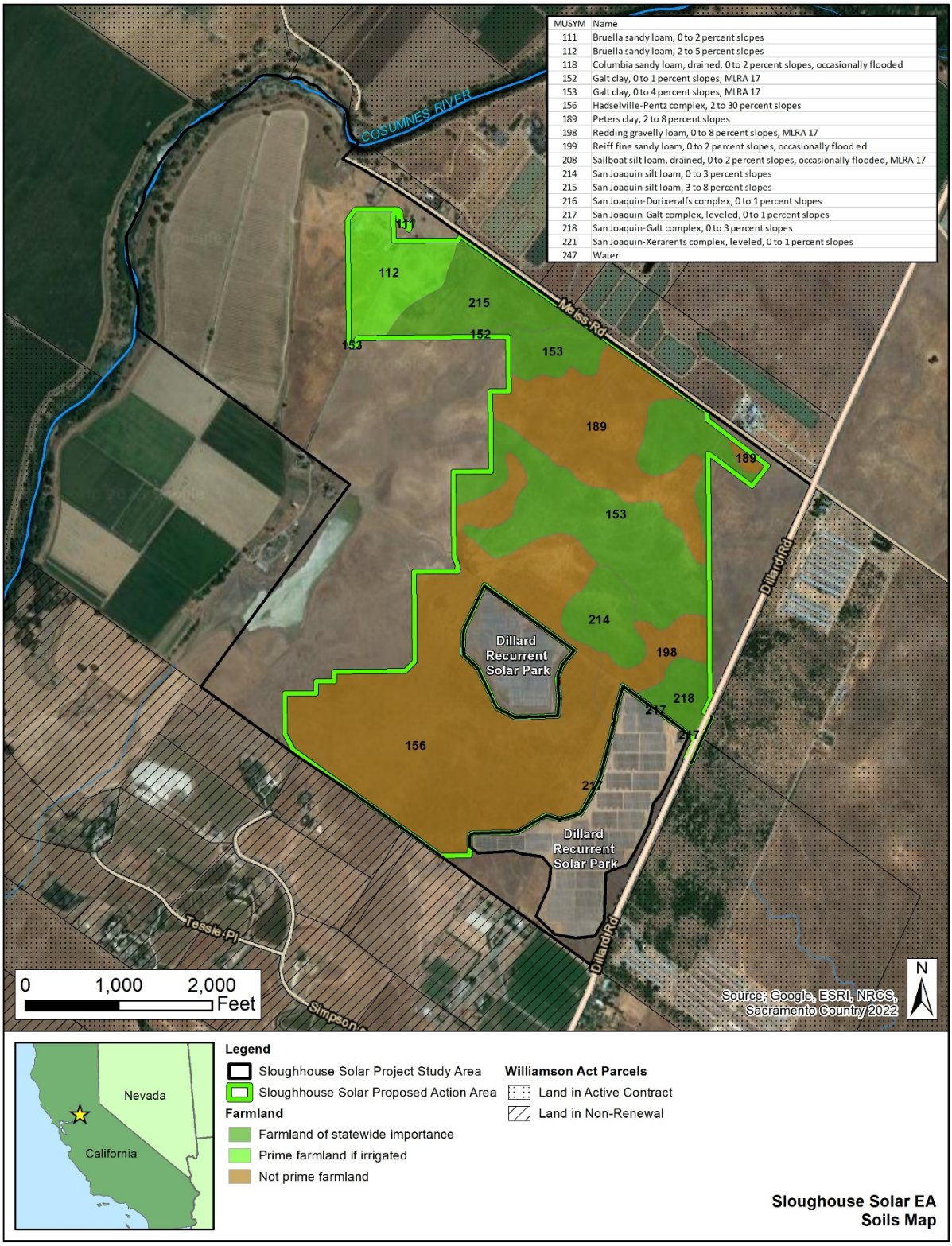

Figure 3.1-2. Soils including Prime Farmland

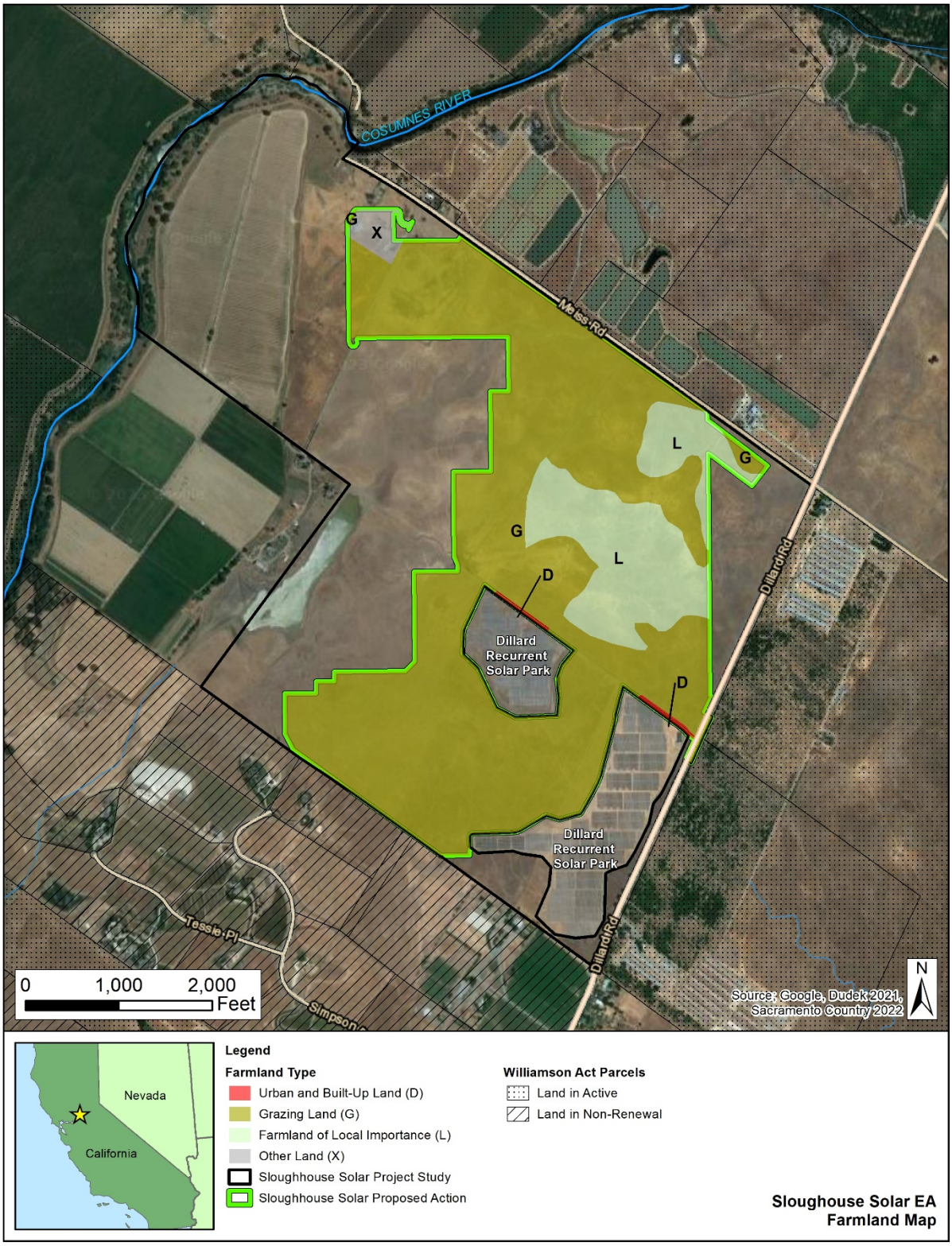

Figure 3.1-3. Soils including Farmland of Local Importance

The surrounding area is largely agricultural and undeveloped with some low-density residential development, which is not likely to change significantly over the next 40 years. It is possible the development of the project could spur additional solar development in the area overtime, should suitable sites be identified. It is assumed such projects would result in similar land use changes. Therefore, the activities associated with the Proposed Action could have a minor indirect effect on land use in the vicinity.

Farmland

For the Proposed Action, approximately 372 acres of existing livestock (cattle) grazing and agricultural land would be converted to new solar generating facilities, but grazing uses would continue on the site during and after the project life. To quantify the potential impacts on prime farmland soils at the site, the Applicant submitted Form AD-1006, Farmland Conversion Impact Rating to initiate consultation with the USDA Natural Resources Conservation Service (NRCS) (Appendix B). Projects with total impact rating scores below the threshold value of 160 do not require further consideration under the FPPA. For projects with scores greater than or equal to 160, the FPPA does not require federal agencies to alter projects to avoid or minimize farmland conversion. However, for such projects, agency personnel are required to consider:

- Use of land that is not farmland or use of existing facilities;
- Alternative sites, locations, and designs that would serve the proposed purpose but convert either fewer acres of farmland or other farmland that has a lower relative value; and
- Special siting requirements of the proposed project and the extent to which an alternative site fails to satisfy the special siting requirements as well as the originally selected site.

The Farmland Conversion Impact Rating for the site is 153. Therefore, no further action is required under the FPPA.

The Agricultural Element of the Sacramento County General Plan and zoning ordinances recognizes that solar facilities are an allowable use in agricultural areas of the county (Sacramento County 2019). The General Plan contemplates that agricultural land outside of the Urban Service Boundary may be converted to solar energy uses to implement other General Plan policies with the solar projects "sited and designed to minimize impacts" (*Id*.) (Sacramento County 2019). The "Energy" Element of the County of Sacramento General Plan includes the goal of Sacramento to reverse the historical trend of increasing per capita consumption of energy; shift toward using a greater share of renewable sources of energy; and shift seasonal and daily peak energy demands to increase the load factor of electrical generating facilities, while maintaining or enhancing the general standard of living, the level of employment, and the quality of the environment (Sacramento County 2017a).

The Agricultural Element of the General Plan includes policies to mitigate effects of solar development on agricultural resources. The AG-5 policy establishes mitigation standards for the effects of conversion of 50 acres or more of certain categories of farmland outside of the Urban Service Boundary. The AG-5 measures include a 1:1 mitigation standard which may be accomplished through "in kind or similar resource value protection" (Sacramento County 2019)

Construction of the Proposed Action would require temporary ground disturbance during installation of project facilities. The electrical substation, battery storage foundations, entrances, and interior access roads (unpaved but with an aggregate base) would result in approximately 15 acres of new impervious surfaces associated with the Proposed Action representing about 4.5 percent of the total Proposed Action Area.

During project operations, the remainder of the Proposed Action Area would be converted to dryland pasture housing a combination of grassland species and non-invasive forbs and maintained for sheep grazing pursuant to the project's *Agricultural Management Plan* (Dudek 2021). Operations and maintenance activities could result in some soil mobilization if they result in ground disturbance or impacts to soils from accidental spills. However, these actions would be localized and intermittent, spills would be addressed immediately in accordance with facility spill plans. Therefore, long-term operational impacts to farmland soils would be negligible.

During decommissioning, equipment and impervious surfaces would be removed and the site would be revegetated to allow for pre-project agricultural uses. Therefore, decommission-related impacts to soils would likely be similar to those described for construction.

For the Proposed Action, no further action is required under the FPPA based on the Farmland Conversion Impact Rating. A small portion of farmland in the vicinity of the Proposed Action Area would be temporarily lost to agricultural/grazing use during the course of the project lifetime. The site would be restored and returned to agricultural/grazing use after decommissioning. The Proposed Action would have an overall negligible adverse impact on prime farmland. Decommissioning of the solar facility would remove aboveground equipment from the site.

3.1.2.2 No Action Alternative

Under the No Action Alternative, RUS would not provide long-term financing for the project, and it is assumed the project would not be constructed. Existing conditions would likely remain unchanged (i.e., property would remain as predominantly-disturbed agricultural/grazing land) and agricultural/grazing activities would likely continue. Therefore, no impacts to land use or prime farmland would be anticipated under the No Action Alternative.

3.1.3 Mitigation – Land Use

Mitigation measures to avoid or minimize adverse impacts to land use include:

- Implementation of the Agricultural Management Plan to allow continuation of grazing during project operation.
- The Applicant would decommission the site to restore it for pre-project agricultural uses at the end of the project life.

3.2 Floodplains

A floodplain is the relatively level land area along a stream or river that is subject to periodic flooding. The area subject to a one-percent chance of flooding in any given year is called the 100-year floodplain. The area subject to a 0.2-percent chance of flooding in any given year is called the 500-year floodplain. It is necessary to evaluate development in the floodplain to ensure that

the Proposed Action is consistent with EO 11988, Floodplain Management and EO 13690, Establishing a Federal Flood Risk Management Standard.

The objective of EO 11988 Floodplain Management is "…to avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative" (EO 11988, Floodplain Management). The EO is not intended to prohibit floodplain development in all cases, but rather to create a consistent government policy against such development under most circumstances. The EO requires that agencies avoid the 100-year floodplain unless there is no practicable alternative. Towards this objective, implementing regulations of the Federal Emergency Management Agency (FEMA), 44 CFR Part 9, include an 8-step decision-making process. The analysis for the Proposed Action is provided in Appendix C. FEMA intends to implement EO 13690 through rulemaking and in 2022 published the Partial Implementation of the Federal Flood Risk Management Standard for Public Assistance (Interim) FEMA Policy 104-22-0003. The FEMA policy "provides elevation requirements for critical and non-critical actions involving structures located in a designated floodplain" (FEMA 2022). "Generating plants and other principal points of utility lines" are considered critical actions in the FEMA policy (FEMA 2022). For critical actions involving new construction in the 100-year floodplain:

A. Applicants must elevate or floodproof the structures to the 500-year flood elevation or an additional 3 feet above the Base Flood Elevation, whichever is higher.

B. For those areas where the 500-year elevation has not been established, applicants must elevate or floodproof the structures an additional 3 feet above the Base Flood Elevation.

3.2.1 Affected Environment – Floodplain

The northwest corner of the Proposed Action Area is within the Cosumnes River/Deer Creek floodplain. As noted above, the Cosumnes River is approximately 150 feet to 0.5 miles north and west of the site, respectively. Deer Creek is approximately 0.5 miles west of the Proposed Action Area. When the Cosumnes River floods, the floodplain spreads primarily to the west, merging with Deer Creek. The floodplain also spreads eastward, but for a shorter distance. Flood control levees are present along both the east and west sides of the Cosumnes River at the Project Study Area and in the Proposed Action vicinity. These levees are privately owned and there is no formal maintenance schedule or maintenance agreement. The most recent FEMA Flood Insurance Rate Map revised in 2018, situates the northwestern portion of the Proposed Action Area, approximately 73 acres, in Zone AE, which is a 100-year flood zone (1 percent annual exceedance probability) where the base flood elevation has been determined (Figure 3.2-1). The remainder of the Project Study Area is designated by FEMA as unshaded Zone X—an area of minimal flood hazard. The Proposed Action Area is not located within a 500-year (2 percent) floodplain as designated by FEMA.

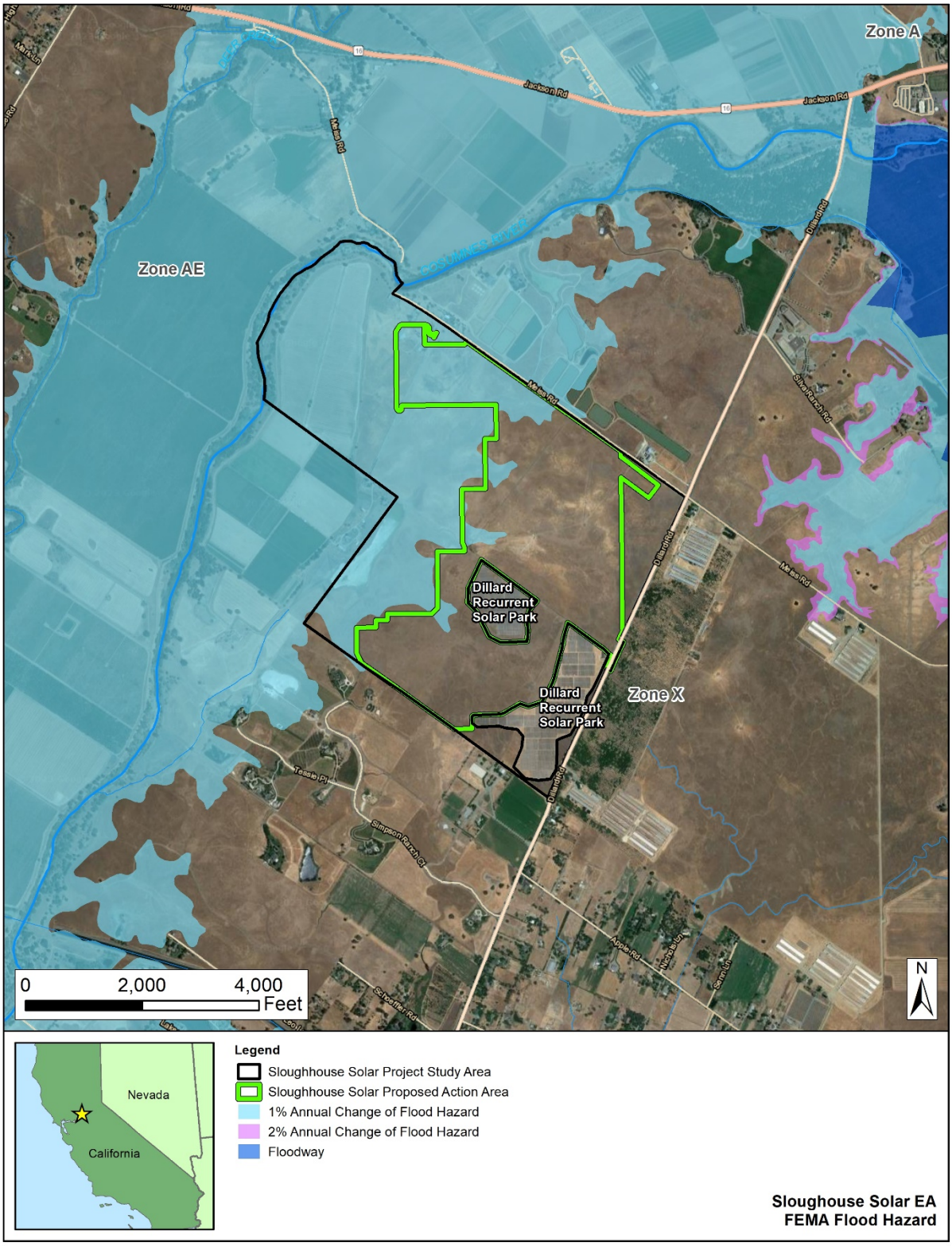

Figure 3.2-1. FEMA Flood Hazard

3.2.2 Environmental Consequences – Floodplain

This section describes the potential impacts to floodplain resources should the Proposed Action or No Action Alternative be implemented.

3.2.2.1 Proposed Action

Required grading of the Proposed Action Area would alter topography and drainage patterns. Proposed structures that would add impermeable surfaces would include the substation, battery storage building, site entrances, interior, unpaved access roads, and PV arrays. Proposed facilities outside the floodplain would include up to 15 acres of new impervious surfaces (approximately 4.5 percent of the Proposed Action Area) thereby increasing the discharge rate of stormwater runoff.

The Proposed Action has been planned to avoid and minimize impacts to sensitive areas. The majority of the proposed facilities would be outside the 100-year floodplain and the Proposed Action Area is outside the 500-year floodplain. The Applicant would comply with the standards set forth in the County's Floodplain Management Ordinance. Hydrologic studies to determine whether the placement of solar panels and fencing would impede or substantially increase flood flows would be performed as part of final design of the facility and prior to the issuance of permits for grading, buildings, or improvement plans. The implementation of appropriate mitigation measures would result in negligible to minor impact on flooding due to floodplain alterations during construction or operations.

Flooding can also be created that may extend beyond the floodplain as a result of seismic activity in the form of seismic seiches. Seismic seiche are standing waves that set up on rivers, reservoirs, ponds, and lakes when seismic waves from an earthquake pass through the area. Because they occur in an enclosed waterbody, standing waves continue to slosh back and forth over a period of time that may range from a few minutes to several hours. Given the long distance from the Project Study Area to active seismic sources, a seismic seiche at the offsite 16-acre pond or the Cosumnes River is unlikely. Therefore, flood hazard impacts associated with seismic seiches would be negligible.

During decommissioning, equipment and impervious surfaces would be removed and the site would be revegetated in a similar manner as during construction. Therefore, floodplain impacts would likely be similar to those described for construction.

3.2.2.2 No Action Alternative

Under the No Action Alternative, RUS would not provide long-term financing for the project and it is assumed the project would not be constructed. Existing conditions would likely remain unchanged (i.e., property would remain as predominantly-disturbed agricultural/grazing land) and agricultural/ grazing activities would likely continue at the site. Therefore, no project-related floodplain impacts would be anticipated under the Proposed Action.

3.2.3 Mitigation – Floodplain

Mitigation measures to avoid or minimize adverse impacts to floodplain include:

- Locating the majority of the proposed structures outside the 100-year floodplain.
- Compliance with the standards set forth in the County's Floodplain Management Ordinance.
- Performance of hydrologic studies to determine whether the placement of solar panels and fencing would impede or substantially increase flood flows. would be performed as part of final design of the facility and prior to the issuance of permits for grading, buildings, or improvement plans.
- Decommissioning and restoration of the project site following the useful life of the facility.

3.3 Wetlands

Wetlands and streams are both considered to be Waters of the United States (WOTUS) and are protected by the CWA (US Congress, 1972, amended 1977). The CWA makes it unlawful to discharge dredged or fill materials into "navigable waters" without a permit (33 U.S.C. S1311(a)). WOTUS are defined as traditional navigable waters, the territorial seas, interstate waters, impoundments of these waters, jurisdictional tributaries to these waters, and jurisdictional adjacent wetlands with a continuous connection or significant nexus to these waters. The USACE, which issues permits for discharge of dredged material or fill into navigable waters, interprets WOTUS to include not only traditionally navigable waters, but tributaries of such waters and wetlands "adjacent" to such waters and tributaries. "Adjacent" is defined as wetlands "bordering, contiguous [to] or neighboring" WOTUS even when they are "separated from [such] waters…by man-made dikes…and the like." Currently, the USACE determines jurisdiction of tributaries and adjacent wetlands based on existence of a "significant nexus" to waters that are navigable or could reasonably be so made.

Wetlands are defined by the USACE as those areas that are inundated or saturated by surface or groundwater at a frequency or duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. An area is a wetland if it meets the wetland hydrology, hydrophytic vegetation, and hydric soil criteria established in the 1987 USACE Wetland Delineation Manual (USACE 1987). USACE provides regulatory oversight for jurisdictional wetlands and USFWS holds oversight of non-jurisdictional wetlands.

Wetlands and other waters within the Project Study Area were delineated in October and November 2020; and March 2021 to identify features that may be potentially subject to agency jurisdiction pursuant to regulations in Section 401 and 404 of the CWA, Porter-Cologne Act, California Fish and Game Code section 1602, and CEQA Guidelines. Wetlands and other waters were delineated using methodology described in USACE's Wetlands Delineation Manual (USACE 1987) and the Regional Supplement for the Arid West Region (USACE 2008a). Non-wetland WOTUS and/or state waters were delineated based on the presence of an ordinary high water mark (OHWM), as determined using the methodology in the OHWM Field Guide for the Arid West

Region (USACE 2008b). Wetlands and other waters were recorded and mapped in the field using a global positioning system (GPS) with sub-meter accuracy. On June 9, 2021, the final delineation report (Appendix C) and a formal request for an Approved Jurisdictional Delineation was submitted to USACE, Sacramento District, to definitively determine and approve the extent of WOTUS.

Executive Order 11990 Wetlands Protection requires federal agencies to take action to minimize the destruction, loss, or degradation of wetlands and to provide opportunity for early public review for any proposals for new construction in wetlands. To meet these requirements as provided by 24 CFR Part 55.20, the Eight Step Decision-Making Process for Alternatives Consideration has been documented for the Proposed Action and the analysis is provided in Appendix C.

3.3.1 Affected Environment – Wetlands

Eight wetland and non-wetland water feature types were documented within the Proposed Action Area including ditch, ephemeral drainage, intermittent drainage, seasonal wetland, seasonal wetland swale, pond, upland swale, and vernal pool (Table 3.3-1, Figure 3.3-1). These features total approximately 5.85 acres (9,261 linear feet) of wetlands and non-wetland waters that were identified within the Proposed Action Area, comprising 1.6 percent of the total land cover with the Proposed Action Area. Specifically, the preliminary jurisdictional delineation identified 3.72 acres as potentially jurisdictional wetland features in the Proposed Action Area. The remaining 2.13 acres (9,261 linear feet) were identified as potentially jurisdictional non-wetland waters (Dudek 2022b). Wetlands and non-wetland waters that have the potential to be jurisdictional WOTUS present in the Proposed Action Area are summarized by type in Table 3.3-1.

Table 3.3-1. Wetlands and Other Waters Within the Proposed Action Area

Feature Type	Acres	Linear Feet
Pond	0.37	---
Freshwater Wetland	0	---
Seasonal Wetland	3.10	---
Vernal Pool	0.25	---
Total Wetlands	**3.72**	**---**
Ditch	0.15	720
Ephemeral Drainage	0.74	2,439
Intermittent Drainage	0.46	1,304
Seasonal Wetland Swale	0.70	3,874
Perennial Drainage	0	0
Upland Swale	0.08	924
Total Non-Wetland Waters	**2.13**	**9,261**

Source: SSLLC 2022c

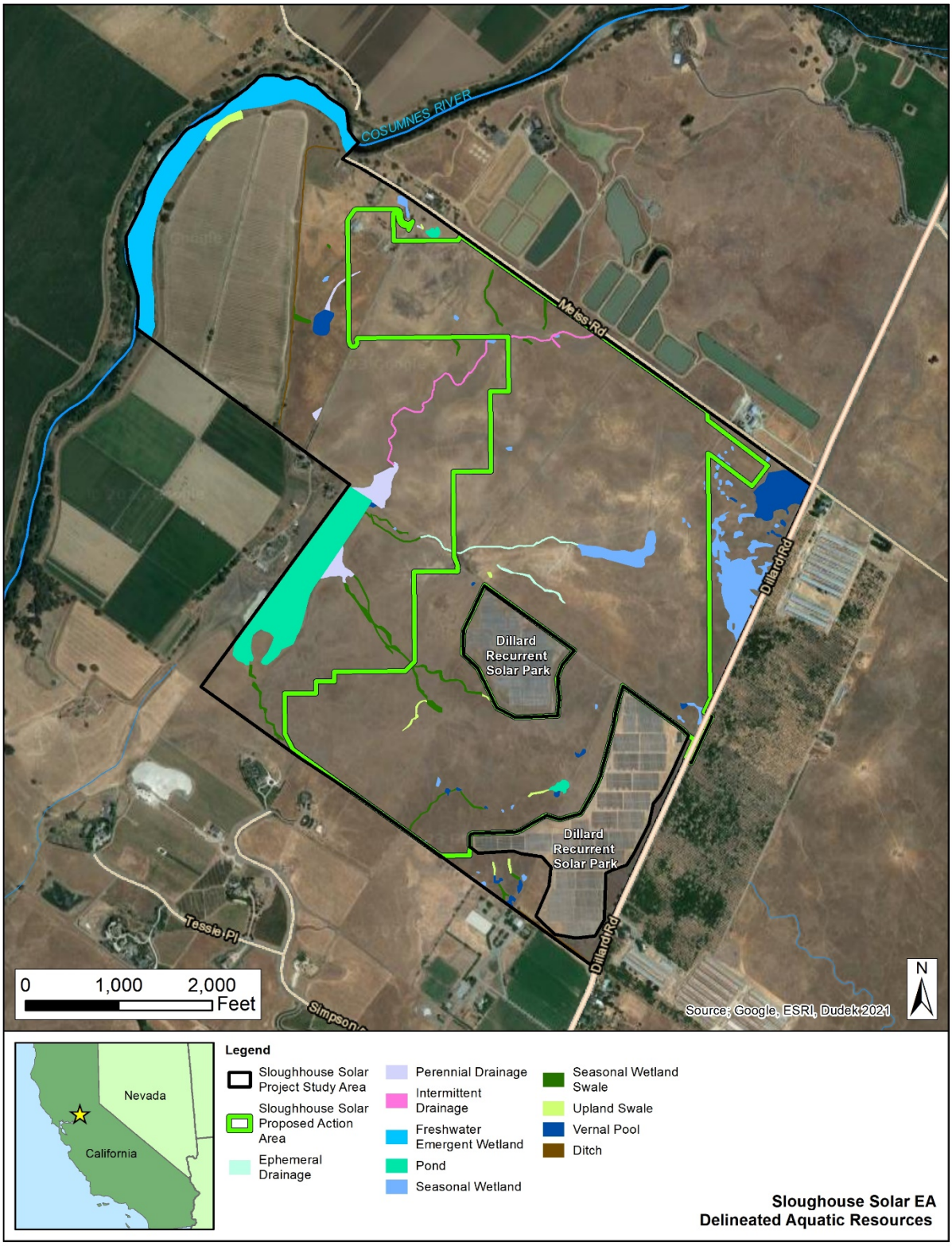

Figure 3.3-1. Delineated Wetland and Other Waters

3.3.2 Environmental Consequences – Wetlands

This section describes the potential impacts to jurisdictional wetlands and non-wetland waters should the Proposed Action or No Action Alternative be implemented.

3.3.2.1 Proposed Action

The Eight Step Decision-Making Process for Alternatives Consideration provided in Appendix C summarizes the process RUS engaged in to ensure the destruction, loss, or degradation of wetlands was minimized to the extent practicable.

The location of the Proposed Action Area has been planned to avoid and minimize impacts to wetlands to the extent possible. No practicable action alternatives other than the Proposed Action were identified as described in Section 2.5. The Project Area was decreased from the original area (Project Study Area) by more than 50 percent thereby avoiding impacting more wetlands. The Proposed Action is the most practicable alternative based on the proximity of the proposed facility to SMUD infrastructure and willing landowners to support the project.

Potential impacts to wetlands and other waters from construction would include habitat loss and changes to water quality. It is conservatively assumed that the 0.08 acres (1.4 percent) of wetlands that would host the solar array infrastructure would be directly impacted from fill, and 3.17 acres of wetland would be temporarily and indirectly impacted during construction.

Temporary indirect impacts to wetlands and other waters could result from shading and changes to water quality from construction runoff from the Proposed Action. Impacts would be similar to those described for surface water resources in Section 3.4.2.1. During construction, runoff from disturbed areas may be washed into adjacent downstream waters during rainstorm events, thereby adversely impacting surface water quality at the Proposed Action Area and immediately down-gradient. The site grading plan would be designed to impact the least amount of soil feasible. Increased turbidity and localized sedimentation may occur from the runoff. Surface water quality impacts during construction would be short-term and minor and would not significantly alter long-term water quality conditions in wetlands. Throughout the Proposed Action Area, best management practices (BMPs) would be implemented in order to minimize soil disturbance and sediment deposition from stormwater runoff. BMPs would prevent or minimize direct and indirect impacts to water quality as well as wetlands and other waters. In reality, temporary construction activities would affect only those wetlands and other waters within the direct alignment of the solar support posts, and it is unlikely that construction equipment would impact the entirety of the resource area during installation activities.

Short-term, temporary impacts could also occur during operations, maintenance, and decommissioning. Impacts during operations and maintenance would be associated with activities such as washing of panels, vegetation management, and facility repairs and would be intermittent and localized. Use of BMPs during these activities would avoid impacts to wetlands to the extent possible. Impacts during decommissioning would be similar to those described previously for construction.

Permanent impacts to wetlands and other jurisdictional waters that cannot be avoided would be permitted by the USACE. It is assumed that the project would be permitted under a nationwide permit and would be subject to required compensatory mitigation. Potential compensatory mitigation could include the purchase of mitigation credits from an approved wetland mitigation bank, paying an in-lieu fee, or developing conservation land (see Appendix C for Aquatic Resources Delineation Report). The project also would be subject to compliance with state and local agencies with permitting jurisdiction.

Mitigation measures for construction and operation would offset resource loss and result in a negligible to minor impact on wetlands and other waters.

3.3.2.2 No Action Alternative

Under the No Action Alternative, RUS would not provide long-term financing for the project, and it is anticipated the project would not be constructed. Existing conditions would likely remain unchanged (i.e., property would remain as predominantly-disturbed agricultural land) and agricultural activities would likely continue. Therefore, no project-related wetland impacts would be anticipated.

3.3.3 Mitigation – Wetlands

Mitigation measures to avoid or minimize adverse impacts to jurisdictional wetlands and other waters include:

- Design site layout to avoid wetlands and other waters to the extent practicable.
- Implement BMPs to minimize soil disturbance and sediment deposition from stormwater runoff.
- Restore temporary impacts to aquatic resource buffers to the extent practicable.
- Obtain USACE permit with associated conditions to minimize adverse impacts to wetlands and other waters.
- Provide required compensatory mitigation through the purchase of mitigation credits from an approved wetland mitigation bank, paying an in-lieu fee, or developing conservation land as necessary, should it be required as a result of USACE wetland delineation.
- Comply with state and local agency requirements with permitting jurisdiction for wetlands and other waters.

3.4 Water Resources

This section describes an overview of existing water resources within the Proposed Action Area and the potential impacts on groundwater and surface water associated with the Proposed Action and No Action Alternative.

3.4.1 Affected Environment – Water Resources

3.4.1.1 Groundwater

Groundwater Basin

A groundwater basin is defined as a hydrogeologic unit containing one large aquifer or several connected and interrelated aquifers. The Proposed Action Area is located in the San Joaquin Valley Groundwater Basin, Cosumnes Subbasin (DWR Basin No. 5-022.16). The Cosumnes Subbasin is bounded on the north and west by the Cosumnes River, on the south by the Mokelumne River, and on the east by consolidated bedrock of the Sierra Nevada Mountain range. Groundwater in the Cosumnes Subbasin is contained within aquifers in three principal geologic formations: (1) recent (Holocene-age) Stream Channel and Floodplain Deposits; (2) Plio-Pleistocene-age Laguna, Riverbank, and Modesto Formations; and (3) the Miocene-age Mehrten Formation (DWR 2006). Aquifers in the Project Action Area are not sole source aquifers (EPA 2015, EPA 2023).

Groundwater Quality and Subsidence

Limited groundwater quality data is available for the Cosumnes Subbasin. After obtaining the publicly available groundwater quality datasets and performing a statistical analysis, EKI Environment & Water (EKI) found that arsenic and nitrate are the only two constituents of concern in the Cosumnes Subbasin (EKI 2021). EKI found that most well samples exceeded the primary or secondary drinking water maximum contaminant levels, and statistically significant upward trends were found at monitoring wells that do not provide water for beneficial use located at sites regulated by the Central Valley Regional Water Quality Control Board (RWQCB) around the City of Galt (EKI 2021). There are also three point-source sites in the City of Galt and one site in the City of Ione where there is existing groundwater contamination from previous land uses. There are no records of impaired groundwater quality in the Project vicinity. In summary, groundwater within the Cosumnes Subbasin is generally considered to be of good quality.

Land subsidence from groundwater withdrawal has not historically represented a hazard in the Cosumnes Subbasin. Measured subsidence from 2015 through 2020 was approximately 0.05 feet during this 6-year period (EKI 2021), indicating that subsidence from groundwater withdrawal does not represent a hazard.

3.4.1.2 Surface Water

Surface Water Resources

The Proposed Action region has a mild Mediterranean climate, with hot, dry summers and cool, wet winters. Most of the precipitation falls during the winter months, from November to April. The site is located in the San Joaquin River Hydrologic Region, in the Upper Cosumnes River Watershed, which drains approximately 180 square miles of land in El Dorado, Amador, and Sacramento Counties. The Cosumnes River is approximately 150 feet north of the northwestern corner of the Proposed Action Area. In the site's southern part, the Cosumnes River is over 0.5 miles west of the Proposed Action Area. From State Route (SR) 16 north of the site, the Cosumnes River drains to the southwest, eventually flowing under SR 99 into the Cosumnes

River Preserve. The Cosumnes River drains southwest through the Preserve to Mokelumne City, where it joins with the Mokelumne River and enters the Sacramento–San Joaquin Delta.

The Proposed Action Area is gently rolling; elevations in the proposed development area range from approximately 103 to 146 feet above mean sea level (amsl). Most of the surface drainage in the Proposed Action Area flows west and south off the site into an approximately 16-acre pond. As described in detail in Section 3.4 of the Aquatic Resources Delineation Report for the Sloughhouse Solar Project, there are a variety of surface waters features at the site, including small ponds, intermittent drainages, freshwater emergent wetland, seasonal wetlands, vernal pools, ephemeral drainages, seasonal wetland swales, and upland swales (Dudek 2022b). Most of these onsite surface water features drain to the offsite 16-acre pond. The 16-acre pond does not have a defined drainage inlet or outlet (although there are several culverts that convey some of the drainage inflows), and the pond does not appear to discharge to other water bodies either on or off the Proposed Action Area.

There is no developed stormwater drainage system on the Proposed Action Area. Overland sheet flow carries stormwater generally towards the southwest.

Surface Water Quality

Section 303(d) of the Federal CWA requires each state to periodically prepare a list of all surface waters in the state for which beneficial uses of the water are impaired by pollutants. Beneficial uses for waters in the Proposed Action region are contained in the Water Quality Control Plan for the Sacramento-San Joaquin River Basins (Basin Plan), adopted by the RWQCB in 2018 (Central Valley RWQCB 2018). Designated beneficial uses for the Cosumnes River (from the source to the Delta) consist of: municipal and domestic water supply, agricultural irrigation, agricultural stock watering, water-contact recreation, canoeing and rafting, other non-contact recreation, warm and cold freshwater habitat, warm and cold habitat for migration of aquatic organisms, warm and cold fish spawning habitat, and wildlife habitat (Central Valley RWQCB 2018). The Basin Plan also provides water quality objectives and standards for waters of the Sacramento River and San Joaquin River basins, including the Delta.

Section 303(d) of the CWA also requires states to identify waters where the permit standards, any other enforceable limits, or adopted water quality standards are still unattained. The law requires states to develop Total Maximum Daily Loads (TMDLs) to improve the water quality of impaired water bodies. TMDLs are the quantities of pollutants that can be safely assimilated by a water body without violating water quality standards. TMDLs are developed for impaired water bodies to maintain beneficial uses, achieve water quality objectives, and reduce the potential for future water quality degradation. National Pollutant Discharge Elimination System (NPDES) permits for water discharges (for construction and operation) must consider the pollutants for which a water body is listed as impaired. The Cosumnes River is listed as an impaired water body on the California CWA Section 303(d) list for indicator bacteria, invasive species, and toxicity; TMDL criteria are still being developed.

Erosion and Runoff Potential

Most soils can be categorized into hydrologic soil groups (which apply only to surface soil layers) based on runoff-producing characteristics. Hydrologic soil groups are factored into calculations of erosion potential when drainage plans are prepared. Based on a review of NRCS 2021 soil data, all of the Proposed Action Area soils are classified as hydrologic Groups D and C, which consist of soils with a very high and high stormwater runoff potential, respectively (NRCS 2022).

3.4.2 Environmental Consequences – Water Resources

This section describes the potential impacts to water resources should the Proposed Action or No Action Alternative be implemented.

3.4.2.1 Proposed Action

Groundwater

California Senate Bill 100 requires Water Supply Assessment (WSA) for development projects such as the Proposed Action (industrial projects greater than 40 acres in size and not within the service area of a public water system). Dudek conducted a WSA which examined the availability of groundwater supplies for the project under a normal-year, single-dry-year, and multiple-dry-year conditions over the projected 35-year life of the project. The WSA considered the water needs as well as other existing and planned future uses of the water supply. During construction, the project would utilize approximately 96 acre-feet of groundwater. Once the solar facility becomes operational, approximately 2-acre feet of groundwater would be utilized per year for washing the panels; however, Dudek evaluated the use of up to 7.6-acre feet per year (Dudek 2022a).

Dudek found that there is a sufficient groundwater supply to serve the Proposed Action over its lifetime with minor impacts to groundwater resources, groundwater-dependent ecosystems, adjacent groundwater wells, or land subsidence in the vicinity. Dudek determined the maximum groundwater storage reduction over the life of the project would be 445-acre feet, which is less than 5 percent of the groundwater volume underlying the project. The maximum drawdown would be approximately 4.5 inches and would occur during construction and decommissioning close to the groundwater well. Total drawdown would not be expected to exceed 1 foot near the well or within 1 mile of the well. Because the groundwater level beneath the site is approximately 150 feet below surface, the anticipated drawdown would not risk disconnection of surface water and groundwater. There is little evidence of historical land subsidence in the Proposed Action vicinity and the minimal drawdown would not be expected to contribute new subsidence effects. The estimated amortized water demand for the project is 0.01 percent of the estimated sustainable yield and 0.15 percent of the estimated Consumnes Subbasin overdraft. Therefore, overall, there would be a minor impact with regard to groundwater storage reduction, drawdown, subsidence, and yield (Dudek 2022a).

Surface Water

The project operation would result in approximately 15 acres of new impervious surfaces, which represents 4 percent of the total Proposed Action Area. In Sacramento County, project applicants

are required to comply with the Stormwater Quality Design Manual (SSQP 2021). Projects must implement BMPs during project operation to reduce post-construction impacts to water quality. Long-term water quality impacts must be reduced using site design and source control measures to help keep pollutants out of stormwater. In addition, industrial facilities require appropriate NPDES permits/water discharge requirements, and implementation of BMPs consistent with the California Stormwater Quality Association (CASQA) *Industrial/Commercial BMP Handbook* (CASQA 2019) or its equivalent, including annual reporting of any structural control measures and treatment systems. Finally, spring sheep grazing during project operation would be conducted in accordance with the project's Agricultural Management Plan (Dudek 2021) and in compliance with ongoing SWRCB and Central Valley RWQCB requirements to protect water quality from nonpoint source agricultural discharges.

Compliance with the regulatory controls discussed above, which include implementation of a SWPPP with site-specific BMPs, stormwater controls in the CASQA *Industrial/Commercial BMP Handbook*, Sacramento County Municipal Code requirements, the Sacramento Stormwater Quality Partnership's *Stormwater Quality Design Manual*, and the project's Agricultural Management Plan, would appropriately control erosion and sedimentation from alteration of drainages and the addition of new impervious surfaces at the Proposed Action Area. Therefore, construction-related short-term impacts and operations-related long-term impacts would both be minor**.**

In addition, the Proposed Action must comply with the requirements of the Sacramento County General Plan, which contains policies designed to protect water quality. With adherence to these requirements, construction and operation of the project would not violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality. Implementation and adherence to BMPs and other measures would therefore, result in short-term negligible impacts to surface water during construction, and long-term negligible impacts to surface water and groundwater during operations.

3.4.2.2 No Action Alternative

Under the No Action Alternative, RUS would not provide long-term financing for the project, and it is assumed the project would not be constructed. Existing conditions would likely remain unchanged (i.e., property would remain as predominantly disturbed agricultural land) and agricultural activities would likely continue. There would be no project-related changes to water resources. Therefore, no impacts to surface water or groundwater would be anticipated under the No Action Alternative.

3.4.3 Mitigation – Water Resources

Mitigation measures to avoid or minimize adverse impacts to water resources include:

- Preparation and implementation of a SWPPP with associated BMPs to protect water quality.
- Site design and source control measures for stormwater pollutants to reduce long-term water quality impacts.

- Adherence to appropriate NPDES permits/water discharge requirements.
- Implementation of operation-related low impact development technologies, BMPs, and pollutant source control measures, along with preparation of a SWPPP with associated BMPs designed to control construction-related erosion and pollutants.

3.5 Biological Resources

This section provides an overview of existing biological resources within the Sloughhouse Solar Project Study Area and the potential impacts to biological resources that would be associated with the Proposed Action and No Action Alternatives. The biological resources that have been analyzed below are vegetation and habitat; wildlife; and rare, threatened, and endangered species.

Biological resources are regulated by a number of Federal, state, and local laws and regulations. Federal laws relevant to biological resources in the vicinity of the Proposed Action include:

- NEPA (42 U.S.C. 4321 *et seq*.)
- ESA (16 U.S.C. 1531 *et seq*.)
- Migratory Bird Treaty Act (MBTA) (16 U.S.C. 703 *et seq*.)
- Bald and Golden Eagle Protection Act
- Invasive Species, Executive Order 13112.

3.5.1 Affected Environment – Biological Resources

The existing biological resources at the Project Study Area include vegetation, wildlife, and rare, threatened, or endangered species. Field surveys and desktop analysis for biological resources were conducted early in the project design process, during evaluation of the approximately 732 acre Project Study Area to allow flexibility in design to avoid biological and aquatic resources the extent feasible. The Project Study Area (732 acres) fully encompasses the smaller Proposed Action Area (372 acres).

3.5.1.1 Vegetation and Habitat

The Project Study Area is located within the Upper Cosumnes River watershed in Sacramento County at the eastern edge of the Central Valley. The Project Study Area is located within the southeastern Sacramento Valley vernal pool region, and is situated between the Mather Core Recovery Area (just over 1 mile to the northwest), and the Cosumnes/Rancho Seco Core Recovery Area (less than 0.5 mile to the southeast) (USFWS 2005). The Project Study Area is surrounded by rural residential development, commercial development, existing solar arrays, and open space generally comprised of annual grassland and agricultural fields. Specifically, the Simpson Ranch development is to the south, a caviar aquaculture farm is to the north, orchards and a turkey farm are to the east, and the Consumes River corridor is to the west/northwest. The Project Study Area is primarily used for livestock grazing or other agricultural uses, and there is an existing solar facility within the southeast vicinity of the Project Study Area.

The vegetation communities and land cover within the Project Study Area were mapped using the California Fire Resources Assessment Program (FRAP) vegetation community and land cover

data (FRAP 2019). FRAP vegetation communities and land cover types occurring within the Project Study Area include agricultural, California annual grassland, low density development, mixed riparian forest, urban, valley foothill riparian, and valley grassland. A total of 75 species of native or naturalized plants—34 native (45 percent) and 41 non-natives (55 percent)—were recorded in the Project Study Area during the field delineation (Appendix D-1).

A tree inventory of the site conducted in February and December 2020 found no trees within the Proposed Action Area that are protected by the Sacramento County Tree Preservation Ordinance. The predominant tree present was tree of heaven (*Ailanthus altissima*), an invasive exotic species.

Vegetation and land cover types for the Project Study Area are shown in Figure 3.5-1 and summarized in Table 3.5-1 for the Project Study Area. Plant species observed during the survey are listed in Appendix D-1.

Table 3.5-1. Vegetation Communities and Land Cover Types

Vegetation Community/Land Cover Type	Acres
California Annual Grassland	286.3
Agricultural	84.77
Deciduous Orchard	0.64
Total	**371.71**

Thirty plant families were observed. Grass (18 species) and sunflower (12 species) were the most abundant families observed. The remainder of the families were comprised of one to four species (Appendix D-1).

California annual grassland (286.3 acres; approximately 77 acres) is the dominant vegetation community present within the Proposed Action Area. Dominant species in this community include soft brome (*Bromus hordeaceus*), medusa head (*Elymus caput-medusae*), and narrow tarweed (*Holocarpha virgata*). The shrub and tree layers are absent from this vegetation community. Numerous aquatic features such as vernal pools, other wetlands, and drainages occur throughout the grassland. Low density development land cover, 6.84 acres within the Proposed Action Area, consists of relatively sparse built environments such as residential and farm structures. Urban land cover, 1.96 acres within the Proposed Action Area, consists of developed areas and infrastructure.

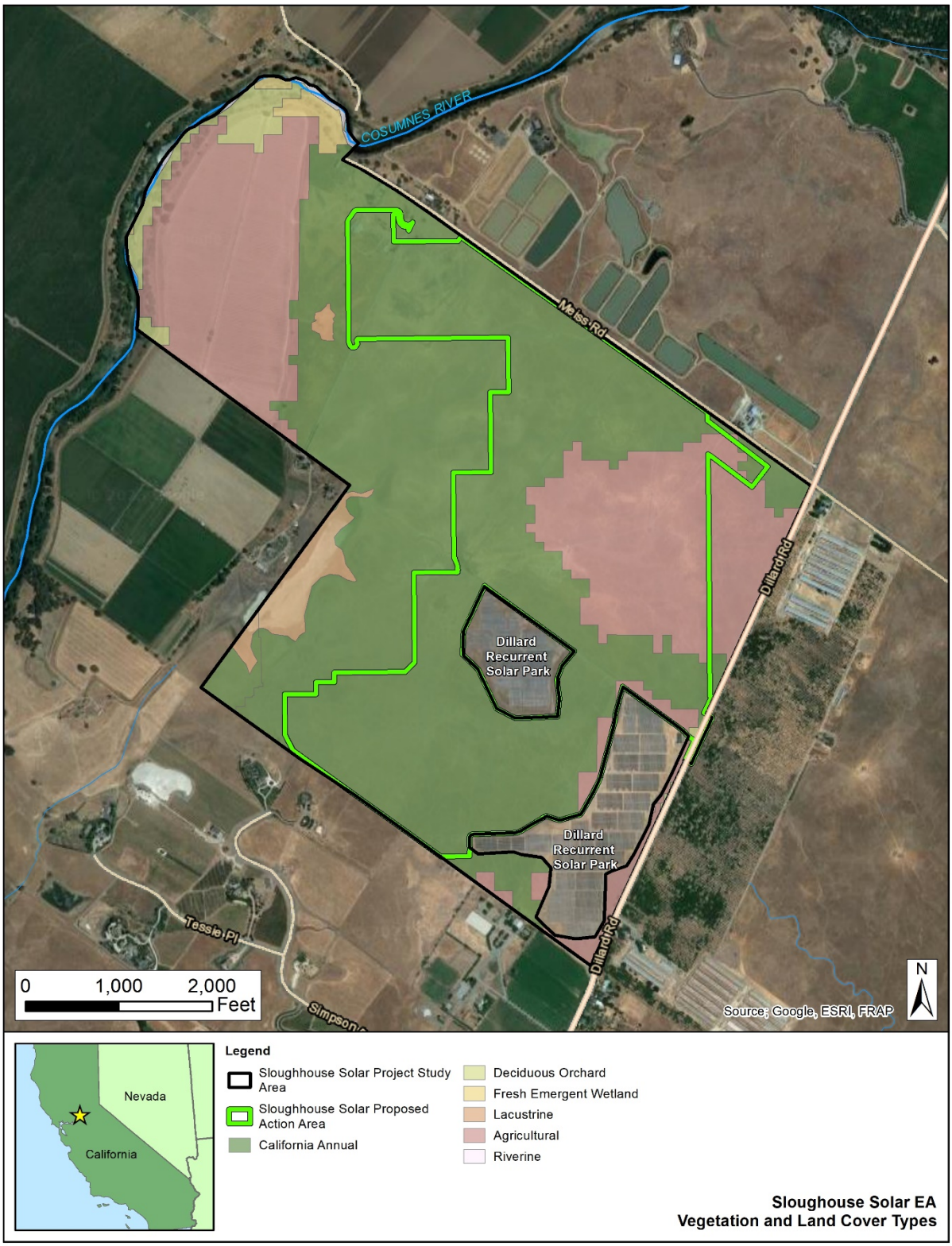

Figure 3.5-1. Vegetation and Cover Types

Executive Order 13112 - Invasive Species, requires Federal agencies to not authorize, fund, or carry out actions that are believed to likely cause or promote the introduction or spread of invasive species in the US; and that all feasible and prudent measures to minimize risk or harm be taken in conjunction with the actions. Invasive species are alien species whose introduction does or is likely to cause economic and environmental harm or harm to human health. Non-native invasive plant species can spread into and persist in native plant communities and displace native plant species, posing a threat to the integrity of the natural plant communities.

Introduced annual grasses include wild oats (*Avena fatua*), soft chess (*Bromus hordeaceus*), ripgut brome (*B. diandrus*), red brome (*B. rubens*), wild barley (*Hordeum vulgare* spp. *spontaneum*) (Kie 2005). California grasslands currently are dominated by exotic Mediterranean annual grasses and subjected to livestock grazing (HilleRisLambers et al. 2010). Displacement of native annual grasses by Mediterranean annual grasses in California may largely have been driven by cattle grazing. Exotic Mediterranean grasses include: *Avena barbata*, soft chess, foxtail barley (*Hordeum murinum)*, and goldentop (*Lamarckia aurea)*. The first three exotic grass species were observed in the Project Study Area. Twelve other non-native grass species also were observed in the Project Study Area (Appendix D-1), and there were 26 other non-native plant species.

3.5.1.2 Wildlife

During field studies in the Project Study Area, 38 native (95 percent) and two introduced species (5 percent) were determined to be present. A summary of the wildlife species observed is shown in Table 3.5-2. A compendium of observed wildlife species identified during the field surveys is included as Appendix D-2.

Table 3.5-2. Summary of Wildlife Species Observed in the Project Study Area

Wildlife Group	Number of Species Observed
Birds	24
Mammals	6
Reptiles	2
Amphibians	1
Invertebrates	7

Wildlife species observed primarily consisted of common bird species. Observations and signs of mammals included coyote, red fox, jackrabbit, American badger, gopher and squirrel. Common garter snake and freshwater turtles were present. Amphibians included the northern pacific treefrog and various aquatic invertebrates such as water boatman, water mites, clam shrimp, cladocerans, copepods, and ostracods.

The majority of the Proposed Action Area within the Project Study Area is agricultural; grasslands used primarily for livestock grazing and other agricultural uses, so overall terrestrial species diversity in the Proposed Action Area is expected to be relatively low. Most species present are widespread in their occurrence, adapted to open field habitats, and relatively common in the region. Special-status wildlife species and their potential occurrence in the Project Study Area are discussed in Section 3.5.1.3.

3.5.1.3 Threatened and Endangered and Other Protected Species

The ESA of 1973 (16 U.S.C. §1531 *et seq.*) affords legal protection to those species and their habitats that are determined to have met specified criteria for listing by the Federal government as either threatened or endangered. Section 3 of the ESA defines endangered species as "any species which is in danger of extinction throughout all or a significant portion of its range..." and threatened species as "any species which is likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range" (ESA, 16 U.S.C. §1531 *et seq.*). If a federal agency undertakes an activity that may impact an "endangered" or "threatened" species, they must first consult with the USFWS or National Oceanic and Atmospheric Administration Fisheries Service, or both, according to Section 7 of the ESA. An effect determination is made for each listed species and designated critical habitat according to the following determinations (USFWS 1998):

- No Effect – "there will be no impacts, positive or negative, to listed species or proposed resources. Generally, this means no listed resources will be exposed to the action and its environmental consequences."
- May Affect, But Not Likely to Adversely Affect – "all effects are beneficial, insignificant, or discountable." Beneficial effects have "no adverse effects to the species or habitat." Insignificant effects are those that "relate to the size of the impact, including undetectable, not measurable, or cannot be evaluated." Discountable effects are those that are "extremely unlikely to occur."
- May Affect, And Likely to Adversely Affect – "listed resources are likely to be exposed to the action or its environmental consequences and will respond in a negative manner to the exposure". This would result in short- or long-term negative impacts.

Species with a Federal or state-listing status and other protected species with recorded occurrences in the vicinity of the Project Study Area were identified based on desktop research. Specifically, the USFWS Information for Planning and Consultation (IPaC) and the National Oceanic and Atmospheric Administration (NOAA) databases were used to identify species with Federal-listing status and/or the potential for critical habitats to occur in the vicinity and/or within the Project Study Area. RUS initiated formal ESA Section 7 consultation with the USFWS in November 2022 for the Project Study Area (Appendix D-9). The official species list of federally listed species that may be present within 5 miles of the action area is provided in Appendix D-6. Eight federally endangered and threatened species included on the USFWS species list and were considered for inclusion in the Biological Assessment (Appendix D-10) based on their potential for occurrence and effects of the action (Table 3.5-3).

Table 3.5-3. Federal and State Listed Species Addressed in the Biological Assessment

Scientific Name	Common Name	Federal Status[1]	State Status[2,3]	Habitat
Amphibians				
Ambystoma californiense	California Tiger Salamander	Threatened	Threatened	Annual grassland habitats and open woodland areas of low hills and valleys. Requires underground retreats and breeding ponds. Breeds in vernal pools, seasonal wetlands, stock ponds, or slow-moving streams[4]
Fish				
Oncorhynchus mykiss	Steelhead	Threatened	None	Anadromous form of rainbow trout that lives in freshwater rivers and streams, estuaries and marine environments. Spend most of their lives in estuaries or open ocean and only return to freshwater to spawn.[5]
Reptiles				
Thamnophis gigas	Giant garter snake	Threatened	Threatened	Live in a variety of agricultural, managed and natural wetlands. Inhabit natural wetlands like marshes, sloughs, ponds, small lakes and small streams.[6]
Insects				
Desmocerus californicus dimorphus	Valley Elderberry Longhorn Beetle	Threatened	None	Occurs only in the Central Valley. Elderberry shrubs are the obligate larval host for this species. These shrubs typically occur in plant communities occupying historic and current floodplains and terraces[7].
Crustaceans				
Branchinnecta conservation	Conservancy Fairy Shrimp	Endangered	None	Occurs in larger, more turbid vernal pools and playa pools[8].
B. lynchi	Vernal Pool Fairy Shrimp	Threatened	None	Vernal pools that form in depressions, usually in grassland habitats and other ephemeral freshwater habitats that hold water seasonally[9].
Lepidurus packardi	Vernal Pool Tadpole Shrimp	Endangered	None	California Central Valley endemic species found in vernal pools, ponded clay flats, alkaline pools, ephemeral stock tanks, and roadside ditches[10].

Table 3.5-3. Federal and State Listed Species Addressed in the Biological Assessment

Scientific Name	Common Name	Federal Status[1]	State Status[2,3]	Habitat
Flowering Plants				
Orcuttia tenuis	Slender Orcutt Grass	Threatened	Endangered	Occurs in narrow zone of remnant depositional stream terraces in northern hardpan vernal pools and northern volcanic flow vernal pools. Also can be present in swales and wetlands[11].

[1] Appendix D-7
[2] CNDDB 2023 (Animals)
[3] CNDDB 2023 (Plants)
[4] USFWS 2005
[5] USFWS 2023a
[6] USFWS 2023b
[7] USWS 2023b
[8] USFWS 2012
[9] Ajuilar 2011
[10] USFWS 2022
[11] USFWS 2023c

The IPaC report identified no designated critical habitats within the Project Study Area. The NOAA identified Chinook salmon Essential Fish Habitat within the Project Study Area, specifically in the Cosumnes River.

The IPaC database also was searched for the reduced solar development area footprint and results are provided in Appendix D-7. This IPaC report showed a similar, but more refined species list because of the smaller area of the solar development footprint.

California tiger salamander, steelhead, giant garter snake, Conservancy Fairy Shrimp and Sacramento Orcutt and Slender Orcut grasses were eliminated from further analysis based on the lack of known occurrences, and consideration that the Proposed Action would have "no affect" and/or will "not likely to adversely affect" these listed species.

California Tiger Salamander

The California tiger salamander has low potential to occur in the Project Study Area. The nearest occurrence of this species was determined to be approximately 5 miles from the Action Area, beyond the dispersal distance for the species. Few to no suitable burrows were identified during surveys, and no California tiger salamander or larvae were detected during focused surveys.

Steelhead

The Action Area does not contain suitable habitat for spawning and rearing steelhead.

Giant Garter Snake

The Action Area is not within the current range of giant garter snake. Giant garter snake has not been documented in the vicinity of the Action Area and the habitat in the Action Area is of low quality. There are no known occurrences within 5 miles of the Action Area.

Valley Elderberry Longhorn Beetle

Valley elderberry longhorn beetle has known to occurrences within the Project Study Area. This species is completely dependent on its host plant, elderberry (*Sambucus* ssp.), which occurs in riparian and other woodland communities in California's Central Valley and the associated

foothills. Only three elderberry shrubs were identified upland within Proposed Action Area, one exhibiting relict beetle exit holes. Condition of the bore holes observed reflect past use by boring insects but are not conclusive for presence of this species.

Conservancy Fairy Shrimp

Conservancy fairy shrimp is not expected to occur within the Project Study Area. Dry and wet season surveys were negative for large listed branchiopod cysts (Dudek 2022c).

Vernal Pool Fairy Shrimp

Vernal pool fairy shrimp has a low potential to occur within the Project Study Area. Protocol level surveys were negative for this species.

Vernal Pool Tadpole Shrimp

Vernal pool tadpole shrimp has known occurrences within the Project Study Area. However, protocol level surveys were negative for this species.

Sacramento and Slender Orcutt Grass

Reference population checks were performed for special-status plant species on April 22, 2021, and protocol-level botanical field surveys were conducted within the Action Area on May 4, 2021. No Sacramento Orcutt grass or slender Orcutt grass was observed during protocol-level botanical surveys.

Migratory Birds

Bird migration is the regular seasonal movement, often north and south along a flyway, between breeding and wintering grounds. Birds that participate in seasonal migration are called migratory birds. All migratory birds are protected by the MBTA (16 U.S.C. 703–712; 40 Stat. 755 as amended), which prohibits the taking of any migratory bird without authorization from USFWS. The MBTA states that “unless and except as permitted by regulations…it shall be unlawful at any time, by any means or in any manner, to take, capture, kill, possess…any migratory bird, any part, nest, or eggs of any such bird.”

Sacramento Valley is located in the Pacific Flyway and the Sacramento-San Joaquin Delta is an important bird area for migratory birds (Audubon 2023). The wintering bird community includes Swainson’s hawk (*Buteo swainsoni)*, Tundra swan (*Cygnus columbianus*), Sandhill crane (*Grus canadensis*), and Short-eared owl (*Asio flammeus*). General species in open country along Meiss Road include raptors and sparrows in winter, Horned larks (*Eremophila alpestris*), Common nighthawks (*Chordeiles minor*) in spring and summer, as well as Lesser nighthawks and grasshopper sparrows (Sacramento Audubon Society 2023). Protected birds include migratory birds identified above and essentially all other native migratory birds that inhabit the vicinity of the Project Study Area.

Federal special-status Birds of Conservation Concern and California state listed and/or Species of Special Concern that have known occurrences within the Proposed Action Area include bald eagle (*Haliaeetus leucocephalus*), western burrowing owl (*Athene cunicularia*), Swainson’s hawk,

tricolored blackbird (*Agelaius tricolor*), white-tailed kite (*Elanus leucurus*), great egret (*Ardea alba*), great blue heron (*Ardea herodias*), and yellow-billed magpie (*Pica nuttalli*). Birds observed during field surveys of the Project Study Area are listed in Appendix D-8.

Other Species of Consideration

Crotch's bumble bee (*Bombus crotchii*), is a California state listed candidate species under the California Endangered Species Act (CESA), therefore this species is temporarily afforded the same protections as a state-listed endangered or threatened species under the California Fish and Game Code (FGC) 2050, et seq. and the California Code of Regulations (CCR) Section 670.1, Title 14. In accordance with the CDFW preliminary guidance for Survey Consideration for CESA Candidate Bumble Bee Species (CDFW 2023), habitat and nectar resource mapping survey were conducted within the Proposed Action area. Findings concluded that within the Proposed Action area, there is suitable nesting and foraging habitat for Crotch's bumble bees. No individual Crotch's bumble bee were observed within the Proposed Action area.

3.5.2 Environmental Consequences – Biological Resources

This section describes the potential impacts to biological resources within the Proposed Action Area from the Proposed Action or No Action Alternative.

3.5.2.1 Proposed Action

Vegetation

No special-status plant species were observed during botanical field surveys, and therefore would not be impacted by the Proposed Action. There would be direct impact on existing annual grassland cover from grading and construction of solar facilities. Construction activities such as grading, trenching, installation of solar panels, and placement of facilities would result in minor temporary disturbance of onsite vegetation. All temporary construction impacts to habitat within the Proposed Action Area would be restored to pre-development conditions following construction. Compensatory mitigation for potential upland plant habitat impacts is not considered necessary because impacts would be negligible. Hedgerows or similar vegetative screening would be planted on the south side of Meiss Road and the west side of Dillard Road to screen the project facilities. Plant species that can thrive without supplementary watering after becoming established, and thus could be used for hedgerows/screening, could include common manzanita (*Arctostaphylos manzanita*), California coffeeberry (*Frangula californica*) and black elderberry (*Sambucus nigra*). In low areas that collect rainfall, plants also could include common buttonbrush (*Cephalanthus occidentalis*) and California wild rose (*Rosa californica*).

Agricultural grazing by sheep is anticipated to take place during solar facility operation, and would be carried out in accordance with the project's *Agricultural Management Plan* (Dudek 2021), and in compliance with California state and local regulatory controls. Seeding using seed drills, broadcast seeding, or hydroseeding and hydro-mulching depending upon the time of seeding would occur based on soil conditions, appropriate grassland species, and the dietary preferences of sheep. Grazing by sheep is expected to control potential spread of invasive species following construction.

As part of decommissioning, the Proposed Action Area would be restored to a condition suitable for agricultural/grazing use in accordance with the Project Decommissioning Plan (Appendix A). Restoration would include:

- Restoration of landform features, vegetative cover, and hydrologic function to support agricultural use such as livestock grazing or similar agricultural use;
- Decompaction of soils as needed;
- Returning soil nutrient levels to pre-construction levels and aerating the soils as necessary;
- Seeding, planting of nursery stock, transplanting of local vegetation within the proposed disturbance areas; native vegetation would be used to establish a composition consistent with the form, line, color, and texture of the surrounding undisturbed habitat based on intact, native vegetation community reference sites; and
- Monitoring the success of restoration.

By returning the Proposed Action Area to pre-construction conditions, long-term adverse impacts to vegetation from construction, operation, and decommissioning are not anticipated.

Wildlife

Disturbance, displacement, and direct mortality of individual animals likely would occur during the period when heavy equipment is used for clearing, grading, and excavation. Mobile animals, including birds, larger mammals, and some reptiles, can avoid such disturbances and move to safer areas in adjacent habitats. There are sufficient adjacent habitats similar in nature to the Proposed Action Area that could serve relocated wildlife. Direct adverse impacts to individual non-mobile animals could occur during construction, however, these would be limited in number. Overall, construction impacts to wildlife would be temporary and minor.

For security and safety during operation, the solar facility would be fenced and security lighting would be installed. The lighting system to provide illumination for normal operations and emergency situations would be designed to provide minimum illumination needed for safety and security. Lights would be shielded and oriented to minimize light spillover. Following the completion of construction, site stabilization, and revegetation, wildlife species adapted to grassland, herbaceous fields, and ecotones between the fields would likely reoccupy most of the affected areas. Larger wildlife species would be expected to be excluded by the fencing, whereas smaller wildlife species may be able to pass under the fence.

Temporary decommissioning impacts would be similar to those during construction and Proposed Action Area would be restored.

Based on historical use of the Proposed Action Area, adherence to regulatory controls, implementation of appropriate BMPs, only minor adverse impacts to wildlife are anticipated.

Threatened, Endangered, and Other Protected Species

Federal, California state, and Sacramento County Habitat Conservation Plan (SSHCP) special-status or covered wildlife species with a moderate or high potential to occur based on potential

suitable habitat, or have known occurrences, in Proposed Action Area include: northwestern pond turtle (*Actinemys marmorata*), western spadefoot toad (*Spea hammondii*), American badger (*Taxidea taxus*), Ricksecker's water scavenger beetle (*Hydrochara rickseckeri*), valley elderberry longhorn beetle, Crotch's bumble bee (*Bombus crotchii*), mid-valley fairy shrimp (*Branchinecta mesovallensis*), California linderiella (Linderiella occidentalis), vernal pool tadpole shrimp (VPTS), vernal pool fairy shrimp (VPFS), nesting and migratory birds such as tricolored blackbird, great egret, great blue heron, long-eared owl, burrowing owl , Swainson's hawk, white-tailed kite, bald eagle, yellow-billed magpie, and native bats.

Federal, California state, and SSHCP special-status or covered plant species with a moderate or high potential to occur based on potential suitable habitat, or have known occurrences, in Proposed Action Area include: valley brodiaea (*Broadiaea rosea* ssp. *vallicola*), dwarf downingia (*Downingia pusilla*), Boggs Lake hedge-hyssop (*Gratiola heterosephala*), legenere (*Legenere limosa*), hoary naverretia (*Navarretia eriocephala*), pincushion navararretia (*Navarretia myersii* ssp. *myserii*), slender Orcutt grass, and Sacramento Orcutt grass (*Orcuttia viscida*).

Table 3.5-4 specifically shows the effects determinations for the Proposed Action on Federally listed species considered in detail and the biological assessment based on their potential for occurrence in the Proposed Action Area and the anticipated potential impacts of the action.

Table 3.5-4 Protected Species Effect Determination – Proposed Action Area

Scientific Name	Common Name	Federal Status	State Status	Notes	Effect Determination
Amphibians					
Ambystoma californiense	California Tiger Salamander	Threatened	Threatened	Few suitable burrows and no adults or larvae detected during field surveys.	No Effect
Fish					
Oncorhynchus mykiss	Steelhead	Threatened	None	Lack of spawning and rearing habitat; not observed during field surveys.	No Effect
Reptiles					
Thamnophis gigas	Giant garter snake	Threatened	Threatened	No to low quality habitat; no known occurrences	No Effect
Insects					
Desmocerus californicus dimorphus	Valley Elderberry Longhorn Beetle	Threatened	None	Only three elderberry shrubs in upland within Proposed Action Area. Condition of the bore holes observed reflect past use by boring insects but are not conclusive for presence of this species.	May Affect, But Not Likely To Adversely Affect

Table 3.5-4 Protected Species Effect Determination – Proposed Action Area

Scientific Name	Common Name	Federal Status	State Status	Notes	Effect Determination
Crustaceans					
Branchinnecta conservation	Conservancy Fairy Shrimp	Endangered	None	Six surveyed features during dry-season survey contained cysts; wet season survey results were negative. Action area is outside known range and habitat is either absent or low quality.	No Effect
B. lynchi	Vernal Pool Fairy Shrimp	Threatened	None	Dry and wet season surveys were negative for cysts. Wet season survey results for this species were negative.	May Affect; Likely to Adversely Affect
Lepidurus packardi	Vernal Pool Tadpole Shrimp	Endangered	None	Dry and wet season surveys were negative for large listed branchiopod cysts. Wet season survey results for this species were negative.	May Affect; Likely to Adversely Affect
Flowering Plants					
Orcuttia viscida	Sacramento Orcutt Grass	Threatened	Endangered	Not observed within the Proposed Action Area during field surveys.	No Effect
O. tenuis	Slender Orcutt Grass	Threatened	Endangered	Not observed within the Proposed Action Area during field surveys.	No Effect

California Tiger Salamander

California tiger salamander has a low potential to occur within the Proposed Action Area. Few suitable burrows were identified during field surveys and no salamanders or larvae were detected during focused field surveys (Dudek 2022c). There were no observations of California tiger salamanders during the aquatic larval surveys conducted within the Project Study Area and no incidental observations within aquatic features during wet season large-listed branchiopod surveys or during focused California tiger salamander surveys, including no incidental observations of this species in the uplands within the Project Study Area during the additional field surveys.

Based on the analysis above, the Proposed Action would not affect California tiger salamander. There are no interrelated, independent and/or cumulative impacts of the Proposed Action.

Steelhead

The Central Valley steelhead distinct population segment is known to occur within 5 miles of the Project Study Area along the Cosumnes River. However, suitable spawning and rearing habitat is not present in this reach of river and no steelhead were observed during field surveys. The Proposed Action would not directly affect the Consumnes River.

Based on the analysis above, the Proposed Action would not affect steelhead. There are no interrelated, independent and/or cumulative impacts of the Proposed Action.

Giant Garter Snake

Giant garter snake has a low potential to occur in the Proposed Action Area. There are no know occurrences within 5 miles of the Project Study Area. Habitat within the Proposed Action Area is sparse and low quality.

Based on the analysis above, the Proposed Action would not affect giant garter snake. There are no interrelated, independent and/or cumulative impacts of the Proposed Action.

Valley Elderberry Longhorn Beetle

Valley elderberry longhorn beetle has a low potential to occur within the Proposed Action Area (Dudek 2022c).Three elderberry shrubs occur within the Proposed Action Area and/or within 165 feet of the Proposed Action Area (Dudek 2022d). None of these shrubs had documented exit holes, frass, or beetle observations during field surveys. All these shrubs reside in the uplands (i.e., non-riparian areas). The two shrubs present within the Proposed Action Area are isolated individuals, and did not have recordable observations of valley elderberry longhorn beetle at the time of surveys. These shrubs would be removed during construction. The remaining elderberry shrub would be avoided and a USFWS 165 foot buffer would be established to avoid direct effects.

In addition to using standard BMPs during construction the following conservation measures are proposed:

- Avoidance and fencing of elderberry shrubs during construction,
- If necessary, trimming of shrubs between November and February,
- Mowing within the dripline of shrubs when adult beetles are not active (August through February),
- Monitoring by a qualified biologist during construction, and
- Environmental education program for on-site contractors and personnel.

For resources within the Proposed Action Area that are directly impacted and “may affect, but not likely to adversely affect” the Applicant proposes mitigation that would utilize a 1:1 ratio. Compensatory mitigation would entail onsite habitat preservation and/or mitigation/preservation credit purchase from existing in-lieu fee programs or banks. The Proposed Action Area is within the service area for the USFWS Sacramento District California In-Lieu Fee Program the following existing banks: Clay Station Mitigation Bank, Bryte Ranch Conservation Bank, Laguna Creek Mitigation Bank, and Van Vleck Ranch Mitigation Bank. The biological resource values of the Project Study Area outside the Proposed Action Area, are described in the Compensatory Mitigation Plan, which provides documentation of suitability for compensatory mitigation (Appendix D-8).

Based on the analysis of effects and conservation measuresdetailed above, the Proposed Action may affect, but is not likely to adversely affect valley elderberry longhorn beetle and the USFWS

concurred with this finding (Appendix D-11). There are no interrelated, independent, and/or cumulative impacts of the Proposed Action.

Conservancy Fairy Shrimp, Vernal Pool Fairy and Tadpole Shrimp

Vernal pool branchiopods, including conservancy fairy shrimp, VPFS, and VPTS, have a low potential to occur within the Proposed Action Area. There is no designated critical habitat within the Project Study Area. The nearest designated critical habitat is 1.3 miles to the southeast (USFWS 2022). The nearest known occurrence of VPFS is within 0.25 miles and for VPTS within 5 miles of the Project Study Area (CDFW 2022). Dry and wet season surveys were negative for VPFS and VPTS cysts. However, six surveyed features contained cysts belonging to the non-listed branchiopod species during the dry-season survey (Dudek 2022d; Dudek 2022c). Wet season survey results for VPFS and VPTS were negative for large listed brachiopods.

It is conservatively assumed that the aquatic resources that would host the solar array infrastructure and access roads would be subject to 0.08 acres of permanent fill and temporary construction disturbance of 3.17 acres of suitable habitat for large listed branchiopod species. In reality temporary construction activities would affect only those aquatic resources within the direct alignment of the solar support posts. Equipment would be unlikely to impact the entirety of the aquatic resource area during installation activities. Cover by solar panels intercepting precipitation and altering flows, shading, and vegetation management that would occur in the surrounding uplands (e.g., regular mowing) could also have some indirect effects on large listed branchiopod habitat. Most of the solar panels would be sited in upland areas and would not shade aquatic resources.

Aquatic resource avoidance buffers that may be indirectly impacted within the Proposed Action Area would be returned to pre-existing conditions to the maximum extent practicable after construction. Flagging, fencing (i.e., silt fence, orange safety barrier fence, or equivalent) would be installed for these buffer areas, and direct construction activities would be prohibited within aquatic resource buffers unless prior approval is received to encroach on the buffer via formal consultation with USFWS.

The USFWS issued a Biological Opinion and Incidental Take Statement for the Sloughhouse Solar Project. In addition to implementation of standard BMPs the following conservation measures are considered part of the Proposed Action (Appendix D-11):

- Worker environmental awareness training to address special-status species, habitats, and protected wetlands within the action area,
- Environmentally sensitive area exclusions via buffers for aquatic resources and elderberry shrubs,
- Construction monitoring by a qualified biologist during construction activities involving ground disturbance within undeveloped portions of the project site,
- Maintaining hydrology such that there is no reduction or increase in existing surface water flow offsite,
- Avoidance of or mitigation for vernal pool branchiopod habitat, and

- Compensatory mitigation for impact to branchiopod habitat to offset impacts by purchase of 8.63 tadpole shrimp and fairy shrimp preservation credits or USFWS-approved alternative means such as offsite or onsite preservation.

As part of the Incidental Take Statement, the following reasonable and prudent measures must be undertaken as binding conditions of any grant or permit issued by RUS for the project for the exemption in Section 7(o)(2) to apply (see Appendix D-11):

- Full implementation and adherence to all conservation measures described in the Sloughhouse Solar Biological Assessment as a condition of any permit from the USACE,
- RUS shall provide the Sacramento USFWS office with a copy of the completed bill of sale and payment receipt for purchase of mitigation credits at a USFWS-approved conservation or mitigation bank and/or USFWS-approved permittee-responsible mitigation, and
- RUS shall provide a precise accounting of the total acreage of habitat impacted after completion of construction.

The Sacramento Valley Conservancy is actively preserving vernal pools within Sacramento County, and has permanently protected 1,000 acres of vernal pool grasslands in the county (SVC 2021). Based on the minor impact (0.08 acres) from construction, the implementation of BMPs, proposed mitigation measures, and restoration of the Proposed Action Area after decommissioning, the proposed solar development is anticipated to have negligible to minor impact on the populations of these protected vernal pool shrimp.

Based on the analysis of effects detailed above, the Proposed Action may affect, but, is not likely to adversely affect vernal pool shrimp with implementation of mitigation measures to avoid and minimize impacts vernal pool habitats. There are no interrelated, independent, and/or cumulative impacts of the Proposed Action.

Sacramento Orcutt and Slender Orcutt Grass

Slender Orcutt grass has a moderate potential to occur within the Proposed Action Area. Low quality suitable habitat within vernal pools, wetland swales, and seasonal wetlands is present for this species. Designated critical habitat is approximately four miles to the northwest and there are no known occurrences within five miles of the Project Study Area. This species was not observed during field surveys in the Project Study Area (Dudek 2022c).

Based on the analysis of effects detailed above, the Proposed Action would have no effect on Sacramento Orcutt and Slender Orcutt grass. There are no interrelated, independent, and/or cumulative impacts of the Proposed Action.

3.5.2.2 No Action Alternative

Under the No Action Alternative, RUS would not provide long-term financing for the project, and it is assumed the project would not be constructed . Existing conditions would likely remain unchanged (i.e., property would remain as predominantly-disturbed agricultural land) and agricultural/grazing activities would likely continue. Therefore, there would be no Project-related

impacts on vegetation, wildlife, or threatened and endangered species would be anticipated under the No Action Alternative.

3.5.3 Mitigation – Biological Resources

Mitigation measures to avoid or minimize adverse impacts to biological resources include:

- Design to avoid sensitive resources to the extent practicable.
- Restore temporary habitat impacts to pre-development conditions following construction.
- Use native vegetation to establish a composition consistent with the surrounding undisturbed habitat based vegetation community reference sites and monitor success of restoration.
- Design the lighting system to provide the minimum illumination needed for safety and security and shield and orient lights to minimize light spillover.
- Provide compensatory mitigation for direct and indirect temporary and permanent impacts to biological resources through onsite habitat preservation and/or mitigation/preservation credit purchase from existing in-lieu fee programs or mitigation banks.

3.6 Cultural Resources

This section describes an overview of existing cultural resources within the Proposed Action Area and the potential impacts that would be associated with the Proposed Action and No Action Alternative. Components of cultural resources that are analyzed include precontact and historic archaeological and architectural resources.

3.6.1 Affected Environment – Cultural Resources

Cultural resources include archaeological sites, standing structures, objects, districts, traditional cultural properties, and other properties that illustrate important aspects of prehistory or history or have important and long-standing cultural associations with established communities and/or social groups.

Section 106 of the NHPA of 1966, as amended (54 U.S.C. 300101-307108) is specifically designed to address the effects of Federal and/or Federally-funded, licensed, or permitted projects on both built resources (such as buildings, bridges, and levees) and underground (archaeological) resources. The NHPA provides for a national program to support both public and private efforts to identify, evaluate, and protect the nation's important historic and archaeological resources. These resources, collectively called "cultural resources," are evaluated for their eligibility for inclusion in the National Register of Historic Places (NRHP) maintained by the National Park Service. The NRHP is a list of buildings, districts, sites, structures, and objects that are significant to local, State, or national history and prehistory. Cultural resources may qualify for inclusion in the NRHP under one of four primary criteria:

- *Criterion A:* association with events that have made a significant contribution to the broad patterns of American history. This criterion includes literature, ethnic heritage, health/medicine, transportation, and many others.
- *Criterion B:* association with the life of significant persons. Examples of National Register properties nominated under *Criterion B* include George Washington's Mt. Vernon estate.
- *Criterion C*: embodiment of the distinctive characteristics of a type, period, or method of construction. This inclusion also includes the works of a master or resources that possess high artistic value.
- *Criterion D*: cultural resources that have yielded or may be likely to yield information important in history or prehistory. This category is typically the most relevant criterion for archaeological resources.

Cultural resources that are listed, or considered eligible for listing, on the NRHP are called "historic properties." Federal agencies are required by the NHPA to consider the possible effects of their undertakings on historic properties. "Undertaking" means any project, activity, or program that is under the direct or indirect jurisdiction of a Federal agency, or is permitted, licensed, or financially assisted by a Federal agency. Considering an undertaking's possible effects on historic properties is accomplished through a four-step review process outlined in Section 106 of the NHPA (36 CFR Part 800) including:

1. Initiation (defining the undertaking and the area of potential effect (APE) and identifying the parties to be consulted in the process);
2. Identification (studies to determine whether cultural resources are present in the APE and whether they qualify as historic properties);
3. Assessment of adverse effects, if any (determining whether the undertaking would diminish the qualities that make the property eligible for the NRHP); and
4. Resolution of adverse effects (by avoidance, minimization, or mitigation).

Throughout the process, RUS must consult with the appropriate State Historic Preservation Officer (SHPO), Federally-recognized American Indian tribes that have an interest in the undertaking, and any other party with a vested interest in the undertaking.

3.6.1.1 Archaeological and Architectural Resources

Previous Surveys

Portions of the Proposed Action Area have been previously surveyed for cultural resources. The direct APE includes the approximately 372-acre Proposed Action (physical APE) and the 0.5-mile visual APE. A total of 12 previous surveys have been conducted within the direct APE. The records search identified no previously recorded archaeological or historic resources within the physical APE and 14 resources within the visual APE (Dudek 2023).

Fieldwork Methodologies

Dudek conducted an intensive-level pedestrian survey of the physical APE from October 20-28, 2020 (Dudek 2023). This report is on file with RUS. The survey began with a desktop review which identified previous surveys and known archaeological resources within and in the vicinity of the Proposed Action. Dudek archaeologists surveyed the physical APE with transects spaced no more than 15-meters apart oriented along the project alignment. After completion of pedestrian survey, subsurface sampling was conducted with a 3-inch-diameter auger, to a depth of 290 centimeters, to probe for buried cultural deposits and reveal soil stratigraphy at several locations within the Proposed Action Area. Field resources and photo documentation of resources were completed as appropriate. All cultural resources identified during the survey were recorded with the California Office of Historic Preservation (Dudek 2023).

The architectural survey included documentation of historic age buildings and structures denoting character-defining features, spatial relationships, and observed alterations. Additionally historic landscape features on the parcels were identified. Dudek staff documented the fieldwork with field notes, digital photography, and close-scale field maps. All cultural resources identified during the survey were recorded with the California Office of Historic Preservation (Dudek 2023).

Archaeological Survey Results

Dudek identified one previously unrecorded historic resource, the remains of a home site, within the Proposed Action Area during the pedestrian survey. Dudek recommended this site as not eligible for the NRHP (Dudek 2023).

None of the augers encountered cultural deposits or apparent anthrosols, nor were there indications of distinct soil horizons indicative of buried surfaces (Dudek 2023). Dudek determined there is a moderate potential for the presence of subsurface or previously undiscovered deposits, particularly in the area between the Consumnes River and the levee (Dudek 2023).

Architectural Survey Results

Dudek conducted a survey of architectural resources within the Project Study Area on October 28, 2020 and within the visual APE and 0.5 mile buffer on August 26 and September 3, 2022. A total of 18 historic-era properties containing buildings and structures over 45 years in age were identified (Dudek 2023). The 18 historic-era properties are listed in Table 3.6-1.

Table 3.6-1. Historic Properties Recorded and Evaluated in the Direct APE

Map ID	Property Type	Address	Approximate Period of Construction	NRHP Recommendation
1	Residential Farm Complex	No Situs	c. 1910-c. 1952	Not eligible
2	Residence	12000 Meiss Road	c. 1962	Not eligible
3	Residential Farm Complex	12800 Meiss Road	c. 1910-1973	Not eligible
4	Unnamed Irrigation Ditch	Linear: No Situs	c. 1910	Not eligible

Table 3.6-1. Historic Properties Recorded and Evaluated in the Direct APE

Map ID	Property Type	Address	Approximate Period of Construction	NRHP Recommendation
5	Residential Farm Complex	12800 Meiss Road	c. 1954-2002	Not eligible
6	Residential Farm Complex and the Deer Creek Bridge	12761 Meiss Road	c. 1903-1945	Not eligible
7	Residential Farm Complex	12783 Meiss Road	c. 1975-1984	Not eligible
8	Residential Farm Complex	12850 Meiss Road	c. 1930-1968	Not eligible
9	No remaining historic-age buildings or structures	13364 Meiss Road	Unknown	Not eligible
10	Agricultural	No Situs, Dillard Road	c. 1920-2020	Not eligible
11	No remaining historic-age buildings or structures	8145 Dillard Road	Unknown	Not eligible
12	Residential Farm Complex	8149 Dillard Road	c. 1959-2020	Not eligible
13	Residential Farm Complex	8161 Dillard Road	c. 1975-2003	Not eligible
14	Residential Farm Complex	8174 Dillard Road	c. 1976-2017	Not eligible
15	Residential Farm Complex	13001 Apple Road	c. 1965-2021	Not eligible
16	Residential Farm Complex	13035 Apple Road	c. 1975	Not eligible
17	Earthen Levee	Linear: Consumnes River Levee-South/Sacramento County Levee 41	Pre-1900	Eligible (Criterion A)
18	Earthen Levee	Linear: Consumnes River Levee-North/Sacramento County Levee 18	Pre-1900	Eligible (Criterion A)

Source: Dudek 2023

The historic-era Slough House Bridge, also known as the McCracken Bridge, was constructed in 1894 across the Cosumnes River. The bridge was recorded in 1985 at which time it was recommended as eligible for the NRHP. The bridge is located within the direct APE but outside the physical APE. Dudek archaeologists observed that the bridge has been disassembled and only the concrete footings remain (Dudek 2023).

3.6.1.2 Tribal Consultation

Scoping letters were sent to the following American Indian tribes on July 18, 2022:

- Buena Vista Rancheria of Me-Wuk Indians
- Ione Band of Miwok Indians
- Nashville Enterprise Miwok-Maidu-Nishinam Tribe
- Shingle Springs Band of Miwok Indians
- Tsi Akim Maidu
- United Auburn Indian Community of the Auburn Rancheria
- Wilton Rancheria

On July 25, 2022, in an email response to project scoping, the United Auburn Indian Community recommended a tribal monitoring plan. They also requested information on the disposal process and environmental impacts associated with spent solar panels. Wilton Rancheria responded on August 1, 2022, and requested copies of cultural resource or other assessments, including records reviews, completed within the APE or surrounding area. The request includes Center of the California Historical Resources Information System (CHRIS) records search, archaeology inventory surveys, Sacred Lands File searches, ethnographic studies, geotechnical reports, aerial maps of the proposed action, and soil diagrams. Both the United Auburn Indian Community of the Auburn Rancheria and Wilton Rancheria requested a tribal monitoring plan while in consultation with Sacramento County under the AB 52 process in association with the CEQA review. A tribal monitoring plan will be developed and implemented in consultation with the American Indian tribes.

RUS initiated consultation with the American Indian tribes listed above on August 9, 2022, and sent the tribes copies of the archaeological surveys and findings of effects letters in June 2023. The United Auburn Indian Community responded on August 4, 2023, with a request for more information about project timing, the NEPA process, and the status of the tribal monitoring, discovery, and treatment plan. All tribal correspondence associated with Section 106 consultation is on file at RUS.

3.6.2 Environmental Consequences – Cultural Resources

This section describes the potential impacts to the cultural resources should the Proposed Action or No Action Alternative be implemented.

3.6.2.1 Proposed Action

Based on the results of the archaeological and architectural cultural resource surveys, a finding of No Adverse Effect in accordance with 36 CFR § 800.5(b) is appropriate for the Proposed Action. RUS submitted this finding in a letter to the American Indian tribes and the SHPO on July 6, 2023. SHPO concurrence was received on August 15, 2023. The United Auburn Indian Community responded on August 4, 2023, with a request for more information about project timing, the NEPA process, and the status of the tribal monitoring, discovery, and treatment plan. These letters are on file at RUS. A tribal monitoring plan will be developed and implemented in consultation with the American Indian tribes.

3.6.2.2 No Action Alternative

Under the No Action Alternative, RUS would not fund the project. Existing land use would be expected to remain unchanged. Agricultural practices at the site would continue to have the potential to impact intact cultural resources at the surface or within the first 8 to 10 inches of soil. No impacts would be anticipated to the NRHP-eligible levees. Therefore, impacts to cultural resources associated with the No Action Alternative would be anticipated to be minor.

3.6.3 Mitigation – Cultural Resources

- A tribal monitoring plan will be developed and implemented in consultation with the tribes.
- A post-review discovery plan will be developed and implemented.

3.7 Aesthetics

This section discusses the potential impacts that construction and operation of the Proposed Action would have on aesthetic character or visual resources of the area, including a summary of the methodology used in the assessment, a description of existing conditions, and the effect that the Proposed Action would have on views from key vantage points.

3.7.1 Affected Environment – Aesthetics

3.7.1.1 Background

Visual resources, the visual characteristics of a place, help determine the aesthetics or how an observer experiences a particular location. Visual resources, including both natural and man-made, are important to people living in the area and to people visiting or passing through an area. In addition, visual resources are also important in the context of historically and culturally significant settings; the experience of a historically significant building can be severely altered by changes to the surrounding visual character. A viewshed is defined as the environment as seen from a certain vantage location, and a viewpoint is the vantage from whence the visual character is viewed.

3.7.1.2 Methodology

Viewshed Analysis

The Proposed Action Area consists of gently rolling topography sloping to the south and west towards a central drainage feature, which in turn flows into an approximately 16-acre offsite pond. The 372-acre site lies south and east of the Consumnes River, sprawling west and south from the intersection of Meiss Road and Dillard Road in the Consumnes community. Historically, the site has been used for grazing, along with an area cultivated for alfalfa hay (for cattle feed). The distance to the Cosumnes River ranges from approximately 150 feet in the northwest corner of the site, to more than 0.5 miles in the southwest corner. The Proposed Action Area is not visible from the Cosumnes River due to the height of the intervening earthen levee and vegetation immediately adjacent to the river.

Key Observation Point (KOP) Identification

As shown in Figure 3.7-1, five Key Observation Points (KOP) from which the Proposed Action Area might be visible were identified within the Project Study Area. The KOP locations were selected based on geographic distribution and distance within the Proposed Action Area and the location of sensitive receptors such as historic structures and districts, churches, schools, parks, and similar land uses. Key locations in these categories included several residences in the vicinity of the Project Study Area.

The visibility analysis established five KOPs as shown in Figure 3.7-1 with viewpoints along Meiss and Dillard Roads along with two viewpoints to the south of the Proposed Action Area. Although SR 16, Jackson Road, is a highly utilized highway in the Proposed Action vicinity, distance, topography, and vegetation preclude visibility of the site. Similarly, distance and topography preclude visibility of the site from Sloughhouse Road. Thus, there is no reason to include either Jackson Highway or Sloughhouse Road as KOPs.

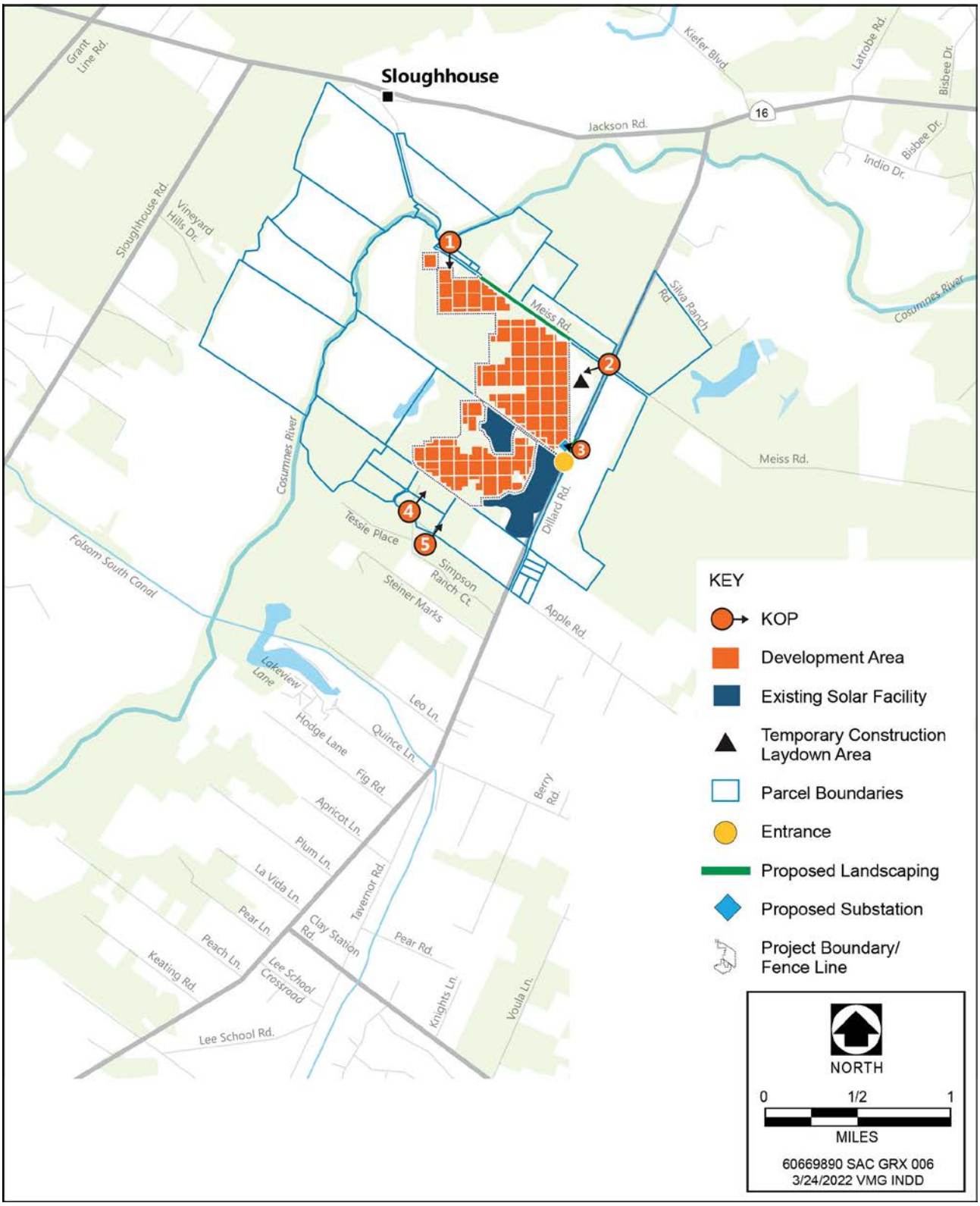

Figure 3.7-1. Key Observation Points (KOPs)

Once KOPs were identified, a compass bearing to the approximate center of the Proposed Action Area was assigned to each KOP location. A map of each KOP location was produced showing an aerial photo of the location, the compass bearing, and the geographic coordinates of the location. These maps were used by the field personnel when taking photographs from each KOP location.

Anticipated visual changes associated with the Proposed Action were generated for each KOP using photo simulations from photos of the existing viewshed.

In December 2020, the potential for visual impacts from the Proposed Action were assess (Appendix E). Figure 3.7-1 shows the areas from which the Proposed Action would be visible, and the KOP locations chosen to illustrate the potential visual impacts.

3.7.1.3 Existing Conditions

Key Observation Point 1 – West End of Meiss Road

The existing visual character along Meiss Road consists of rural residential and agricultural land. Several small rural residences with associated landscaping, fencing, barns, sheds, vehicles, and agricultural equipment are visible on the north and south sides of Meiss Road near the Cosumnes River. South of Meiss Road, the Proposed Action Area is flat to gently rolling grazing land with two large barns and a variety of smaller structures and facilities associated with agricultural operations. Scattered trees and large shrubs are visible in the vicinity of these structures. Barbed wire fencing is visible around the parcel boundaries. Overhead electrical lines and wood power poles are consistent with other manmade elements that dominate the viewshed along Meiss Road, including fencing, roadway and signage, residences, barns, and agricultural equipment.

Viewer sensitivity at KOP 1 is high; although there are only a few local residents traveling on Meiss Road or with long-term stationary views of the Proposed Action from areas north of Meiss Road, project-related components would be installed in the foreground of the viewshed. Meiss Road is lightly traveled, and dead-ends at the Cosumnes River; there is no recreational river access from Meiss Road. This viewshed exhibits a low degree of vividness and unity, and a moderate degree of intactness; the visual quality is therefore considered low.

Key Observation Point 2 – Meiss Road/Dillard Road Intersection

Off the Proposed Action Area, to the north of the intersection, a walled, solitary residence is located and, to the east of Dillard Road, rows of orchard trees. Looking southwest from the Meiss Road/Dillard Road intersection towards the Proposed Action Area, the northern portion of the site and the surrounding area from the Meiss Road/Dillard Road intersection is generally flat and agricultural in nature. Low barbed-wire fencing in the foreground, and overhead power lines and wood power poles stand out against the skyline along Meiss Road and Dillard Road.

Viewer sensitivity at KOP 2 is high, with thousands of motorists traveling weekly on Dillard Road, an important rural north/south connector between SR 16 and SR 99, and with components of the Proposed Action installed in the foreground of the viewshed. However, this viewshed exhibits only a moderate degree of intactness along with a low degree of vividness and unity. The visual quality is therefore considered low.

Key Observation Point 3 – Proposed Main Entry, Dillard Road

The visual character of the middle portion of the Proposed Action Area and the surrounding area from the proposed main entry at Dillard Road includes a mixture of agricultural and industrial views. To the northwest, the site is flat to gently rolling grasslands, which are green in the spring and brown the rest of the year. Wood power poles and overhead power lines stand out against the skyline along the paved/gravel central entryway to the site from Dillard Road. The Dillard Road entry is fenced with a double metal locked gate on the existing dirt/gravel roadway leading to the interior of the site. At KOP 3, Dillard Road motorists can view metal electrical facilities, the existing SMUD substation, and rows of grey solar panels associated with the existing offsite Dillard Road Solar Facility to the south of the Proposed Action Area. These dark grey solar panels blend with the existing landscape during the fall and winter months, becoming visually dominant against the green spring grasses. The existing landscape elements exhibit similar form, scale, and texture.

Viewer sensitivity at KOP 3 is high, due to the presence of thousands of motorists traveling weekly on Dillard Road, an important rural north/south connector between SR 16 and SR 99, and with components of the Proposed Action installed in the foreground of the viewshed. However, although this viewshed exhibits a large degree of uniformity, it has a low degree of vividness and intactness, and overall visual quality is considered low.

Key Observation Point 4 – Simpson Ranch Court Northwest

The visual character of the southern portion of the Proposed Project Area and the surrounding area from KOP 4 on Simpson Ranch Court is rural agricultural. Privately owned, gently rolling grassland south of the site merges with the gently rolling grassland at the Proposed Action area. The grassland is green in the spring, but brown the rest of the year. To the northeast, a large white agricultural barn with grey metal roofing and large trees is in the middleground. To the northeast, a newly constructed large white barn with a metal roof (constructed after KOP 4 was photographed) along with solar panels of the existing solar generating facility adjacent to the Proposed Action Area, are visible in the middleground. Although the solar panels present a low, horizontal element, contrasting white (due to reflected light/sky) against the green and brown landscape during the bright daylight hours, at approximately 0.5 miles, the existing solar panels blend with the surrounding grassland in the middleground with the green trees of the Cosumnes River and the higher foothills of the Sierra Nevada in the background.

Viewer sensitivity at KOP 4 is moderate, due to the presence of only a few local residents traveling on Simpson Ranch Court for property access, and the fact that project-related components would be installed in the middleground rather than the foreground of the viewshed for long-term stationary viewers. Simpson Ranch Court, and the adjacent Tessie Place (Figure 3.7-1) are lightly traveled, dead-end roads providing access to approximately 15 private property parcels. This viewshed exhibits a high degree of vividness and unity, with a moderate degree of intactness. The visual quality is therefore considered high.

Key Observation Point 5 – Private Residence, Simpson Ranch Court

The visual character of the southern portion of the Proposed Action Area and the surrounding area from KOP 5 is rural agricultural and is similar to the viewshed described above for KOP 4.

Gently sloping grassland, private property fences and an elevated soil berm are visible in the foreground. To the northwest, a portion of the recently constructed white barn, mentioned in the KOP 4 discussion, is visible. In the middleground, gently rolling brown grassland at the site, along with white/grey solar panels associated with the existing solar facility adjacent to the southern portion of the Proposed Action Area are visible. As noted above for KOP 4, at approximately 0.5 miles, the existing solar panels blend with the surrounding grassland in the middleground with the green trees of the Cosumnes River and the higher foothills of the Sierra Nevada in the background. This viewshed exhibits a moderate degree of vividness, unity, and intactness. The visual quality is therefore considered moderate.

3.7.2 Environmental Consequences – Aesthetics

This section describes the potential aesthetic or visual impacts to the landscape should the Proposed Action or No Action Alternative be implemented.

3.7.2.1 Proposed Action

The Proposed Action would develop a solar facility on 372 acres of gently rolling cattle grazing land in the unincorporated Consumnes community in Sacramento County California. Grading would be minimized to the extent possible and follow existing contours with drainage to the south and west. The site would be converted to dryland pasture with a combination of self-perpetuating grassland species and non-invasive forbs which would help stabilize. Some of the vegetation would provide a visual screen of the industrial facility. The fencing is anticipated to be 7-foot high agricultural style woven wire fencing making it less conspicuous. Views would change from undeveloped grassland to multiple lines of pole mounted PV panels; some with intervening landscaping.

Visual simulations from the five KOPs were performed in 2022 and are provided in Figures 3.7-2 through 3.7-6 (Dudek 2022, Appendix E). While equipment and workers would be visible during construction and decommission phases, the proposed hedgerow would screen much of this view at maturity. Visual simulations were created for the long-term views; with mature plantings. At KOP 1, near the western end of Meiss Road, the proposed foreground hedgerow plantings screen the majority of the proposed solar panels from sight. At KOP 2, intersection of Meiss and Dillard Road, the proposed solar panels and the Meiss Road hedgerow are visible in the middleground as low horizontal elements. At KOP 3, near the proposed main entry at Dillard Road, the proposed landscaping, approximately 500 feet, would screen the majority of the proposed substation, battery storage buildings, and the solar arrays from view of passing Dillard motorists. At KOP 4, on Simpson Ranch Court, the middleground view of grasslands would be replaced with rows of solar panels, approximately 1,500 feet north of the viewer. At KOP 5, a private residence on Simpson Ranch Court, the view is quite similar to KOP 4 with solar panels approximately 2,300 feet north of the viewer.

KOP 1 – Existing

KOP 1 – Proposed

Figure 3.7-2. KOP 1 – Meiss Road facing southeast, approximately 200 feet to nearest proposed solar panel

KOP 2 – Existing

KOP 2 – Proposed

Figure 3.7-3. KOP 2 Intersection of Meiss Road and Dillard Road, facing west, approximately 1,050 feet to the nearest solar panel

KOP 3 – Existing

KOP 3 – Proposed

Figure 3.7-4. KOP 3 Dillard Road near Project entrance, facing west; approximately 200 feet to the generation tie line backed by battery energy storage and solar panels

KOP 4 – Existing

KOP 4 – Proposed

Figure 3.7-5. KOP 4 Simpson Ranch Road facing northeast; approximately 1,500 feet to the nearest solar panel

KOP 5 – Existing

KOP 5 – Proposed

Figure 3.7-6. KOP 5 Simpson Ranch Road facing north, approximately 2,300 feet to the nearest solar panel

During construction, viewers from all KOPs and the surrounding area would have varying views of the construction activities (construction vehicles, grading, facility installation, etc.). These short-term impacts to the viewshed would be minor. Once the hedgerows were mature, as described above, there would be minimal visibility of the PV panels from the various KOPs. Therefore, the long-term impacts to visual resources during operations would also be minor.

Lighting and Glare

The Proposed Action's construction lighting would be short-term. Lighting would be shielded and focused downward on the required work area. Because construction lighting would be minimized, shielded, and pointed downwards, this lighting would not result in substantial glare, skyglow, or sleep disruption, and would, therefore, be a minor impact with regard to construction impacts of the Proposed Action.

The Proposed Action's operational phase would require minor nighttime security lighting at the substation, office, and battery storage buildings. None of these structures are located in proximity to existing offsite residences. Nighttime operational lighting would be designed to provide the minimum illumination needed to achieve safety and security objectives. Nighttime lighting would be shielded and oriented to focus on the desired areas, minimizing light spillover and glare for Dillard Road motorists. In addition, operational lighting would be motion activated, shielded, and pointed downwards. Therefore, the operational nighttime lighting would not result in substantial glare, skyglow, or sleep disruption, and would, therefore, be a minor impact with regard to operational impacts of the Proposed Action.

The Proposed Action's operational phase would not result in hazardous glare at the Mather Airport Control Tower, approach-departure flight paths for Mather or Rancho Murieta Airports, nearby residences, or nearby roadways. The Proposed Action would not provide a substantial new source of daytime glare resulting in a hazard for aircraft pilots or people on the ground. The solar facility would be located and its solar panels designed and oriented to address potential problems of glare consistent with optimum energy and capacity production as confirmed with Dudek's 2022 *Glare Analysis Report* and consistent with Sacramento Climate Action Plan (Sacramento County 2022a, Appendix E). Therefore, there would be no anticipated impact to aesthetics as a result of glare from the Proposed Action.

3.7.2.2 No Action Alternative

Under the No Action Alternative, RUS would not provide long-term financing for the project, and it is assumed the project would not be constructed. Existing conditions would likely remain unchanged (i.e., property would remain as predominantly-disturbed agricultural land) and agricultural activities would likely continue. Therefore, no project-related aesthetic impacts would be anticipated under the Proposed Action.

3.7.3 Mitigation – Aesthetics

- Design the lighting system to provide minimum illumination needed for safety and security using shielding and orientation to minimize light spillover.
- Install motion-activated lighting.

- Provide landscaping to screen the majority of the proposed substation, battery storage buildings, and the solar arrays from view of passing Dillard motorists.

3.8 Air Quality

This section describes an overview of existing air quality and greenhouse gas (GHG) emissions within the Proposed Action Area and the potential impacts on air quality and GHG emissions that would be associated with the Proposed Action.

3.8.1 Affected Environment – Air Quality

Ambient air quality is determined by the type and amount (concentration) of pollutants emitted into the atmosphere, the size and topography of the air basin in question, and the prevailing meteorological conditions in that air basin. Through its passage of the Clean Air Act of 1970 (CAA) and its amendments, Congress has mandated the protection and enhancement of our nation's air quality. The US Environmental Protection Agency (EPA) has established the National Ambient Air Quality Standards (NAAQS) for the following criteria pollutants to protect the public health and welfare: sulfur dioxide (SO_2), ozone (O_3), nitrogen dioxide (NO_2), particulate matter (PM) whose particles are less than or equal to 10 micrometers (PM_{10}), particulate matter whose particles are less than or equal to 2.5 micrometers ($PM_{2.5}$), carbon monoxide (CO), and lead (Pb).

The primary NAAQS were promulgated to protect public health, and the secondary NAAQS were promulgated to protect public welfare (e.g., visibility, crops, forests, soils, and materials) from known or anticipated adverse effects of air pollutants. NAAQS primary and secondary standards along with California Ambient Air Quality Standards (CAAQS) for criteria pollutants are listed in Table 3.8-1 (EPA 2022a, CARB 2016).

Table 3.8-1. National and California Ambient Air Quality Standards

Criteria Pollutant	Averaging Time	NAAQS [a]	CAAQS
Ozone (O_3)	8-hour	70 ppb [b]	70 ppb
Particulate Matter ($PM_{2.5}$)	24-hour	35.0 µg/m^3	NA
	1-year	12.0 µg/m^3	12.0 µg/m^3
Particulate Matter (PM_{10})	24-hour	150 µg/m^3	50 µg/m^3
Carbon Monoxide (CO)	1-hour	35.0 ppm	20 ppm
	8-hour	9.0 ppm	9.0 ppm
Lead (Pb)	3-month	0.15 µg/m^3	NA
Nitrogen Dioxide (NO_2)	1-hour	100 ppb	0.18 ppm
	1-year	53 ppb	30 ppb

Table 3.8-1. National and California Ambient Air Quality Standards

Criteria Pollutant	Averaging Time	NAAQS [a]	CAAQS
Sulfur Dioxide (SO_2)	1-hour	75 ppb	0.25 ppm
	3-hour	0.5 ppm	NA

Notes:
[a] All of the NAAQS are primary standards, which provide public health protection, except for the 3-hour SO_2 limit, which is a secondary standard and provides public welfare protection. The 1-year $PM_{2.5}$ and 24-hour PM_{10}, are a combination of primary and secondary standards. Units of measure are parts per million (ppm) by volume, parts per billion (ppb) by volume, and micrograms per cubic meter ($\mu g/m^3$) of air.
[b] Final rule signed October 1, 2015, and effective December 28, 2015. The previous (2008) O_3 standards additionally remain in effect in some areas. Revocation of the previous (2008) O_3 standards and transitioning to the current (2015) standards will be addressed in the implementation rule for the current standards.
Source: EPA 2022a, CARB 2016

Areas in compliance with the NAAQS are designated "attainment" areas. For areas EPA designates as "nonattainment" areas, the degree of nonattainment is further categorized from "marginal" to "severe". In some cases, EPA is not able to determine air quality attainment status, in which case such areas are designated "unclassifiable". A nonattainment designation requires that a region submit a State Implementation Plan (SIP) that addresses how the NAAQS will be met. The CAA General Conformity Rule requires that Federal actions taking place in nonattainment areas conform to the region's SIP for reducing airborne concentrations of the nonattainment pollutant(s) (40 CFR Parts 50, 51, and 93).

The Proposed Action Area is in the Sacramento Valley Air Basin (SVAB) and the eastern portion of the Sacramento Metropolitan Air Quality Management District (SMAQMD). The EPA, California Air Resources Board (CARB), and SMAQMD are responsible for regulating air quality in the vicinity of the site. CARB is the lead agency for developing the SIPs in California.

3.8.1.1 Regional Air Quality

The Proposed Action Area is in the eastern portion of the SMAQMD. SMAQMD is responsible for monitoring air pollution within the SVAB and for developing and administering programs to reduce air pollution levels below the health-based standards established by the state and federal governments. As shown in Table 3.8-2, the SMAQMD meets the NAAQS for all criteria air pollutants except ozone and $PM_{2.5}$ (SMAQMD 2017).

Table 3.8-2. Attainment Status for Federal and State Ambient Air Quality Standards

Pollutant	Federal Standard	State Standard
Ozone[1]	Nonattainment[1]	Nonattainment
Particulate Matter—10 Micrometers or Less	Attainment	Nonattainment
Particulate Matter—2.5 Micrometers or Less	Nonattainment	Attainment
Carbon Monoxide	Attainment	Attainment
Nitrogen Dioxide	Unclassifiable/Attainment	Attainment
Sulfur Dioxide	Unclassifiable/Attainment	Attainment

Table 3.8-2. Attainment Status for Federal and State Ambient Air Quality Standards

Pollutant	Federal Standard	State Standard
Lead	Attainment	Attainment
Hydrogen Sulfide	No Federal Standard	Unclassified
Sulfates		Attainment
Visibility-Reducing Particles		Unclassified

Source: SMAQMD 2017

[1] This designation indicates that a pollutant concentration has exceeded the established standard.

3.8.1.2 Regional Climate

Air quality conditions are determined by topography, meteorology, and climate. The Proposed Action Area is in the SVAB, characterized by a Mediterranean climate with cool, rainy winters and hot, dry summers tempered by occasional westerly breezes from the Sacramento–San Joaquin River Delta (SMAQMD 2021).

May through October is ozone season in the SVAB; characterized by poor air movement in the mornings and the arrival of the Delta sea breeze from the southwest in the afternoons. In addition, with the longer daylight hours, more sunlight is available to fuel photochemical reactions between volatile organic compounds (VOC) and nitrogen oxides (NO_X), which in turn result in ozone formation. Typically, the Delta breeze transports air pollutants northward out of the SVAB. However, during approximately half of the time from July to September, a phenomenon known as the Schultz eddy prevents this from occurring. The Schultz Eddy phenomenon causes winds on the west side of the SVAB to shift to a northerly wind, blowing air pollutants southward back into the SVAB. This phenomenon exacerbates the concentration of air pollutant emissions in the air basin and can contribute to violations of ambient air quality standards (SMAQMD 2021).

3.8.1.3 Greenhouse Gas Emissions

GHGs are compounds found naturally within the earth's atmosphere. These atmospheric compounds absorb the infrared sunlight, acting like an insulator to trap heat and helping maintain global temperatures. The surface earth temperature increases as the levels of GHGs increase at ground level, more commonly known as global warming. The climate change associated with global warming is predicted to produce negative economic and social consequences across the globe through changes in weather including more intense hurricanes, greater risk of forest fires, and increased flooding.

The most common GHGs emitted from natural processes and human activities include carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). In addition, fluorinated gases, including sulfur hexafluoride (SF_6), are potent GHGs, providing a high global warming potential (GWP) to trap heat in the atmosphere. The primary GHG emitted by human activities in the United States is CO_2, representing approximately 79 percent of total GHG emissions in 2020. The largest source of CO_2 and of overall GHG emissions is fossil fuel combustion.

The EPA is the Federal agency responsible for implementing the Federal CAA. On April 2, 2007, the US Supreme Court ruled that GHGs fit within the CAA's definition of a pollutant and that EPA

had the authority to regulate GHGs. In 2009, the EPA determined that current and projected atmospheric levels of the six key GHGs,CO_2, CH_4, N_2O, hydrofluorocarbons, perfluorocarbons, and SF_6, endanger the public health and welfare of current and future generations.

Climate change is a complex global challenge with inherent interrelationships among its sources and effects. In 2023, the CEQ issued interim guidance to assist in the consideration of GHG and climate change effects for actions proposed under NEPA (CEQ-2022-0005).

EPA's Facility Level Information on Greenhouse Gases Tool (FLIGHT) database indicates that as of 2021 there were eight large emitters of GHGs in Sacramento County: four power generation facilities (natural gas and biomass), two landfills, one industrial gas supplier (carbon dioxide and hydrogen), and one medical center (EPA 2022d). The State of California has implemented several programs and regulatory measures to reduce GHG emissions including the California 2030 Renewable Portfolio Standards. In compliance with those programs and measures, SMUD has implemented a 2030 Net Zero Plan. Both the State and SMUD programs are described in Section 1.4. Future projects will be expected to be consistent with these programs.

Global warming potential (GWP)

While air pollutants, have relatively short atmospheric lifetimes and localized effects, GHGs have long atmospheric lifetimes (1 year to several thousand years), or long enough to be dispersed around the globe. With their heat trapping abilities, GHG released locally can contribute to global changes in the climate and environment.

Different GHGs have different abilities to trap heat in the atmosphere. The GWP of GHGs are measured relative to CO_2, which has a GWP of 1. The GWP is 25 for CH_4, 298 for N_2O, and 22,800 for SF_6, such that 1 ton of CH_4 has the same contribution to the greenhouse effect as 25 tons of CO_2, often expressed as metric tons (MT) carbon dioxide equivalent (CO_2e). An annual inventory of statewide California GHG emissions prepared by CARB revealed that 369.2 million MT CO_2e were generated in 2020 with contributions from fossil fuel combustion (transportation), industry, and electric power accounting for 38, 23, and 11 percent, respectively, of the total GHG emissions (CARB 2022b).

3.8.2 Environmental Consequences – Air Quality

This section describes the potential impacts to climate and air quality should the Proposed Action or No Action Alternatives be implemented.

3.8.2.1 Proposed Action

NAAQS

Dudek prepared an Air Quality and Greenhouse Gas Emission Calculations Technical Memorandum for the Sloughhouse Solar Project (Appendix F) to estimate air pollutant and GHG emissions from construction and operation of the Proposed Action. Under the Proposed Action, the proposed solar facility would be built and would remain operational until decommissioning in 30 years. Construction and decommissioning activities would require the use of off-road equipment including skid loaders, rough terrain forklifts, graders, scrapers, bulldozers, rollers,

tractors/loaders/backhoes, excavators, scrapers, rollers, plate compactors, cranes, and all-terrain vehicles. Project construction would also require the export of approximately 78,000 cubic yards of soil during site preparation activities. The analysis conservatively assumed a 75-mile one-way trip distance to Vallejo for offsite disposal. Since the truck trips would potentially travel outside of the SMAQMD jurisdiction for disposal of the soil, emissions associated with the haul trucks were apportioned to the surrounding air districts of Bay Area Air Quality Management District and Yolo-Solano Air Quality Management District for comparison to their recommended thresholds of significance. Additionally, it was assumed that worker vehicles would travel, on average, approximately 0.5 mile on unpaved roads over the course of construction to account for travel to laydown locations.

Operational activities would include regular inspection and maintenance activities associated with operation of the Proposed Action. It is anticipated that inspection and maintenance activities would require up to 10 trips per day. The operational analysis also accounted for area-source emissions associated with VOC off-gassing emissions from reapplication of surface coatings for the energy storage system and landscape/maintenance equipment.

Construction activities associated with the Proposed Action would result in a temporary increase in criteria pollutant and ozone precursor emissions in the form of both fugitive dust from ground disturbing activities, including site preparation, grading, and travel on paved and unpaved roadways, and exhaust emissions from the use of construction equipment and operation of worker vehicles and vendor and haul trucks.

Decommissioning activities would also result in a temporary increase in criteria air pollutant and ozone precursor emissions (NO_x and reactive organic gases) associated with fugitive dust during system removal and demolition, site restoration, and travel on paved and unpaved roadways, and exhaust emissions from the use of construction equipment and operation of worker vehicles and vendor and haul trucks.

The construction-related and decommissioning activities would be required to comply with SMAQMD rules and regulations established, in part, to ensure implementation of and consistency with strategies and actions of the applicable air quality plans.

As shown in Table 3.8-3, emissions generated during construction could exceed the SMAQMD thresholds of significance for NO_X and PM_{10}. Therefore, the construction and decommissioning activities could result in a potentially moderate short-term contribution to regional air pollution and thereby could conflict with air quality plans applicable to the SMAQMD. Similarly, for these same reasons, construction would not be consistent with the applicable County General Plan policies related to air quality in the absence of mitigation and project features to reduce the impacts. This impact would be moderate and would be mitigated by implementation of BMPs. During construction and decommissioning, applicable dust control BMPs would be continued throughout including watering exposed soil surfaces to maintain moist soil, covering haul trucks traveling on major roads, suspending excavation activities when wind speed exceed 20 miles per hour, limiting unpaved road travel to less than 15 miles per hour, and using a wet street sweeper to remove visible trackout mud onto public roads, all which work to decrease PM_{10} concentrations. Other applicable BMPs include reducing vehicle/equipment emissions through minimizing idling time

and maintaining equipment in proper working order, which work to decrease PM_{10}, $PM_{2.5}$ and reactive organic gases (which lead to the formation of pollutants like ozone) concentrations.

Table 3.8-3. Summary of Maximum Daily and Annual Construction and Decommissioning Related Emissions of Criteria Air Pollutants and Precursors

Description	ROG (lbs/day)	NO_X (lbs/day)	PM_{10} (lbs/day)[1]	$PM_{2.5}$ [a] (lbs/day)[1]	PM_{10} (tons/year)[1]	$PM_{2.5}$ (tons/year)[1]
Construction Emissions	**51.36**	**218.48**	**104.39**	**21.25**	**4.23**	**0.88**
SMAQMD Threshold of Significance	N/A	85	80	82	14.6	15
Threshold Exceeded?	N/A	**Yes**	**Yes**	No	No	No
Decommissioning Emissions	**21.94**	**33.29**	**28.18**	**4.51**	**1.58**	**0.25**
SMAQMD Threshold of Significance	N/A	85	80	82	14.6	15
Threshold Exceeded?	N/A	No	No	No	No	No

Notes: ROG = reactive organic gases; NO_X = nitrogen oxides; PM_{10} = particulate matter less than 10 micrometers in diameter; $PM_{2.5}$ = particulate matter less than 2.5 micrometers in diameter; SMAQMD = Sacramento Metropolitan Air Quality Management District

[1.] PM emissions include implementation of fugitive dust control measures listed as BMPs; therefore, this analysis utilized the non-zero SMAQMD recommended PM significance threshold.

Source: See Appendix F for detailed construction assumptions and calculations.

As shown in Table 3.8-4, although mitigation measures would reduce NO_X and PM_{10} emissions associated with project construction, these emissions still exceed SMAQMD's thresholds of significance; requiring the project's participation in the SMAQMD's offsite mitigation fee program. Administered by SMAQMD, the mitigation fee is calculated, approved, and paid prior to the issuance of grading or improvement plans. Therefore, with implementation of the described mitigation measures, the impacts on air quality associated with construction of the Proposed Action would be minor.

Table 3.8-4. Summary of Mitigated Maximum Daily Construction-Related Emissions of Criteria Air Pollutants and Precursors

Emissions Source	ROG (lbs/day)	NO_X (lbs/day)	PM_{10} (lbs/day)	$PM_{2.5}$ (lbs/day)
Emissions	**44.56**	**130.42**	**100.51**	**17.70**
SMAQMD Threshold of Significance	N/A	85	80	82
Threshold Exceeded?	N/A	**Yes**	**Yes**	No

Notes: lbs/day = pounds per day; N/A = not applicable; NO_X = nitrogen oxides; PM_{10} = particulate matter less than 10 micrometers in diameter; $PM_{2.5}$ = particulate matter less than 2.5 micrometers in diameter; ROG = reactive organic gases; SMAQMD = Sacramento Metropolitan Air Quality Management District

Source: See Appendix F for detailed construction assumptions and calculations.

Operational activities associated with the Proposed Action, including an average of 10 regular inspection and maintenance trips per day along with energy and water usage, would result in the generation of criteria air pollutant emissions. Estimated operational project generated emissions modeled by Dudek are shown in Table 3.8-5, with assumptions and calculations detailed in Appendix F. Since the Proposed Action would generate PM emissions during operation,

implementation of BMPs would be required in order to use the SMAQMD non-zero thresholds of significance for PM. As shown in Table 3.8-5, operational emissions would not exceed the recommended SMAQMD thresholds of significance. In addition, operation of the project would result in the generation of energy from a renewable, carbon-free resource that would support the increasing contribution of clean energy resources to the overall regional power mix and related reduction in criteria air pollutants emissions associated with energy generation.

Table 3.8-5. Summary of Maximum Daily and Annual Operational Emissions of Criteria Air Pollutants and Precursors

Emissions Source	ROG (lbs/day)	NO_X (lbs/day)	PM_{10} (lbs/day)[1]	$PM_{2.5}$ (lbs/day)[1]	PM_{10} (tons/year)[1]	$PM_{2.5}$ (tons/year)[1]
Emissions	**0.16**	**0.05**	**0.07**	**0.02**	**0.01**	**<0.01**
SMAQMD Threshold of Significance	65	65	80	82	14.6	15
Threshold Exceeded?	N/A	No	No	No	No	No

Notes: BMP = best management practices; lbs/day = pounds per day; NO_X = nitrogen oxides; PM = particulate matter; PM_{10} = particulate matter less than 10 micrometers in diameter; $PM_{2.5}$ = particulate matter less than 2.5 micrometers in diameter; ROG = reactive organic gases; SMAQMD = Sacramento Metropolitan Air Quality Management District; tons/year = tons per year

1. This analysis utilized the non-zero SMAQMD recommended PM significance threshold; therefore, implementation of BMPs is required.

Source: See Appendix F for detailed construction assumptions and calculations.

While operational emissions would not exceed SMAQMD-recommended thresholds of significance, implementation of BMPs is required to enable the project to use the SMAQMD non-zero thresholds of significance. Without implementation of the applicable BMPs, PM emissions generated during routine operational maintenance activities may conflict or obstruct implementation of applicable air quality, making this impact potentially significant. Similar BMPs would be implemented during operation of the project as described previously for construction and decommissioning. Therefore, with implementation of BMPs and any mitigation measures as needed, impacts on air quality in association with operations of the Proposed Action would be minor.

Greenhouse Gas Emissions

Short-term construction and decommissioning activities and long-term operations of the Proposed Action would generate GHG emissions associated with off-road and on-road exhaust. Construction- and decommissioning-related and operational mobile sources (both off-road and on-road) of GHG emissions were modeled using the same methods and assumptions used to model criteria air pollutants above. As detailed in Appendix F and summarized in Table 3.8-6, total construction-related GHG emissions are estimated to be approximately 1,950 MT CO_2e over the 8-month construction period and would exceed the SMAQMD construction-related threshold of 1,100 MT CO_2e per year. Decommissioning activities would generate approximately 989 MT CO_2e over the 8-month decommissioning period and would not exceed the SMAQMD threshold of 1,100 MT CO_2e per year. This could result in moderate impacts to GHGs in association with construction activities (Appendix F). To minimize impacts, Sloughhouse Solar would require contractors to minimize idling time and maintain all construction equipment in proper working

condition per manufacturer's specifications. Additionally, off-road diesel vehicles would be required to provide current California Air Resources Board certificates of compliance.

Table 3.8-6. Estimated Annual Construction and Decommissioning Greenhouse Gas Emissions (metric tons/year)

Year	CO_2	CH_4	N_2O	CO_2e[1]
2022 Construction	1,915.94	0.25	0.09	1,949.51
2053 Deconstruction	982.80	0.02	0.02	988.51
SMAQMD Threshold				1,100
Threshold Exceeded				Yes

Notes: CH_4 = methane; CO_2 = carbon dioxide; CO_2e = carbon dioxide equivalent; N_2O = nitrous oxide
Source: See Attachment A of Appendix F for complete results.
[1] Includes indirect GHG emissions associated with onsite water well use during construction (17.78 CO_2e).

After construction, the Proposed Action would require minor operations and maintenance activities that would include up to 10 daily vehicles trips. Maximum annual GHG emissions from operations were estimated assuming the maximum daily vehicle and equipment activity would occur year-round, which is a conservative estimate of such activity, which may only occur for periods of days to weeks throughout the year. Estimated operational GHG emissions are summarized in Table 3.8-7. Emissions are separated into emissions from area and mobile (including transportation) sources along with energy emissions from energy consumed by the Proposed Action, solid waste disposal (and associated landfill off gassing), and energy associated with water supply, treatment, and distribution along with wastewater treatment.

Table 3.8-7. Estimated Annual Operational Greenhouse Gas Emissions (metric tons/year)

Emission Source	CO_2	CH_4	N_2O	CO_2e
Area	<0.01	0.00	0.00	7.37[1]
Energy	82.49	<0.01	<0.01	82.95
Mobile	10.68	<0.01	<0.01	10.86
Waste	0.95	0.06	0.00	2.36
Water	0.37	<0.01	0.09	0.37
TOTAL	99.03	0.06	<0.01	103.91

Notes: CH_4 = methane; CO_2 = carbon dioxide; CO_2e = carbon dioxide equivalent; N_2O = nitrous oxide
[1] Includes emissions from SF_6 (68 pounds of SF_6 assuming a 1 percent leak rate = 7.37 MT CO_2e per year).
Source: See Attachment A of Appendix F for complete results.

While Table 3.8-7 assumes onsite water well use, operational GHG emissions shown in Table 3.8-8 conservatively estimate 10.13 MT CO_2e for use of offsite water. And, thus, the total annual GHG emissions generated as a result of operations and maintenance activities would be less than 114 MT CO_2e per year. Because this estimate reflects a conservative assumption of peak maintenance activities occurring year-round and because it does not consider future emissions reductions in vehicle and equipment operations due to increasing regulatory requirements and implementation of cleaner technology, long-term annual operations and maintenance emissions are likely to be even less than estimated. These operational GHG emissions would be less than the SMAQMD *de minimis* screening level and the project's operational emissions would, therefore, be considered a minor direct contribution to climate change.

Table 3.8-8. Proposed Project Operational GHG Emissions in the First Operational Year

Proposed Project Operational Emissions Source	Total GHG Emissions (MT CO_2e per year)
Area[1]	7.37
Energy	82.95
Mobile	10.86
Waste	2.36
Water	10.13
Total Annual Emissions	**113.67**
SMAQMD Threshold (de minimis)	**1,100**
Exceed Threshold?	**No**

Notes: GHG = Greenhouse gas; MT CO_2e = metric tons of carbon dioxide equivalents; SF_6 = sulfur hexafluoride; SMAQMD = Sacramento Metropolitan Air Quality Management District

1. Area source emissions include fugitive SF_6 emissions at a maximum rate of 1 percent SF_6-containing switchgear and equipment.

Source: See Appendix F for detailed methodology, assumptions, and calculations.

Operations of the Sloughhouse Solar facility would include the use of SF_6, which is a high-GWP GHG. As mentioned previously, SF_6 is a strong GHG used primarily as an insulator in electrical transmission and distribution systems. The Proposed Action is anticipated to require 68 pounds of SF_6 gas. The project's circuit breakers would have a maximum annual leak rate of 1 percent, based on compliance with CARB regulations (CARB 2011, CARB 2022c). Appendix F provides the detailed calculation inputs, assumptions, and outputs regarding the SF_6 GHG emissions.

The Proposed Action's 50-megawatt capacity was estimated to generate approximately 130,000 megawatt hours (MWh) per year. As detailed in Appendix F, SMUD's most recently published GHG emissions intensity factor of 360 pounds of CO_2e per MWh for the year 2021 was used to calculate the net emissions benefit for an initial operational year of 2023, assuming a linear progress of SMUD's incorporation of GHG-free energy resources into its power mix of 100 percent carbon-free energy by 2045. The net emissions benefit over the majority of the life of the project are shown in Table 3.8-9. Thus, if the renewable electricity generated by the project were to be used instead of electricity generated by SMUD's current sources projected to the 2023 calendar year, the Proposed Action would provide a potential offset of up to 19,459 MT CO_2e in the first year of operation. See Appendix F for additional details and calculations.

Table 3.8-9. Estimated Net Emissions Benefit Assuming 130,000 MWh Generated Per Year

Year	SMUD GHG Emission Factor (pound CO_2e/MWh)	Avoided GHG Emission (MT CO_2e)
2021	360	--
2022	345	--
2023	330	19,459.14
2024	315	18,574.63
2025	300	17,690.12
2026	285	16,805.62
2027	270	15,921.11
2028	255	15,036.60
2029	240	14,152.10
2030	225	13,267.59
2031	210	12,383.09
2032	195	11,498.58
2033	180	10,614.07
2034	165	9,729.57
2035	150	8,845.06
2036	135	7,960.56
2037	120	7,076.05
2038	105	6,191.54
2039	90	5,307.04
2040	75	4,422.53
2041	60	3,538.02
2042	45	2,653.52
2043	30	1,769.01
2044	15	884.51
2045	0	0.00
TOTAL		**223,780.06**

Social Cost of GHGs

With inherent interrelationships among sources and effects, climate change is a complex global challenge. In 2023, the CEQ interim guidance instructed climate change analysis include the effects of the proposed action on GHG emissions (both production and reduction) be assessed over the lifetime of the proposed action along with the effects of climate change on the proposed action and its environmental impacts. To assist decision makers and the public asses potential climate change effects, climate impacts are translated into dollar estimates of the social cost of GHG (SC-GHG).

Estimates of the social cost of carbon (SC-CO_2), social cost of methane (SC-CH_4), and social cost of nitrous oxide (SC-N_2O) from 2020 through 2050, as presented in US 2020 dollars, were used to represent the net harm to society from the addition of a small amount of GHG in a given year.

This value incorporates climate change impacts including "net agricultural productivity, human health effects, property damage from increased flood risk natural disasters, disruption of energy systems, risk of conflict, environmental migration, and the value of ecosystem services." However, some direct and indirect impacts like ocean acidification, increased wildfires, and increased drought are not included in these costs. To reflect the stream of future damages to agriculture, human health, and other sectors, the stream is discounted to its value in the year of its release. Because future emissions produce larger incremental damages as systems become more stressed with climate change, and because the gross domestic product is growing over time, SC-GHG estimates increase over time. Thus, the societal harm from the release of a metric ton of GHG in 2035 is greater than a release of a metric ton in 2025 (Cost of Carbon 2017, EPA 2021, Cost of Carbon 2023a, Cost of Carbon 2023b).

The Proposed Action's SC-GHG was calculated using the New York University Institute of Policy Integrity's Cost of Carbon Calculator based on the federal government's Interagency Working Group on the Social Cost of Greenhouse Gases policy. the anticipated construction and decommission GHG emissions for the Proposed Action in Table 3.8-4 and the operational GHG emissions in Table 3.8-5 were used for the calculation. As analyzed in 2022 using the 3 percent discount rate[1], estimates of the Proposed Action's SC-GHG are summarized in Table 3.8-10 using 2020 US dollars. While the Proposed Action is anticipated to operate for 30 to 35 years, the model was limited to emissions prior to 2051. Anticipated SC-GHG for yearly operational emissions beyond 2049 are anticipated to be similar to previous years. Decommission SC-GHG are anticipated to be similar to that determined for the limit of the model in 2050 (EPA 2021, Cost of Carbon 2023c).

Table 3.8-10. Summary of Projected SC-GHG for 2022 through 2050 (2020 US dollars) [1]

Project Phase	CO_2	CH_4	N_2O	SC-GHG
Construction	$ 98,929.56	$ 394.75	$ 1,735.11	$ 101,059.42
Operations (2023-2049)	$ 121,067.44	$ 2,420.15	$ 4,577.43	$ 128,065.02
Decommissioning	$ 36,367.53	$ 26.81	$ 288.38	$ 36,682.73
Total SC-GHG (2022-2050)	$ 256,364.54	$ 2,841.71	$ 6,600.92	$ 265,807.17

Notes: CH_4 = methane; CO_2 = carbon dioxide; N_2O = nitrous oxide; SC-GHG = social cost of greenhouse gas

[1] SC-GHG determined using a discount rate of 3 percent. Model used to calculate the SC-GHG limited to 2020 through 2050.

Source: (EPA 2021, Cost of Carbon 2023c)

3.8.2.2 No Action Alternative

Under the No Action Alternative, RUS would not provide long-term financing for the project, and it is assumed the project would not be constructed. Existing conditions would likely remain unchanged (i.e., property would remain as predominantly-disturbed agricultural/grazing land) and agricultural / grazing activities would likely continue. Therefore, no project-related air quality impacts would be anticipated under the No Action Alternative.

[1] Discount rates currently range between 2 to 7 percent on average. A 3 percent discount rate was selected as a moderate approach.

Under the No Action Alternative, the Proposed Action would not be built and would not provide 130,000 MWh per year. Without the Sloughhouse Solar generation, the local utility, SMUD, would provide this energy using their existing mix of providers. Using the 2021 emissions factors for the Western Electricity Coordinating Council and assuming these factors remain relevant over the modeled 27-years of operation, Table 3.8-11 provides an estimate of the SC-GHG from SMUD emissions for this annual 130,000 MWh production over the modeled 27-year period. This estimate for SMUD does not incorporate green technology advances during this timeframe (EPA 2021, EPA 2022c, Cost of Carbon 2023c).

Table 3.8-11. Summary of SMUD Projected SC-GHG to produce 130,000 MWh annually for 2023 through 2049 (2020 US dollars) [1]

	CO_2	CH_4	N_2O	SC-GHG
Non-Baseload Emission Factors (pound/MWh)	1,006.5	0.053	0.007	--
Metric ton / year	59,350	3.13	0.41	--
Operations (2023-2049)	$ 72,557,309.10	$ 126,058.86	$ 188,941.16	$ 72,872,309.12

Notes: CH_4 = methane; CO_2 = carbon dioxide; N_2O = nitrous oxide; SC-GHG = social cost of greenhouse gas
[1] SC-GHG determined using a discount rate of 3 percent. Model used to calculate the SC-GHG limited to 2020 through 2050.
Source: (EPA 2021, EPA 2022c, Cost of Carbon 2023c)

While Table 3.8-11 is oversimplified with a snapshot of 2021 emission factors used for the entire operational period, comparison of the projected SC-GHG under the Proposed Action Alternative in Table 3.8-10 with results under the No Action Alternative in Table 3.8-11 shows the Proposed Action emitting much less than the SMUD mockup in the No Action Alternative.

3.8.3 Mitigation – Air Quality

- The construction-related and decommissioning activities would be required to comply with SMAQMD rules and regulations established, in part, to ensure implementation of and consistency with strategies and actions of the applicable air quality plans.
- The project would be required to participate in the SMAQMD's offsite mitigation fee program. Administered by SMAQMD, the mitigation fee is calculated, approved, and paid prior to the issuance of grading or improvement plans.

3.9 Socioeconomics / Environmental Justice

This section provides an overview of existing socioeconomic conditions and environmental justice considerations within the Proposed Action Area and vicinity and describes the potential impacts that would be associated with the Proposed Action and No Action Alternative. Components of socioeconomic resources that are analyzed include population, employment, and income. Components of environmental justice that are analyzed include minority and low-income population.

3.9.1 Affected Environment – Socioeconomics / Environmental Justice

3.9.1.1 Socioeconomics

In order to identify general socioeconomic patterns in the vicinity of Proposed Action Area, various socioeconomic characteristics have been analyzed, including population growth trends, racial and ethnic characteristics, economic indicators, and employment data. Data are analyzed at various geographic levels for the purpose of comparison.

Population

Population trends and projections are presented in Table 3.9-1. In 2021, the population of Sacramento County was 1,571,767 (USCB 2021a). Sacramento County is classified as a metropolitan area, and is part of the Sacramento-Roseville-Folsom, California metropolitan core-based statistical area (USCB 2022). Sacramento County is growing faster than the state and the nation. Between 2000 and 2021, population in Sacramento County increased 28.5 percent while population in California and the nation increased 12.4 percent and 17.2 percent, respectively (USCB 2000, USCB 2021a).

Table 3.9-1. 2000 – 2030 Population Data

Geographical Area	2000	2010	2021	Projection 2030	Projection 2040	Percent Change 2000 – 2021 (%)	Percent Change 2021 – 2040 (%)
Sacramento County	1,223,499	1,418,788	1,571,767	1,687,220	1,808,307	28.5	15.0
California	33,871,648	37,253,956	39,455,353	NA	NA	16.5	NA
United States	281,421,906	308,745,538	329,725,481	355,101,000	373,528,000	17.2	13.3

Sources: USCB 2000, USCB 2010, USCB 2021a, USCB 2023, State of California 2023

The upward trend in population is expected to continue through 2040 and beyond, although the rate of growth is projected to be less than previous periods. Between 2021 and 2040, the population is projected to increase in Sacramento County by 15.0 percent. During the same period, the population is projected to increase 12.4 percent in California and 13.3 percent in the nation (State of California 2023, USCB 2023, USCB 2021a).

There are four census block groups located wholly or partly within a 2-mile radius of the Proposed Action Area, with a total population of 5,242. Table 3.9-2 presents the 2021 population estimates for these block groups. The Proposed Action Area is located in Block Group 1, Census Tract 86.02 which had a population of 1,213 in 2021 (USCB 2021a).

Table 3.9-2. 2021 Block Group Population Data

Geographical Area	2021 Population
Block Group 1, Census Tract 86.02, Sacramento County, California	1,213
Block Group 2, Census Tract 86.02, Sacramento County, California	528
Block Group 2, Census Tract 94.04, Sacramento County, California	2,343
Block Group 3, Census Tract 94.04, Sacramento County, California	1,158

Table 3.9-2. 2021 Block Group Population Data

Geographical Area	2021 Population
Sacramento County	1,571,767
California	39,455,353
United States	329,725,481

Sources: USCB 2000, USCB 2010, USCB 2021a, USCB 2023, State of California 2023

Employment and Income

Employment and industry trends are presented in Table 3.9-3. In 2021, Sacramento County had a total employment of about 923,168 jobs. Government and related enterprises provided 19.8 percent of the jobs, more than the state (11.4 percent) and the nation (12.0 percent). Approximately 0.3 percent were employed in farming, below the state level of 1.0 percent and the national level of 1.3 percent (BEA 2023a). The 2021 unemployment rate for Sacramento County was 7.0 percent, slightly lower than the state (7.3 percent) and higher than the nation (5.3 percent) (BLS 2022a, BLS 2022b).

Table 3.9-3. Employment and Industry Trends

Industry	Sacramento County	California	United States
Total Employment (number of jobs)	923,168	23,906,353	201,142,600
Farm	0.3%	1.0%	1.3%
Construction	6.4%	5.2%	5.8%
Manufacturing	2.7%	5.8%	6.5%
Retail Trade	8.7%	8.5%	9.5%
Health care and social assistance	13.1%	11.8%	11.4%
Accommodation and food services	6.1%	6.6%	6.7%
Government and government enterprises	19.8%	11.4%	12.0%
Other	42.9%	49.7%	46.8%

Source: BEA 2023a, BEA 2023b

Table 3.9-4 presents 2021 per capita personal income. Sacramento County's per capita income of $61,829 was 96.4 percent of the national average of $64,143 and less than the state average of $76,614 (BEA 2023c).

Table 3.9-4. 2021 Per Capita Personal Income Data

Area	Per Capita Personal Income	Percent of US (%)
Sacramento County	$61,829	96.4
California	$76,614	119.4
United States	$64,143	100.0

Source: (BEA 2023c)

3.9.1.2 Environmental Justice

The need to identify environmental justice issues is stated in EO 12898, entitled "Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations". EO 12898 directs federal agencies to identify and address, as appropriate, potential disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and low-income populations. Disproportionately high and adverse effects is defined as an adverse effect that is predominately borne or suffered by a minority population and/or a low-income population and is appreciably more severe or greater in magnitude than the adverse effect that would be suffered by the non-minority population and/or non-low-income population. A Presidential Memorandum accompanying the EO directed agencies to incorporate environmental justice concerns in their NEPA processes and practices. Guidance for addressing environmental justice during the NEPA process can be found in *Environmental Justice: Guidance under the National Environmental Policy Act* (CEQ 1997). In identifying minority and low-income populations, the following definitions of minority individuals and populations and low-income populations were used:

- *Minority individuals.* Individuals who identify themselves as members of the following population groups: American Indian or Alaskan Native, Asian, Native Hawaiian or Other Pacific Islander, Black or African American, Hispanic, or two or more races.
- *Minority populations.* Minority populations are identified where (1) the minority population of an affected area exceeds 50 percent or (2) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis. For the purposes of this analysis, "meaningfully greater" is defined as greater than 10 percent of the minority population percentage in the County within which the affected area is located.
- *Low-income populations.* Low-income populations are identified with the annual statistical poverty thresholds from the United States Census Bureau (USCB) Current Population Reports, Series P-60, on Income and Poverty. In this analysis, low-income populations are identified where (1) the population of an affected area exceeds 50 percent low-income based on the Census data or (2) the percentage of low-income population in the affected area is greater than 10 percent of the low-income population percentage in the County within which the affected area is located.

Minority and poverty data from 2017-2021 USCB American Community Survey 5-Year Estimates was used to conduct a quantitative assessment of potential environmental justice impacts. The geographic unit used in the analysis to identify any environmental justice communities of concern is the census block group. For this Proposed Action, minority populations are identified by examining the racial and ethnic characteristics of the surrounding community. If the community has a minority population that is greater than 50 percent or that is meaningfully greater than the general population of Sacramento County as a whole, it is identified as having a minority population.

The Region of Influence (ROI) for this analysis was a 2-mile radius around the Proposed Action Area, which wholly or partly contains four census block groups (see Table 3.9-5). The Proposed

Action ROI contains only one minority population and one low-income population subject to consideration as a potential environmental justice community of concern (Block Group 2, Census Tract 94.04). The Proposed Action site is located in Block Group 1, Census Tract 86.02. For the purposes of this analysis, a census block group constitutes an environmental justice community if one of the two criteria described above for either minority or low-income populations are met.

Minority Population

Table 3.9-5 presents the results of the minority population analysis for the ROI. In 2021, minorities constituted 57.1 percent of the total population in Sacramento County. Minority populations in block groups contained in the ROI ranged from 24.1 percent to 52.9 percent (USCB 2021b). Thus, the ROI had a lesser share of minority population than the county and the state (64.2 percent).

However, Block Group 1, Census Tract 86.02, the block group in which the site is located exceeded the 50 percent minority population threshold. Thus, it constitutes a minority population subject to consideration as an environmental justice community of concern. None of the block groups exceed the meaningfully greater threshold (more than 10 percent greater than the minority population of the county). Based on this analysis, the ROI contains one block group with a minority population.

Table 3.9-5. 2021 Minority Population Data

Area	Total Population	Minority	Percent Minority Population (%)
Block Group 1, Census Tract 86.02, Sacramento County, California	**1,213**	**642**	**52.91**
Block Group 2, Census Tract 86.02, Sacramento County, California	528	127	24.1
Block Group 2, Census Tract 94.04, Sacramento County, California	2,343	984	42.0
Block Group 3, Census Tract 94.04, Sacramento County, California	1,158	482	41.6
Sacramento County, California	1,571,767	897,614	57.1
California	39,455,353	25,346,056	64.2
United States	329,725,481	133,715,111	40.5

Source: USCB 2021b

[1] Defined EJ community – exceeding the minority threshold of more than10 percent greater minority than the minority population of the county.

Low-income Populations

Table 3.9-6 presents the results of the low-income population for the ROI. In 2021, 13.3 percent of the population in Sacramento County had an income below the poverty level (USCB 2021c). Low-income populations in block groups contained in the ROI ranged from 2.6 percent to 19.2 percent (USCB 2021c). The block group with the highest rate of poverty was Block Group 2, Census Tract 86.02. None of the block groups had low-income populations exceeding 50 percent;

however, Block Group 2, Census Tract 86.02 did exceed the meaningfully greater threshold (more than 10 percent greater than the population of the county) and it is therefore considered an environmental justice community. That being said, the project is not in this Census Tract Block Group.

Table 3.9-6. 2021 Low-Income Data

Area	Total Population	Persons Below Poverty Level	Percent of Persons Below Poverty Level (%)
Block Group 1, Census Tract 86.02, Sacramento County, California	1,213	31	2.6
Block Group 2, Census Tract 86.02, Sacramento County, California	**495**	**95**	**19.2[1]**
Block Group 2, Census Tract 94.04, Sacramento County, California	2,343	80	3.4
Block Group 3, Census Tract 94.04, Sacramento County, California	1,158	87	7.5
Sacramento County	1,550,537	205,590	13.3
California	38,701,352	4,741,175	12.3
United States	321,897,703	40,661,636	12.6

Source: USCB 2021c

[1] Defined environmental justice community exceeding the poverty threshold of more than 10 percent greater than the population of the county.

3.9.2 Environmental Consequences – Socioeconomics / Environmental Justice

This section describes the potential socioeconomic resources and environmental justice impacts should the Proposed Action or No Action Alternatives be implemented. Social and economic issues considered for evaluation within the impact area include change to current and projected population levels, change in expenditures for goods and services, and short-term or long-term impacts on employment and income. According to the CEQ, adverse health effects to be evaluated within the context of environmental justice impacts may include bodily impairment, infirmity, illness, or death. Environmental effects may include ecological, cultural, human health, economic, or social impacts. Disproportionately high and adverse human health or environmental effects occur when the risk or rate of exposure to an environmental hazard or an impact or risk of an impact on the natural or physical environment for a minority or low-income population is high and appreciably exceeds the impact level for the general population or for another appropriate comparison group (CEQ 1997).

3.9.2.1 Proposed Action

Socioeconomics

Implementation of the Proposed Action would entail a variety of operation and maintenance related activities and would directly affect employment, industry, and commerce in the ROI. The direct impact to the economy associated with construction activities is expected to be short-term

and beneficial to the local economy. Beneficial indirect impacts would also be possible from general economic stimulation of the area. Long-term impacts to the economy would be minor and beneficial.

The temporary loss of farmland as a result of construction would not be expected to have a significant impact on the socioeconomics of the area; the reduction in farmland would not constitute a major change on the local economy. The project's *Agricultural Management Plan* will minimize and mitigate effects associated with the operation by providing for continued grazing.

The implementation of the Proposed Action with respect to construction activities would directly result in the creation of approximately 150 full-time-equivalent construction jobs for approximately 8 months. Benefits associated with the Proposed Action would include the purchase of materials, equipment, and services and a temporary increase in employment and income. This increase would be local or regional, depending on where the goods, services, and workers were obtained. It is likely some construction materials and services would be purchased locally in Sacramento County as well as in adjacent counties and cities. The majority of the construction workforce would likely be from local or regional sources, mostly from construction contractors, with a small portion of the workforce coming from out of state. Therefore, it is anticipated that construction of the Proposed Action would not result in an increase in the number of permanent residents.

Beneficial indirect employment and income impacts would result from expenditure of the wages earned by the workforce involved in construction activities, as well as the local workforce used to provide materials and services. Materials, equipment, and services may be purchased locally in the ROI, as well as in adjacent counties and the Sacramento-Roseville-Folsom, California metropolitan area. Revenue generated by income tax and sales tax from workers associated with the construction activities would benefit the local economy. However, given the relatively small magnitude of the anticipated workforce, this impact is considered to be negligible relative to the size of the local economy.

The direct impact to the economy associated with operations is expected to be minor, long-term and beneficial to the local economy. Upon completion of construction, the facility would be primarily operated remotely through a local solar operations and maintenance company, with a small maintenance and security staff of expected to be onsite periodically. Ten workers would be employed periodically for panel washing activities over a 1-2 week period several times per year. The local tax base could increase as a result of the Proposed Action, and the rent for the site would benefit individual landowners who contribute to the local economy; this impact would be minor, long-term and beneficial to Sacramento County.

Environmental Justice

Based on the analysis of impacts for environmental resource areas (water, air, aquatic, and terrestrial resources) and socioeconomic conditions, it is determined that the majority of environmental, health and safety impacts would be minimal, temporary, and confined to the immediate Proposed Action Area. Impacts that may be experienced outside of the Proposed Action Area and that could potentially affect the identified environmental justice communities include impacts to air quality and socioeconomics. There would be minor temporary impacts on air quality during construction. Additionally, there could be potential beneficial economic and

employment benefits during construction. The impacts to air quality and socioeconomics would be temporary, minor, and would not result in disproportionately high and adverse environmental or economic effects on minority or low-income populations.

3.9.2.2 No Action Alternative

Socioeconomics

Under the No Action Alternative, RUS would not provide long-term financing for the project, and it is assumed the project would not be constructed. Current employment trends in the area would likely continue with most of the employment continuing in the existing economic sectors of government and health care. Existing conditions would likely remain unchanged (i.e., property would remain as predominantly-disturbed agricultural land) and agricultural activities would likely continue. Therefore, no socioeconomic impacts would be anticipated under the No Action Alternative.

Environmental Justice

Under the No Action Alternative, RUS would not provide long-term financing for the project, and current employment and health trends in the area would likely remain unchanged. There would be no changes to the Proposed Action Area and no disproportionately high and adverse project-related impacts to minority or low-income populations.

3.9.3 Mitigation – Socioeconomics / Environmental Justice

- The Proposed Action would have minor beneficial effects on socioeconomic factors and mitigation to reduce adverse effects is not warranted.
- There would be no disproportionately high and adverse effects on minority or low-income populations and mitigation to reduce these effects on environmental justice communities is not warranted.

3.10 Miscellaneous Issues

3.10.1 Noise

This section provides an overview of the existing ambient sound environment in the Proposed Action Area, and the potential impacts to the ambient sound environment that would be associated with the Proposed Action and No Action Alternatives.

3.10.1.1 Affected Environment – Noise

Noise is an unwanted or unwelcome sound added to the natural acoustic setting of a locale. The most common unit of sound is the decibel (dB), a logarithmic measure of sound pressure. However, the human ear is not equally sensitive to all sound frequencies. The A-weighted decibels (dBA) scale, weighted approximately to the sensitivity of the human ear, quantifies this subjective noise level perception. Approximating the range of human hearing, the dBA scale ranges from 0 dBA to about 140 dBA. The softest sound heard by a person with average hearing is 0 dBA, 60 dBA is the level of normal conversation, 90 dBA is a motorcycle at 20 feet, and 110 dBA is equivalent to thunder. With respect to noise levels, a 1-dBA increase is imperceptible, a

3-dBA increase is barely perceptible, a 6-dBA increase is clearly perceptible, and a 10-dBA increase is subjectively perceived as approximately twice as loud (Caltrans 2013).

In addition, noise levels are perceived differently at night, between 10pm and 7am, with noise levels perceived as more disruptive during normal sleeping hours. This difference is reflected by artificially increasing the perceived volume by 10 dBA. The day-night-sound level is measured in L_{dn} a weighted 24-hour average noise level to describe a receptor's cumulative noise exposure. An Ldn at or below 65 dBA is typically applied as suitable for residential use. Similarly, the Community Noise Equivalent Level (CNEL) weights 7pm to 10 pm with an additional 5 dBA along with the L_{dn} weight of 10 dBA between 10pm and 7am. The CNEL is typically approximated as 0.5 dBA higher than the L_{dn}. The EPA recognizes noise levels below an L_{dn} of 55 dBA as having no adverse impact (EPA 1974).

Noise Regulations

The Federal Noise Control Act of 1972 (Public Law 92-574) established that all federal agencies administer their programs to promote an environment free of noise that would jeopardize public health or welfare. In 1974, in response to the requirements of the Federal Noise Control Act, the EPA identified indoor and outdoor noise level limits to protect public health and welfare (communication disruption, sleep disturbance, and hearing damage). Outdoor and indoor noise exposure limits of 55 dB L_{dn} and 45 dB L_{dn}, respectively, are identified as desirable to protect against speech interference and sleep disturbance for residential, educational, and healthcare areas. The sound-level criterion identified to protect against hearing damage in commercial and industrial areas is 70 dB 24-hour L_{eq} (both outdoors and indoors).

Sacramento County has a noise element in their General Plan prioritizing the use of site design and setbacks over the use of noise barriers to mitigate non-transportation noise to the median (L_{50}) and maximum (L_{max}) noise levels presented in Table 3.10-1.

Table 3.10-1. Non-Transportation Noise Standards (dBA)
Sacramento County Noise Element Median (L_{50}) / Maximum (L_{max})[1]

Receiving Land Use [7]	Outdoor Area[2]		Interior[3]	
	Daytime	Nighttime	Day & Night	Notes
All Residential	55 / 75	50 / 70	35 / 55	---
Transient Lodging	55 / 75	---	35 / 55	4
Hospitals & Nursing Homes	55 / 75	---	35 / 55	5, 6
Theaters & Auditoriums	---	---	30 / 50	6
Churches, Meeting Halls, Schools, Libraries, etc.	55 / 75	---	35 / 60	6
Office Buildings	60 / 75	---	45 / 65	6
Commercial Buildings	---	---	45 / 65	6
Playgrounds, Parks, etc.	65 / 75	---	---	6
Industry	60 / 80	---	50 / 70	6

1. The Table 3.10-1 standards shall be reduced by 5 dB for sounds consisting primarily of speech or music, and for recurring impulsive sounds. If the existing ambient noise level exceeds the standards of this table, then the noise level standards shall be increased at 5 dB increments to encompass the ambient.
2. Sensitive areas are defined acoustic terminology section.
3. Interior noise level standards are applied within noise-sensitive areas of the various land uses, with windows and doors in closed positions.

4. Outdoor activity areas of transient lodging facilities are not commonly used during nighttime hours.
5. Hospitals are often noise-generating uses. The exterior noise level standards for hospitals are applicable only at clearly identified areas designated for outdoor relaxation by either hospital staff or patients.
6. The outdoor activity areas of these uses (if any), are not typically utilized during nighttime hours.
7. Where median (L50) noise level data is not available for a particular noise source, average (Leq) values may be substituted for the standards of this table provided the noise source in question operates for at least 30 minutes of an hour. If the source in question operates less than 30 minutes per hour, then the maximum noise level standards shown would apply.

Source: Sacramento County 2017b, Table 2.

Noise control regulations in Sacramento County are specified under Chapter 6.68 of the County Code. The ordinance contains performance standards for the purpose of preventing unnecessary, excessive, and offensive noise levels at sensitive receptors within the county. This Noise Control Ordinance specifies exterior noise standards per zoning district. For the Proposed Action vicinity, the exterior noise standard to not be exceeded is 55 dBA between 7am and 10pm and 50 dBA between 10pm and 7am. Further information detailing tolerance of unlawful, intrusive sounds exceeding this ordinance is in Appendix G.

Sources of Noise

Noise-sensitive land uses generally consist of those uses where noise exposure would result in adverse effects on uses for which quiet is an essential element of their intended use. Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of individuals to both interior and exterior noise.

The Proposed Action Area is located in Sacramento County, approximately 1.7 miles south of SR 16 and approximately 800 feet west of Dillard Road. Noise-sensitive land uses in the Proposed Action Area include single-family residences south of the site, to the north of the site along Meiss Road, and to the east of the site along Dillard Road. The nearest noise-sensitive land use to the proposed facilities is a residence on Meiss Road within 50 feet of the site, approximately 1,000 feet west of Dillard Road. Figure 3.10-1 shows the nearby sensitive land uses and the noise monitoring locations discussed below.

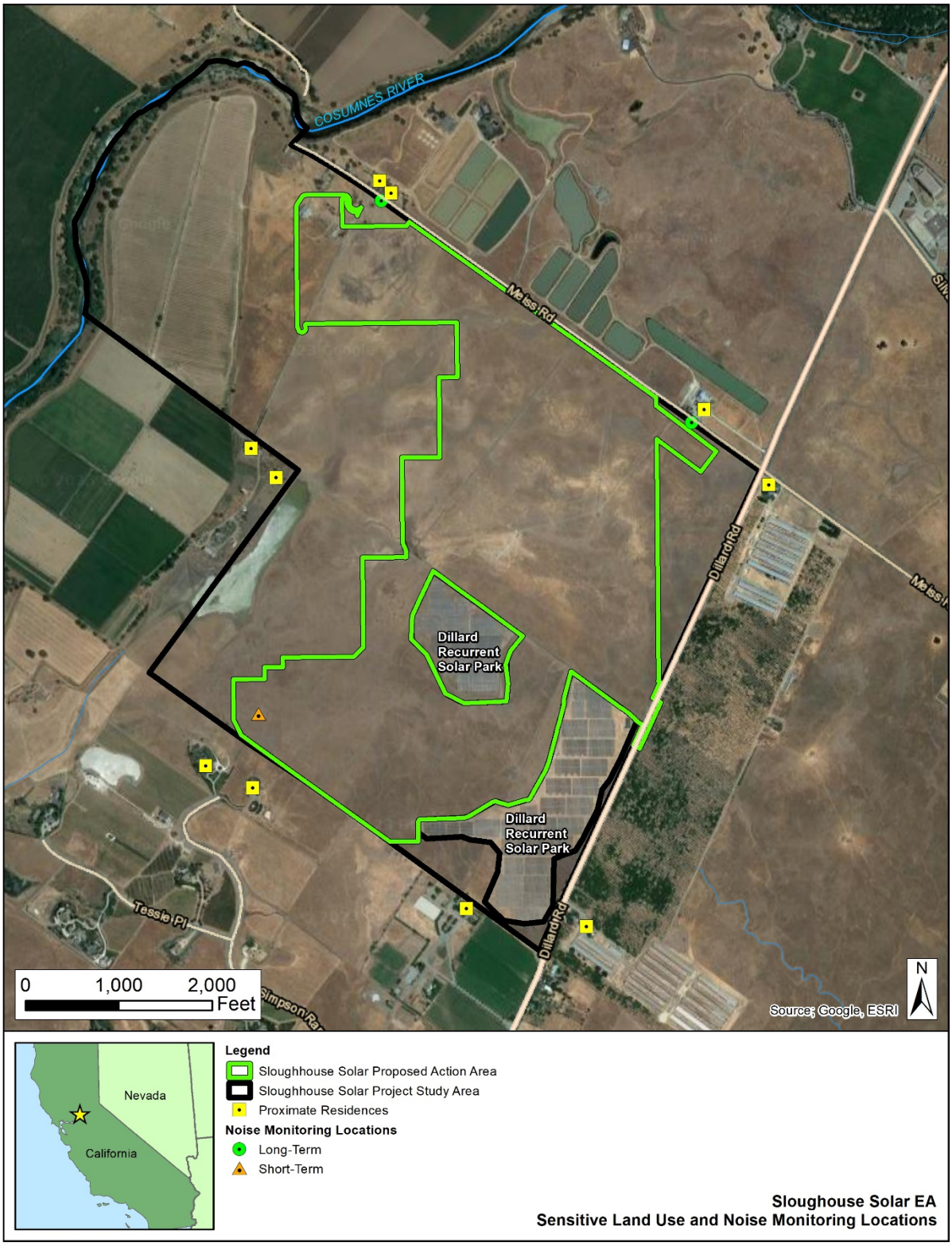

Figure 3.10-1. Sensitive Land Use and Noise Monitoring Locations

A community noise survey was conducted on May 3 through May 4, 2022, to document the existing noise environment at various locations within the Proposed Action Area. The dominant noise source identified during the ambient noise survey was traffic from Dillard Road and distant SR 16. Further detail is included in Appendix G.

The L_{eq}, and L_{max} values were taken at two long-term and one short-term ambient noise location, with the results presented in Table 3.10-2. During the survey, average daytime ambient noise levels ranged from 39 dB to 55 dB L_{eq}, with maximum noise levels ranging from 55 dB to 81 dB L_{max}.

The principal existing noise source near the Proposed Action Area is vehicular traffic on nearby roadways and from distant SR 16. Noise from operation and maintenance of the existing Dillard Road Solar Facility southeast of the site and noise from overhead aircraft also contribute, to a lesser extent, to the existing noise environment. In addition, existing vehicle traffic noise levels were modeled using vehicle traffic count data in Appendix G.

Table 3.10-2. Summary of Measured Ambient Noise Levels (dBA)

Site	Location	Date	Duration	L_{dn}	Daytime (7 a.m.–10 p.m.) L_{eq} \ L_{max}	Nighttime (10 p.m.–7 a.m.) L_{eq} \ L_{max}
LT-1	Within Project Site (Northern Boundary)	5/3/22 – 5/4/22	24 Hour	54.8	49.7 \ 72.8	48.1 \ 56.1
LT-2	Within Project Site (Southern Boundary)	5/3/22 – 5/4/22	24 Hour	59.1	54.8 \ 80.7	52.2 \ 66.6
ST-1	East of Project Site (Krave Jerky Outside Seating Area)	5/4/22	1 Hour	--	39.0 \ 55.4	--

Notes: LT = long-term; ST = short-term; dBA = A-weighted decibels; L_{dn} = day-night average noise level; L_{eq} = the equivalent hourly average noise level; L_{max} = maximum noise level.
Monitoring locations correspond to those depicted in Figure 3.10-1.
Source: Data collected by AECOM in 2022 (Appendix G).

3.10.1.2 Environmental Consequences – Noise

This section describes the potential impacts to the ambient sound environment should the Proposed Action or No Action Alternative be implemented.

Proposed Action

Construction of the Proposed Action would result in temporary construction-related noise from onsite equipment and from transit of construction related vehicles. Noise levels would vary over time. Over the approximately 8-month construction period, daily trip generation would occur for the delivery of equipment and supplies along with the commuting construction workforce. The number of workers expected onsite during construction would vary over the construction period and would likely average 150 construction workers (300 total trips per day) at the site during peak construction phases, PV system installation and PV system removal. Deliveries of equipment and supplies to the site would also vary over the construction period and have the potential to range from 5 to 40 round trips, averaging approximately 10 daily round trips. During the approximately 2 months of grading activity, an additional 217 truck trips per day would be generated to haul off excess grading material, resulting in an estimated peak of 597 trips per day during construction

(300 worker trips, 80 delivery trips, and 217 haul trips). These number of trips added to existing traffic volumes along the existing nearby roadways would result in a noise increase of up to 3 dB at the nearest noise-sensitive uses from Dillard Road centerlines. However, construction traffic noise would result in a peak noise increase of 14 dB at the nearest noise-sensitive uses from the Meiss Road centerline during the 2-month grading period.

To assess potential short-term, temporary (i.e., construction-related) noise impacts, sensitive receptors and their relative exposure were identified. Noise levels of specific construction equipment were determined and resultant noise levels at those receptors (at given distances from the source) were calculated. Potential long-term (i.e., operational) noise was assessed based on reconnaissance data and documented noise levels. Predicted noise levels during construction and decommissioning as calculated at the surrounding residential areas to the north, south, east, and west of the site are provided in Appendix G.

Estimated noise levels for various construction activities range from 48 to 82 dBA at sensitive noise receptor locations.

Anticipated major noise-generating construction activities include site grading and excavation, installation of infrastructure, pile driving, paving, and landscaping. The highest construction noise levels are typically generated during pile driving and during grading and excavation while lower noise levels typically occur during fence installation.

The increase in traffic noise during construction, averaging 160 trips during construction would produce an increase in noise of 3 dBA at the nearest Dillard Road noise sensitive use location. During the 2-month grading/construction activities, daily traffic peaks at 597 trips; producing an increase of 14 dBA at the nearest noise sensitive use location on Meiss Road as detailed in Appendix G. Because construction activities would occur during hours prescribed by Sacramento County for construction, and because construction activities occurring within the hours prescribed by the County Noise ordinance are exempt from the County noise standards, these noise levels would not violate County standards. Thus, the impact of construction noise, including that resulting from construction-related traffic, conforms with the County Noise ordinance as well as with the EPA's noise guidance. Therefore, noise related impacts associated with construction of the Proposed Action would be short-term and minor. Impacts would be similar during decommissioning.

Operational noise from the solar facility equipment would include noise from inverters, heating, ventilation, and air conditioning (HVAC) systems, and tracking motors. As shown on Table 3.10-3, the greatest operational noise level is anticipated from inverter and HVAC systems (i.e., 58 dBA at 75 feet). Because the Proposed Action would provide backup battery power, the inverter/HVAC facilities would be operational during evening and nighttime hours. To comply with the County's exterior nighttime noise limitation of 50 dB and based on a noise rating of 58 dBA at 75 feet from the inverter and HVAC system, such facilities would need to be located approximately 200 feet from the nearest noise-sensitive land use. Since the nearest residences along Meiss Road are approximately 50 feet north of the Proposed Action Area (Figure 3.10-1), noise levels from the inverter and HVAC system would potentially exceed the exterior nighttime noise limitation. However, to conform with the County noise standards as prescribed by the County General Plan

Noise Element, including the nighttime standard of 50 dB $L_{50,}$ the site building plan would be modified such that nighttime operation of the proposed facilities would not exceed nighttime standards of 50 dBA. Noise-generating facilities would be designed and sited in a manner, increasing distance and/or enclosure to reduce noise levels below the applicable County noise standards which would also be consistent with the EPA's noise guidance. With this mitigation, the resulting long-term noise related impacts associated with operation of the Proposed Action would be negligible.

Table 3.10-3. Estimated Noise Rating of Project Facilities

Equipment	Reference Noise Level (dBA L_{eq})	Distance from Source (feet)
Gen-Tie 1	20	50
PV Panel	44	50
Inverter (unenclosed)	52	75
Inverter (enclosed with HVAC system)	58	75
Transformer	58	3.3
Solar Panel Tracking Motors	58	1

Sources: US Department of Energy 2011; San Luis Obispo County 2011; Illingworth and Rodkin 2009; Kern County 2014; Monterey County 2014

No Action Alternative

Under the No Action Alternative, RUS would not provide long-term financing for the project, and it is assumed the project would not be constructed. Existing conditions would likely remain unchanged (i.e., property would remain as predominantly-disturbed agricultural/grazing land) and agricultural/grazing activities would likely continue. Ambient noise would remain as at present. Therefore, no project-related noise impacts would be anticipated under the No Action Alternative.

3.10.1.3 Mitigation – Noise

- Design and locate noise-generating facilities to reduce noise levels below the applicable county noise standards.

3.10.2 Transportation

This section provides an overview of existing transportation resources and discusses the potential impacts on transportation resources that would be associated with the Proposed Action and No Action Alternative. Components of transportation resources that are analyzed include roads, traffic, railroads, and airports.

3.10.2.1 Affected Environment – Transportation

Roads

As shown on Figure 1-1, regional roads near the Proposed Action Area include US Route 50 (US 50), stretching west to east, and Interstate 5 (I-5), SR 99, and SR 16 stretching north to south. Grant Line Road and Dillard Road are major connectors in the region, joining SR 99 to SR 16. Roadways within 1 mile of the site include SR 16, Dillard Road, Meiss Road, and several roadway segments. Primary access to the site is by SR 16 and Dillard Road.

- **US 50** is a major west to east transcontinental highway stretching from California to Maryland.
- **I-5** is the main north-south interstate on the west coast, running from Canada to Mexico, roughly paralleling the coast.
- **SR 99** (the Golden State Highway) is a state highway running north to south from Red Bluff to Wheeler Ridge. SR 99 roughly parallels I-5. SR 99 is four lanes wide from Sacramento to Wheeler Ridge.
- **SR 16** (Jackson Road) is a state highway running from Route 20 in Colusa County to Route 49 just outside Plymouth in Amador County. Crossing generally west to east through the Sacramento Valley, SR 16 is roughly equidistant from I-5 and US 50. In the Project Study Area, it has one lane in each direction and a turn lane to the south onto Dillard Road towards the site entrance about 1 mile to the south. The intersection with Dillard Road is signal controlled.
- **Grant Line Road** is a 2-lane roadway (one lane in each direction) between SR 16 and SR 99. Grant Line Road runs generally north to south, west of Dillard Road. It travels through rural lands and skirts the town of Elk Grove, running roughly parallel to the Cosumnes River to the east.
- **Dillard Road** is a 2-lane roadway (one lane in each direction) between SR 16 and SR 99. Dillard Road runs generally north-south along the eastern boundary of the Project Study Area parcels. It travels through rural lands and through the town of Wilton, running roughly parallel to the Cosumnes River to the west.
- **Meiss Road** is a 2-lane road running east from the Cosumnes River (where there is an abandoned bridge that used to connect the roadway to SR 16) to Iona Road. Bounding the northern portion of the Project Study Area, Meiss Road crosses Dillard Road.

Several roadway segments providing access to private property in the Project vicinity include:

- **Silva Ranch Road** is a narrow 2-lane road extending east off Dillard Road approximately 0.5 mile north of the Project Study Area.
- **Apple Road** is a narrow 2-lane road in the town of Wilton extending east off of Dillard Road directly south of the Project Study Area, becoming Riza Road shortly before dead ending to the east.
- **Simpson Ranch Court** is a 2-lane roadway in the town of Wilton extending west off Dillard Road and dead ending just south of the Project Study Area.
- **Wiltovania Lane** is a 2-lane road, also called Apple Road and Steiner Marks, south of the Project Study Area and Simpson Ranch Court. It extends west off Dillard Road and dead ends at several residences.

The Sacramento County *Bicycle Master Plan* includes a planned Class II bike lane adjacent to the Project Study Area along Dillard Road extending south from SR 16 to SR 99 (Sacramento County 2011). This plan will be superseded by the draft Sacramento County Active Transportation

Plan once formally adopted, which also includes the planned Class II bike lane along Dillard Road (Sacramento County 2022b). There are no other existing or planned transit, bicycle, or pedestrian facilities in the vicinity.

Average traffic volume on regional roads is tabulated in Table 3.10-4. The California Department of Transportation has historic traffic counts available for highways in the site region from the Traffic Census Program. Annual Average Daily Traffic (AADT) volumes are calculated using counts continuously recorded at permanent count stations or locations that are counted for a 24-hour period throughout the year; adjusted for monthly seasonal and day-of-week factors. Similarly, cities and counties count the traffic on main connectors over 24-hour periods to provide a measure of traffic flow (Caltrans 2023, Sacramento County 2022c). Peak hour volume is estimated at 10 percent; so peak hour volume for Dillard Road is estimated at 569 vehicles.

Table 3.10-4. Average Annual Daily Traffic near Proposed Project Site

Location	Descriptor	Year	AADT Count
US 50	North of Site	2020	323,000
I-5	West of Site	2020	320,000
SR 99	West of Site	2020	149,000
SR 16	North of Site	2020	25,400
Grant Line Road	West of Site	2018	8,413
Dillard Road	East of Site	2020	5,690
Meiss Road	North of Site	2019	302

Source: Caltrans 2023, Sacramento County 2022c

Rail Traffic

As shown in Figure 1-1, three rail lines extend southward from Sacramento in the Project Study Area region. The most easterly rail line, traveling from Sacramento to Rosemont to Vineyard to Lodil, is no longer utilized. The other two lines, roughly paralleling I-5 and SR 99, are an integral part of Union Pacific's rail operations in California serving the rich agricultural Central Valley and connecting to the ports of Los Angeles, Long Beach, and Oakland. Commodities include chemicals, manufactured goods, fruits, vegetables, and canned goods. Extensive commuter trains also operate on Union Pacific tracks throughout California. While specific information is not available regarding rail traffic on the two lines in the vicinity of the Project Study Area, in 2021, Union Pacific operations included the journeys of over 3 million rail cars of commodities that originated on or terminated on Union Pacific's 3,363 miles of California track (Union Pacific 2022, Union Pacific 2023).

Air Traffic

Mather Airport is approximately 7.3 miles northwest of the Proposed Action Area. Mather Airport was formerly a military facility (Mather Air Force Base), which was decommissioned and is now a County-owned and operated public use airport. Mather Airport has a control tower and two helipads along with two asphalt/concrete runways approximately 11,300 and 3,500 feet long, respectively. The runways and helipads are lighted. In 2018, 52 aircraft were based at the field,

which averaged a total of 272 flights per day. Mather Airport accommodates large transport planes and high-performance military T-38 jets (AirNav 2021a).

There are also two smaller local airports in the vicinity: Rancho Murieta Airport (approximately 3.5 miles to the northeast), and the Sky Way Estates Airport (approximately 4.6 miles to the southwest). Rancho Murieta Airport is a privately owned, public use airport. While it does not have a control tower, airport staff are in attendance from 8 am to 5 pm daily. Rancho Murieta Airport has two lighted asphalt runways that are approximately 3,800 feet and 1,150 feet long, respectively. In 2018, 22 aircraft were based at the field, which averaged 86 flights per day (AirNav 2021b). Sky Way Estates Airport is privately owned and operated, and requires permission prior to landing (i.e., Sky Way Estates is not a public use airport). There is one 1,950-foot-long asphalt runway and there are 8 aircraft based at the field (AirNav 2021c). The Sky Way Estates Airport does not have a control tower, the runway is not lighted, and there are no airport staff in attendance.

3.10.2.2 Environmental Consequences – Transportation

This section describes the potential impacts to transportation resources should the Proposed Action or No Action Alternatives be implemented.

Proposed Action

Roads

Construction of the Proposed Action would impact roads in the immediate vicinity, which are currently used by local workers, farmers, residents, and visitors. During the peak of construction, a typical day would include the transportation of workers, movement of heavy equipment, and transportation of materials. An increase in road traffic would result from construction-related movement of people, materials and equipment. The level of increase would vary depending on the phase of construction. Impacts from construction are anticipated to be direct but temporary.

Construction of the Proposed Action would employ an average of 150 workers per day and up to 250 workers per day during peak construction. A majority of these workers would likely commute from local or regional areas, an average of 300 trips per day. Other workers would come from outside the region and many would likely stay in local hotels. The Proposed Action would be constructed over a period of approximately 8 months. Trip generation for employees, delivery trucks, and construction equipment would vary depending on the phase of construction. Delivery of equipment and supplies would range from 5-40 trips per day averaging approximately 10 daily trips during the construction period. These daily trips are expected to include approximately 5 construction vehicles, 8 to 9 shipping trucks, and various workers' vehicles. Construction workers would be present at the site from approximately 6 am to 4 pm, Monday through Friday, for approximately 8 months.

Grading of the site would be minimized to the extent feasible and existing farmstead structures would be demolished. During the approximately 2 months of grading activity, an additional 217 truck trips per day would be generated to haul off excess grading material, resulting in an estimated peak of 597 trips per day generated during construction (300 worker trips, 80 delivery truck trips, and 217 haul truck trips). Parking for project-related vehicles would be provided onsite

during construction. As construction progresses, the parking area would be relocated adjacent to new Proposed Action phases. The Proposed Action does not include any permanent changes to the public roadway network.

Regional access to the Proposed Action Area would be primarily through SR 16. Site access would be provided off Meiss Road and Dillard Road. Direct impacts from construction would not substantially impact the area's public roadways. Relative to existing traffic volumes noted above in Table 3.10-4, the construction traffic would represent a short-term increase in daily traffic of about 3 to 4 percent on SR 16. On Dillard Road, construction would temporarily increase daily traffic by about 8 percent, with a peak increase of about 13 percent during the 2-month grading period. Specific to peak-hour traffic volumes (i.e., during the morning and evening commute times), the addition of 150 worker vehicle trips would increase peak-hour commute traffic on Dillard Road by about 26 percent. However, according to the Federal Highway Administration, as a rural two-lane highway with two-way stop control, Dillard Road has a capacity of approximately 1,200 vehicles per hour (FHWA 2017). Thus, given the estimated peak-hour traffic volume on Dillard Road of about 570 trips, the temporary addition of 150 peak-hour vehicles during construction would not substantially alter existing roadway capacity and would not substantially affect traffic circulation during typical commute times.

Typical transport shipping and container trucks would be used to transport equipment to the Proposed Action Area. Typical shipping containers are 40 feet in length and shipping trucks can vary between 45 to 53 feet in length. None of the transport vehicles should exceed 45,000 pounds in cargo weight and would typically hold between 34,000 to 44,000 pounds of cargo. The tare weight (unloaded weight) of a shipping vehicle or container is typically around 15,000 pounds without any contents and not including the weight of the truck. Transport deliveries of the solar equipment will account for about a third of the daily trips, or 8 to 9 vehicles per day. All transport vehicles will comply with the Caltrans Maximum Legal Dimensions and Weights as well as all federal requirements on state, federal, and local routes.

The Proposed Action would not cause unreasonable congestion or unsafe conditions with respect to transportation impacts of the public roads. During construction, the project components, including the solar modules, mounting system, inverters, transformers, electrical cabling, and ancillary construction equipment would be transported to the site using standard trucking methods as described above. Following site preparation, the supporting mounting structures will be delivered, offloaded, placed and assembled in accordance with a construction schedule. Then the solar modules would be delivered and offloaded at either a lay-down staging area or, depending on the timing of the deliveries, be placed in proximity of the designated construction area.

Sloughhouse Solar would coordinate with the community and Sacramento County, as appropriate, to assure construction/decommissioning traffic does not place any undue burdens on the community. To address potential traffic hazards during construction, prior to the commencement of construction or demolition activities the applicant would prepare a traffic control plan for review and approval by the County Department of Transportation. Typical measures to be included in the traffic control plan include signage, traffic cones, and flaggers to help ensure safe and efficient movement of traffic through the affected area. In addition, the traffic

control plan would provide for notification of emergency responders regarding the planned construction/demolition activities and would ensure that sufficient emergency access is available in the Proposed Action vicinity. Additionally, trips of the delivery trucks could be staggered over time in order to avoid congestion. The solar modules, mounting system, electrical cabling, and inverters are all of appropriate size, shape, and weight to be transported to the site on SR 16, and other state, county, or local roads using shipping vehicles as described; the need for oversize/overweight loads is not expected.

No bus stops, pedestrian and bicycle facilities are located near the Proposed Action Area, and as a result there would be no impact from construction. Similarly, temporary construction activities would not impede or otherwise conflict with implementation of the planned Class II bike lane along Dillard Road. Therefore, the short-term impact of construction on traffic circulation, or transit, bicycle and pedestrian facilities would be minor.

During operation, maintenance and security personnel are expected to generate 4 to 10 trips per day. The facility would be primarily operated remotely through a local solar operations and maintenance company, facilitated by the Project Supervisory Control and Data Acquisition system. Similar short-term and minor impacts to transportation would be anticipated during decommissioning.

These increases in road traffic during the anticipated 35 years of operation should have a negligible to minor impact on the local roadways.

Rail and Air Traffic

The construction, operation, and decommissioning of the Proposed Action would have negligible effect on rail traffic of airports in the region. While rail may be utilized to transport some materials and air may be utilized to transport some workers during construction and decommissioning of the Proposed Action, operation of the solar facility would not affect commercial air passenger or freight traffic in the region and would not adversely affect any crop dusters operating in the vicinity of the site. The northwest corner of the site is adjacent to, but outside of, Mather Airport's safety restriction area (clear zone, approach-departure zone, and overflight zone). Additionally, the Proposed Action Area is approximately 2.5 miles west of Rancho Murietta Airport's safety restriction area. Impacts to rail or air traffic are anticipated to be negligible to none.

Glare

Glare analysis was conducted per the Federal Aviation Administration's (FAA's) recommended procedures described in its *Technical Guidance for Evaluating Selected Solar Technologies on Airports* (FAA 2018). Potential glare receptors included residences, local roadways, airports, and flight path receptors. Twenty-one representative receptors for adjacent residential dwellings along with 17 representative road receptors were modeled. For airports, the one currently operating Mather Airport air traffic control tower was modeled along with six representative straight-line approach flight paths for the six runways at Mather and Rancho Murietta combined. The glare analysis used solar panel locations and characteristics of the Proposed Action, along with locations and elevations of the existing receptors, to simulate the sun's progression across the sky over the course of a year and model the potential glare from the proposed solar arrays.

Modeling results demonstrated the proposed solar panels would not result in any hazardous glare from any of the proposed solar panel arrays for the modeled receptors (Appendix E). Because the proposed solar arrays at the site would not result in hazardous glare at the Mather Airport Control Tower, approach-departure flight paths for Mather or Rancho Murieta Airports, nearby residences, or nearby roadways, impacts associated with daytime glare as a result of the Proposed Action would not be anticipated to affect aircraft pilots or people on the ground.

No Action Alternative

Under the No Action Alternative, RUS would not provide long-term financing for the project, and it is assumed the project would not be constructed. Existing conditions would likely remain unchanged (i.e., property would remain as predominantly-disturbed agricultural/grazing land) and agricultural/grazing activities would likely continue. Therefore, no project-related transportation impacts would be anticipated under the Proposed Action Alternative.

3.10.2.3 Mitigation – Transportation

- Prepare a traffic control plan for review and approval by the County Department of Transportation.
- Coordinate with the community and Sacramento County, as appropriate, to assure construction/decommissioning traffic does not place any undue burdens on the community.

3.11 Human Health and Safety

This section provides an overview of existing human health and safety, and discusses the potential impacts associated with the Proposed Action. Safety issues also include identification of recognized environmental conditions (REC) for protection of workers and the environment.

3.11.1 Affected Environment – Human Health and Safety

The Proposed Action Area is currently private property in an unincorporated portion of Sacramento County. Land use on the site is predominantly agricultural land primarily used for livestock grazing, irrigated pasture, and cultivation of alfalfa hay. As part of current site agricultural operations, petroleum products, agricultural pesticides, herbicides, and fertilizers are stored in totes on the property. The Proposed Action would construct a utility-scale solar facility able to interconnect into existing SMUD infrastructure immediately adjacent to the site. A 69 kV feeder capable of accepting the proposed 50 MW of AC nameplate capacity is located within 5 miles of the Proposed Action.

3.11.1.1 Electromagnetic Fields and Interference

Electromagnetic fields (EMF) contain both electric and magnetic fields. Electric fields are forces that electric charges exert on other electric charges. Electric fields are produced by voltage, the potential to do work, and are measured in volts per meter (V/m) or kilovolts per meter (1000 V/m or kV/m). Flow of current results in a magnetic field measured in gauss (G). While an electric field is easily shielded by conducting objects (including magnetic soil, trees, and buildings), a magnetic field is not easily weakened by most materials. However, the strength of both electric and

magnetic fields decreases rapidly with distance from the source as shown in Table 3.11-1 (NIEHS 2002).

Table 3.11-1. Typical EMF Levels from Power Transmission Lines

Distance from line	0 feet	50 feet	100 feet	200 feet	300 feet
115 kV Transmission Line Electric Field (kV/m)	1.0	0.5	0.07	0.01	0.003
230 kV Transmission Line Electric Field (kV/m)	2.0	1.5	0.3	0.05	0.01
115 kV Transmission Line Mean Magnetic Field (mG)	29.7	6.5	1.7	0.4	0.2
230 kV Transmission Line Mean Magnetic Field (mG)	57.5	19.5	7.1	1.8	0.8

Source: NIEHS 2002.
EMF = Electromagnetic field
kV/m = kilovolts per meter
mG = milliGauss

The strength of EMF from transformers, capacitor banks, and substations decreases rapidly with distance. Typically, the EMF produced from a substation is indistinguishable from background beyond the fence. Generally, the strongest EMF around the outside of a substation is generated from the power lines connected to the substation (NIEHS 2002).

Electromagnetic interference occurs when a generated EMF hinders the operation of an electrical, magnetic, or electromagnetic device. Electromagnetic fields can jam or block other electromagnetic signals, or they can induce a current in another circuit. Possible electromagnetic interference from the Proposed Action include interference in radio and television reception along with interference with pacemaker functions (NIEHS 2002).

3.11.1.2 Environmental Risk Management

Hazardous materials or waste may be generated or released by the Proposed Action including wastes from the previous use of the property. The property's environmental condition along with anticipated waste from the Proposed Action is evaluated in this section to determine and manage risk to the environment and people.

The environmental condition of the parcel was evaluated using an ASTM E1527-13 Phase 1 ESA in November 2020 as part of environmental due diligence. The Phase 1 ESA documented agricultural properties with a few residential structures, farming facilities, storage sheds, feed silos, and hay barns. An empty 500-gallon diesel fuel storage tank was also present along with septic systems and groundwater wells. Records review and site reconnaissance provided no indication of probable environmental impact from adjacent or surrounding properties (Dudek 2020).

In accordance with ASTM E1527-13, this Phase 1 ESA is valid for 180 days. The report would be updated by the original report preparer as appropriate prior to the property acquisition date, to make it consistent with the EPA's "all appropriate inquiries rule".

3.11.2 Environmental Consequences – Human Health and Safety

This section describes the potential impacts to human health and safety should the Proposed Action or No Action Alternative be implemented.

3.11.2.1 Proposed Action

Electromagnetic Fields and Interference

Because a correlation between EMF exposures and public health hazards has not been established, federal and most state health regulatory agencies have determined not to set numeric exposure limits for EMFs. An American organization, the International Commission of Electromagnetic Safety/Institute of Electrical and Electronics Engineers, publishes exposure limits including a general public exposure limit of 5 kV/m (EMFs 2023b). California does not have an exposure limit. Instead, California has a prudent avoidance policy where new power line projects must include EMF reduction measures as less than 5 percent of the project cost and must include special precautions for schools (CPUC 2006, EMFs 2023a).

The California Public Utilities Commission (CPUC) has established EMF design field guidelines for electrical facilities to help minimize magnetic field exposure. These guidelines include magnetic field management plans (FMP) to help mitigate magnetic fields for new substations, new transmission lines, and relocated transmission lines. Under these guidelines, installing new transmission lines (requiring General Order 131-D permitting[2]) requires a detailed FMP, relocating poles or towers (with less than 2000 feet of transmission lines) requires no FMP, and constructing a new substation (with a rated voltage of 50kV or above) requires a checklist FMP. These FMPs will document the consideration of no-cost and low-cost magnetic field reduction measures (CPUC 2006).

At the Sloughhouse Solar facility, voltage of the electricity from each PC array would be increased by a transformer at each power conversion station to a medium voltage level, typically 34.5 kV. Medium voltage electric lines located underground and/or overhead would be used to collect the electricity from each transformer and transmit it to the existing SMUD substation. An existing power line adjacent to the existing Dillard solar facilities at the southeastern portion of the Proposed Action Area would be relocated to accommodate the project. It is anticipated that two new poles, would be placed to the east of Dillard Road, consistent with the existing transmission line which is approximately 50 feet tall. From the first structure, the transmission line would be routed through metering equipment that controls facility power injection from the Sloughhouse Solar facility into the grid adjacent to the SMUD substation, and would then be routed back to the east of Dillard Road to the second structure where the existing transmission line would continue along its current route. EMF decreases rapidly with distance from the source (CDPH 2008). At 300 feet from high voltage power lines, EMF is a background levels at 300 feet from high voltage overhead power lines and at even closer distances in some cases. Overhead transmission lines do not, as a general rule, interfere with normal radio or TV reception. The proposed substation

[2] In May of 2023, the CPUC opened a new proceeding to update its General Order 131-D, which governs the siting, construction, or modification of new or existing electric transmission and generation related facilities. This proposed modification would implement changes mandated by Senate Bill 529 along with modernization of the review process (CPUC 1995, CPUC 2023a, CPUC 2023b, CPUC 2023c).

would export 69 kV to the interconnection with the SMUD distribution and therefore require an FMP. It is anticipated that the Proposed Action would result in a negligible adverse effect on EMF exposure and potential interference.

Environmental Risk Management

The Phase 1 ESA discovered no evidence of RECs, historical RECs, controlled RECs, or a vapor encroachment condition. A REC is defined as "the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment." However, because the Proposed Action Site includes property used for agricultural purposes since 1937, residual pesticides and metals may remain in the shallow soil and potential impacts from pesticides and metals may require evaluation. In addition, residential buildings and storage sheds may include lead-based paint or asbestos that would require proper disposal prior to demolition (Dudek 2020).

Workers at the site would have an increased safety risk associated with exposure to hazardous materials or pollutants during construction and operation. However, to reduce health and safety risks, standard practice is for contractors and operators to establish and maintain health and safety plans in compliance with Occupational Safety and Health Administration (OSHA) regulations. Such health and safety plans emphasize BMPs for site safety management to minimize potential risks to workers. Examples of BMPs include employee safety orientations; establishment of work procedures and programs for site activities; specific training requirements; use of equipment guards; emergency shut-down procedures; lockout procedures; site housekeeping; personal protective equipment; regular safety inspections; and plans and procedures to identify and resolve hazards.

During construction and operation, a variety of chemicals and hazardous materials would be stored and used at the facility. Chemicals would be stored as appropriate to prevent exposure to the elements and to reduce the potential for accidental releases, and in appropriate chemical storage containers. The transport, storage, handling, and use of all chemicals would be conducted in accordance with applicable laws, ordinances, regulations, and standards. The quantities of hazardous materials stored on-site would be evaluated to identify the required usage and to maintain sufficient inventories to meet use rates without stockpiling excess chemicals. Operations would generate minimal sanitary wastewater via use of portable restrooms, non-hazardous wastes, and require small quantities of hazardous wastes for use and consumption. Materials that are anticipated to be used include the following: used Hydraulic fluid, oils, and grease; tracker drives and electrical equipment, oily rags, oil absorbent, and oil filters, and sanitary wastewater from portable restrooms.

Under the Proposed Action, construction of the solar facility could result in potential public health and safety impacts associated with the flow of construction traffic along the public roadways. Construction traffic would probably access the site using SR 16 and Dillard Road. Health and safety plans established and adhered to by the construction team would include traffic procedures to stagger deliveries and minimize potential safety concerns.

Emergency response for the Proposed Action Area would be provided by local, regional, and state law enforcement, fire, and emergency responders. The facility would be primarily operated remotely through a local solar operations and maintenance company, facilitated by the Project Supervisory Control and Data Acquisition system. To ensure the safety of the public and the facility, the property would be fenced, security lighting installed, and high-voltage warning signs posted. The fence would be monitored periodically to detect any intrusion into the property. Access would be controlled through security gates at entrances on Dillard Road and Meiss Road. Multiple gate-restricted access points would be used during construction and operation.

Minimal human health or safety risks would be anticipated as a result of operations. Public and worker health and safety hazards during decommission activities would be similar to construction hazards. Overall, the environmental risks of adverse impacts to human health and safety in association with implementation of the Proposed Action would be minor and short-term, occurring only when workers are present and working at the site.

3.11.2.2 No Action Alternative

Under the No Action Alternative, RUS would not provide long-term financing for the project, and it is assumed the project would not be constructed. Existing conditions would likely remain unchanged (i.e., property would remain as predominantly-disturbed agricultural/grazing land) and agricultural/grazing activities would likely continue. Therefore, no project-related human health or safety impacts would be anticipated under the Proposed Action Alternative.

3.11.3 Mitigation – Human Health and Safety

- Comply with OSHA regulations.
- Use applicable BMPs to protect workers and the public during construction and operation.
- Institute traffic procedures to stagger deliveries and minimize potential safety concerns.

CHAPTER 4

4.0 CUMULATIVE EFFECTS

Cumulative impacts are defined as the incremental effects of the Proposed Action when considered together with other past, present, and reasonably foreseeable future actions within the potentially affected region regardless of the actors. Chapter 3, Affected Environment and Environmental Consequences, presents information about past and present environmental conditions, as well as future trends, where appropriate. This chapter addresses the cumulative impacts of the Proposed Action and any reasonably foreseeable actions in the vicinity outside the scope of this Proposed Action.

Desktop research of potential past, present, and future actions in the vicinity of the Proposed Action Area was conducted. Resources examined included:

- Local and regional news sources;
- California Department of Transportation, South Sacramento Habitat Conservation Plan, Sacramento County website records, including planning commission meetings, city meeting minutes, and public notices.

4.1 Foreseeable Projects

The cumulative projects in the region surrounding the Proposed Action Area that are considered in the cumulative analysis are listed in Table 4-1 below.

Table 4-1. Cumulative Projects List

Project No.	Project Name (County Control Number)	Location	Description	Status
Unincorporated Sacramento County				
1	OE3 Training Center (PLNP2017-00199)	13800 Meiss Road, Sloughhouse, CA	Construction of a campus and associated facilities and field instruction to provide worker training on the use of construction equipment within a 450-acre site.	Approved
2	Coyote Creek Agri-voltaic Ranch (PLNP2021-00191)	3830 Scott Road, Sloughhouse, CA	Development of a 200-megawatt photovoltaic solar energy generation facility on parcels that total 2,555 acres.	In Planning Process
3	Cordova Hills (PLNP2008-00142)	4715 Grant Line Road, Rancho Cordova, CA 95742	A 2,669-acre urban development area east and adjacent to Rancho Cordova.	Under Construction

Table 4-1. Cumulative Projects List

Project No.	Project Name (County Control Number)	Location	Description	Status
4	Riverview Subdivision Map Extension / Rancho Murieta (2004-00168 and PLNP2017-00182)	14834 Reynosa Drive, Rancho Murieta, CA 95683	Develop 57 acres into 140 residences, a park site, open space, resource protection, landscaping, wetlands restoration and sediment basin.	Under Construction
5	Carli Mine Expansion (PLNP2017-00243)	11501 Florin Road, Sacramento, CA	A 160-acre expansion of an existing surface mine of 394 acres.	Operational
6	Grant Line East Mine Use Permit Amendment (PLNP2021-00135 and 95-0658)	3500 Grant Line Road, Rancho Cordova, CA 95742	Extend existing aggregate mining operations through July 2046. No new or expanded activities are proposed.	In Planning Process
7	Rancho Murieta North (PLNP2014-00206)	Eastern Sacramento County along the Jackson Road highway	772 acres of residential, parks, recreation, and commercial development located in the Rancho Murieta community.	In Planning Process
8	NewBridge Specific Plan (PLNP2010-00081)	Eastern Sacramento County along the Jackson Road highway	General plan amendments to 1,095 acres south of the Mather South Plan area, along Kiefer Boulevard.	Approved
9	Jackson Township Specific Plan (PLNP2011-00095)	Eastern Sacramento County along the Jackson Road highway	Proposed master planned community 1,391 acres south of Mather Field, west of the Mather South Plan Area.	Approved
10	Mather South Community Master Plan (PLNP2013-00065)	Eastern Sacramento County along the Jackson Road highway	Redevelopment of 848 acres on a portion of former Mather Air Force Base, immediately south of the city of Rancho Cordova.	Approved
City of Rancho Cordova				
11	Sunridge Ranch Specific Plan	Located in southern Rancho Cordova	Master-planned community of 2,606 acres south of Douglas Road, east of Sunrise Boulevard, and north of Grantline Road.	Approved

Table 4-1. Cumulative Projects List

Project No.	Project Name (County Control Number)	Location	Description	Status
Placer County				
12	Country Acres Solar	Southwestern Placer County, west of the City of Roseville, north of Baseline Road and east of South Brewer Road	1,170-acre solar energy development project	In Planning Process

4.2 Cumulative Effects of the Sloughhouse Solar Facility and Foreseeable Future Projects in the Area

4.2.1 Land Use

The surrounding area is largely agricultural and undeveloped with some low-density residential development, which is not likely to change significantly over the life of the project. It is possible the development of the Proposed Action could spur additional solar development in the area over time. However, given the State of California's Renewable Portfolio Standards, additional solar development in the region is likely regardless of the development of the Proposed Action. It is assumed other projects would result in similar land use changes in the vicinity. Therefore, the activities associated with the Proposed Action could have a minor cumulative effect on land use including prime farmlands in the vicinity when combined with other reasonably foreseeable planned and approved development actions.

4.2.2 Floodplains

Based on the Sloughhouse Solar site plans, no permanent structures would be placed in the portion of 100-year floodplain within the Proposed Action Area. Structures and most of the solar panels would be outside the flood zone. Facilities would be decommissioned following the useful life of the solar facility. Other planned and approved development projects in the area also would be expected to adhere flood standards and regulations. As a result, minor adverse cumulative effects on floodplains and flooding are expected from the construction of the Proposed Action when combined with other reasonably foreseeable actions in the vicinity.

4.2.3 Wetlands

The Proposed Action was designed to avoid wetland impact to the degree practicable and would result in no more than 0.08 acres of wetland impact from fill. RUS assumes that other projects in the area would also comply with federal, state, and local regulatory requirements to avoid or minimize wetland impacts for actions subject to regulatory requirements. Further, the Applicant would provide compensatory mitigation as needed to offset the loss of wetland habitat. The construction of additional developments in the area could add to incremental loss of wetlands, but

it is expected that impacts to wetlands during the construction of other projects would be permitted and effects mitigated under applicable federal, state, and local requirements and carried out in accordance with applicable construction permits. As a result, minor adverse cumulative effects to wetlands are expected from the construction of the Proposed Action when combined with other reasonably foreseeable actions in the vicinity.

4.2.4 Water Resources

Adherence to regulatory requirements during construction and operation of the Proposed Action and other reasonably foreseeable projects would not substantially degrade surface or ground water quality. Implementation and adherence to BMPs and other measures employed by all reasonably foreseeable projects is expected to result in short-term negligible impacts to water resources during construction and decommissioning, and long-term negligible impacts to surface water during operations in their immediate vicinities. The Proposed Action would have negligible impacts on surface water and a minor impact with regard to groundwater storage reduction, drawdown, subsidence, and yield resulting in a minor incremental impact on water resources. As a result, minor adverse cumulative effects to surface water or groundwater are expected from the construction of the Proposed Action when combined with other reasonably foreseeable planned and approved development actions in the vicinity.

4.2.5 Biological Resources

4.2.5.1 Vegetation

In general, cumulative impacts to vegetation from the Proposed Action could occur where other existing and reasonably foreseeable trends and actions occur within the analysis area. Current and reasonably foreseeable future actions in the Proposed Action Area could result in altered species composition, a reduced number of plant species and relative frequencies of occurrence for some plants, and decreased overall plant diversity. Impacts to agricultural land would represent the largest vegetation community impacted. The Proposed Action could also influence factors affecting vegetation growth (e.g., revegetation, root formation, exposure to spills, and watering via dust abatement) and invasive species and noxious weed encroachment. However, BMPs and design features would be applied to minimize adverse impacts. The Proposed Action Area would be decommissioned and vegetation restored following the useful life of the solar facility. Therefore, the Proposed Action when combined with other present and reasonably foreseeable actions in the vicinity would have a negligible cumulative impact on vegetation.

4.2.5.2 Wildlife

Direct impacts to most wildlife species from the Proposed Action would be temporary and short-term and are considered to be minor. The Proposed Action has been designed to avoid sensitive wildlife habitat to the extent practicable. Additional development in the area would add to this threat to wildlife where development would result in permanent habitat loss or conversion. However, it is assumed that BMPs of planned or proposed projects in the area would use avoidance measures, and adhere to federal and state permit requirements. Adherence to permit requirements as well as application of BMPs would minimize potential cumulative adverse effects associated with new construction. As a result, no adverse cumulative effects to wildlife are

expected from the construction of the Proposed Action in conjunction with other reasonably foreseeable actions in the vicinity.

4.2.5.3 Threatened and Endangered and Other Protected Species

The Proposed Action would add to habitat loss from present and reasonably foreseeable project trends and actions. Project-related disturbance would represent a small fraction of total vegetative cover within the analysis areas, and many actions would be both short-term and localized. The Applicant would limit or minimize impacts to special-status species within the Project Study Area through the implementation of BMPs and design features and mitigation measures. Further, the USFWS did not identify any future non-federal actions reasonably certain to occur in the action area as part of the formal Section 7 consultation (Appendix D-11). Therefore, the Proposed Action is not anticipated to result in more than minor contribution to cumulative impacts to threatened and endangered species when combined with reasonably foreseeable actions in the vicinity.

4.2.5.4 South Sacramento Habitat Conservation Plan (SSHCP)

The SSHCP is a regional plan that allows project proponents within the Plan Area to expedite federal and state ESA permitting for certain identified covered activities. The SSHCP permittees (i.e., County of Sacramento, City of Rancho Cordova, City of Galt, Sacramento County Water Agency, and the Southeast Connector Joint Powers Authority) received Incidental Take Permits for certain project activities covered by the SSHCP, and the County of Sacramento and cities can extend incidental take permit coverage under their Incidental Take Permits to third-part project proponents' covered activities. The SSHCP also integrates with an Aquatic Resources Program that allowed the USACE to issue a Programmatic General Permit for SSHCP covered activities.

The SSHCP includes a comprehensive conservation strategy, including extensive Avoidance and Minimization Measures (AMMs) to insure that covered activities comply with the ESA permitting standards. The USFWS Record of Decision approving the SSCHP concludes that the SSHCP "fully mitigates for unavoidable impacts on Covered Species and their habitats, protects the functions of wetlands and waters of the Plan Area on a landscape bases, provides for the permanent conservation of the natural communities that are present in the Plan Area, and provides for the permanent conservation of the 28 Covered Species in the Plan Area" (USFWS 2019).

The Proposed Action is not a covered activity under the SSHCP and is not subject to the SSCHP. The SSHCP contemplated that non-covered activities may be approved and permitted in accordance with the ESA and other state and federal environmental laws. The Proposed Action is designed to be consistent with the SSHCP conservation strategy and AMMs, including through the avoidance, minimization, and minimization of effects on the SSHCP covered species and their habitat, Dudek prepared a detailed analysis of the consistency of the Proposed Action with the SSHCP. The analysis documents that the Proposed Action includes mitigation measures that are equivalent to the relevant AMMs in the SSHCP, and that the Proposed Action AMMs coupled with compensatory mitigation for unavoidable impacts, would ensure that Proposed Action effects on SSHCP Covered Species would be avoided, minimized, and mitigated so that the Proposed Action is consistent with the SSHCP.

4.2.6 Cultural Resources

The Proposed Action would have no adverse effect on NRHP-eligible resources in the vicinity. The specific effects of the reasonably foreseeable projects on NRHP-eligible resources is unknown, however, it is assumed that impacts to such resources would be avoided to the extent practicable and that appropriate mitigation would be implemented if effects cannot be avoided. None of the projects listed in Table 4-1 are in view of the NRHP-eligible levees. Therefore, the Proposed Action would not be expected to contribute to cumulative impacts to cultural resources in conjunction with other projects in the area.

4.2.7 Aesthetics

The Proposed Action would be constructed in close proximity to the existing Dillard Recurrent Solar Park and when combined with reasonably foreseeable planned and approved actions in the vicinity, it would have a minor contribution to cumulative impacts on aesthetics as a result of changes to the visual environment.

4.2.8 Air Quality

Construction and decommissioning activities associated with the Proposed Action, as well as with the reasonably foreseeable projects, would result in a temporary increase in criteria pollutant and ozone precursor emissions in the form of both fugitive dust from ground disturbing activities and exhaust emissions from the use of construction equipment and operation of worker vehicles and vendor and haul trucks. If incorporation of BMPs to control emissions does not mitigate emissions to levels below daily SMAQMD thresholds, Sloughhouse Solar and or the other reasonably foreseeable projects would pay a mitigation fee to SMAQMD for construction activities. Therefore, with implementation of BMPs and any mitigation measures as needed, cumulative impacts on air quality in association with construction and decommissioning of Proposed Action in conjunction with construction of other projects would be minor. Construction and decommissioning activities of both the Proposed Action and of reasonably foreseeable projects could also result in temporary, moderate GHGs emissions. For the Proposed Action and other solar facilities, these emissions would largely end following completion of construction or decommissioning activities. Total annual GHG emissions generated as a result of operations and maintenance activities of these solar facilities would be less than the SMAQMD *de minimis* screening level and the project's operational emissions would, therefore, be considered a minor cumulative contribution to climate change.

The average GHG emissions intensity factor for SMUD's overall power mix will decrease over time as the percentage of renewable energy resources contributing to the power mix increases. Senate Bill 100 requires retail sellers of electricity, including investor-owned utilities and community choice aggregators, to provide at least 60 percent of their supply from renewable sources by the year 2030, and 100 percent by the year 2045. Thus SMUD's 2030 Zero Carbon Plan strategy with a target of eliminating carbon emissions from its power supply by 2030, is more aggressive than current regulatory requirements, and over time is expected to result in beneficial cumulative effects.

Significant reductions in electricity generation from fossil fuels, and large increases in electricity generation from solar facilities are key elements of the State of California's goal to reduce GHG

emissions by 80 percent by 2050 (CARB 2017). Senate Bill 100 (2018) requires that 52 percent of the total electricity sold to retail customers in California per year by December 31, 2027, and 60 percent by December 31, 2030, be secured from qualifying renewable energy sources.

As the regional power mix continues to become increasingly dominated by GHG-free energy sources, the relative GHG emissions benefit potential of the Proposed Action could be considered to diminish as would its cumulative impact on GHG emissions and climate change. As noted in Section 3.2 of Appendix F, emissions generated by vehicle and equipment exhaust would also likely decrease over time due to increased regulatory requirements, improved (i.e., less emitting) technology, and fleet turnover. However, because of reduced emissions rates associated with operational vehicle and equipment use, they are not included in this conservative estimation of the project's emissions benefit operational horizon. Additionally, although quantifiable GHG emissions offsets diminish over time with the overall shift toward a 100 percent renewable energy power mix, the Proposed Action provides an overall benefit. The development of renewable energy sources, such as the Proposed Action, are a necessity to meet the State Renewables Portfolio Standard requirements, realizing a 100 percent renewable energy power mix, and achieving overall state GHG emissions reduction targets. Therefore, overall, operation of the Proposed Action is anticipated to have a generally beneficial cumulative effect on air quality and climate in conjunction with the reasonably foreseeable projects particularly other solar projects.

4.2.9 Socioeconomics / Environmental Justice

Socioeconomics

The direct impact to the economy associated with the Proposed Action is expected to be minor, long-term and beneficial to the local economy. The development of other planned and approved projects is expected to have similar minor to moderate beneficial effects on the local economy depending upon the size and type of project. Therefore, the Proposed Action is anticipated to contribute minor cumulative beneficial impacts and long-term beneficial socioeconomic impacts to the local economy when combined with reasonably foreseeable planned and approved actions in the vicinity.

Environmental Justice

The Proposed Action ROI contains only one minority population and one low-income population subject to consideration as a potential environmental justice community of concern. There would be no disproportionately high and adverse environmental or economic effects on minority or low-income populations. Given the distance between the reasonably foreseeable projects and the Proposed Action, it is not anticipated that project-related environmental justice impacts would coincide with those from other projects in the immediate vicinity of Proposed Action Area. Therefore, the Proposed Action is not anticipated to result in more than negligible cumulative impacts to the environmental justice communities when combined with reasonably foreseeable actions in the vicinity.

4.2.10 Miscellaneous Issues

4.2.10.1 Noise

If construction of the Proposed Action overlaps construction of other reasonably foreseeable projects in the vicinity, it is possible they may contribute to a temporary, cumulative increase in noise if construction vehicles utilize some of the same roadways. This impact would be minor and temporary. It is not anticipated that operational noise at the Sloughhouse Solar facility would coincide with other planned and approved projects in the immediate vicinity of Proposed Action Area. Therefore, the Proposed Action is not anticipated to result in more than minor contribution to cumulative noise impacts when combined with reasonably foreseeable actions in the vicinity.

4.2.10.2 Transportation

It is not anticipated that project-related traffic would coincide with that from other reasonably foreseeable projects in the immediate vicinity of Proposed Action Area. With mitigation, the resulting long-term transportation related impacts associated with operation of the Proposed Action would be negligible. Therefore, the Proposed Action is not anticipated to result in more than minor contribution to cumulative impacts to transportation environment when combined with reasonably foreseeable actions in the vicinity.

4.2.11 Human Health and Safety

4.2.11.1 Electromagnetic Fields and Interference

Two other solar projects are in the planning stages (2,555 acre, 200 MW facility in Sacramento County and 1,170-acre facility in Placer County). The Proposed Action is distant from these two planned projects, and the size of the Proposed Action is minor compared to two planned solar energy projects. While some of the other reasonably foreseeable projects may also include activities that could affect electromagnetic fields and interference, these also are situated distant from the Proposed Action. It is also assumed, as these other projects are not associated with power generation, the potential for electromagnetic fields and interference effects would be minimal. For these reasons, the Proposed Action is anticipated to make a negligible contribution to cumulative effects from electromagnetic fields and interference.

4.2.11.2 Environmental Risk Management

Because the Proposed Action site includes property used for agricultural purposes, residual pesticides and metals may remain in the shallow soil. In addition, residential buildings and storage sheds to be demolished may include lead-based paint or asbestos. Similar conditions could be present at other planned and approved project sites. Public and worker health and safety hazards during construction and decommissioning activities would have an increased safety risk which would be mitigated through implementation of health and safety plans, BMPs, and adherence to OSHA regulations. RUS assumes other reasonably foreseeable projects in the vicinity would employ similar measures to mitigate health and safety risks. Minimal human health or safety hazards would be anticipated as a result of the Proposed Action operations. Overall, impacts to human health and safety in association with implementation of the Proposed Action would be short-term, occurring only when workers are present and working at the site, and would be minor. Therefore, the Proposed Action is not anticipated to result in more than minor contribution to

cumulative impacts to human health and safety environment when combined with reasonably foreseeable planned and approved actions in the vicinity.

CHAPTER 5

5.0 SUMMARY OF MITIGATION

As described in Chapter 3, the Applicant would implement various BMPs and mitigation measures to minimize potential environmental impacts associated with the construction and operation of the Proposed Action. Measures to mitigate impacts are avoid or minimize the impact, rectify the impact by repair, rehabilitation, or restoration, reduce or eliminate the impact through preservation or maintenance, or compensating for the impact through replacement or substitution. The following list summarizes the mitigation measures the Applicant would implement with regard to other resources:

- Design the site to avoid sensitive resources to the extent practicable.
- Avoid and minimize aquatic and wetland resource impacts to the extent practicable.
- Return aquatic resource buffers that may be indirectly impacted to pre-existing conditions to the maximum extent practicable after construction.
- Restore all temporary habitat impacts to pre-development conditions following construction.
- Use native vegetation to establish a composition consistent with the form, line, color, and texture of the surrounding undisturbed habitat based on intact, native vegetation community reference sites and monitor success of restoration.
- Provide required compensatory mitigation through the purchase of mitigation credits from an approved wetland mitigation bank, paying an in-lieu fee, or developing conservation land as necessary, should it be required as a result of USACE wetland delineation.
- Provide compensatory mitigation for direct and indirect temporary and permanent impacts to biological resources through onsite habitat preservation and/or mitigation/preservation credit purchase from existing in-lieu fee programs or mitigation banks, to include the purchase of 8.63 vernal pool preservation credits (in acres of habitat) for tadpole shrimp and fairy shrimp offsite at a USFWS-approved vernal pool conservation or mitigation bank.
- If needed, provide mitigation fee to SMAQMD for construction activities.
- Plant hedgerows on portions of the site to screen the solar facility from nearby residents and roads.
- Design the lighting system to provide minimum illumination needed for safety and security using shielding and orientation to minimize light spillover.
- Install motion activated lighting to minimize glare and skyglow.
- Design and locate noise-generating facilities to reduce noise levels below the applicable county noise standards.

- Implement Agricultural Management Plan to mitigate effects on agricultural resources, provide for continued grazing of site, and provide wildlife benefits. A tribal monitoring plan will be developed and implemented in consultation with the tribes.
- A post-review discovery plan will be developed and implemented.

CHAPTER 6

6.0 COORDINATION, CONSULTATION, AND CORRESPONDENCE

RUS is using its NEPA procedures to meet its responsibilities to solicit and consider the views of the public during review under Section 106 of the NHPA and its implementing regulation.

During the preparation of this EA, RUS and/or the Applicant consulted with the following agencies:

- USDA NRCS Farmland Conversion Impact Rating
- USFWS
- SHPO
- Indian tribes

6.1 Summary of NRCS Consultation

The FPPA (7 U.S.C. Part 4201 *et seq.*), requires federal agencies to consider the adverse effects of their actions on prime or unique farmlands. The purpose of the Act is "to minimize the extent to which Federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses."

To quantify the potential impacts on prime farmland soils at the Proposed Action Area, the Applicant submitted Form AD-1006, Farmland Conversion Impact Rating to initiate consultation with the USDA NRCS (Appendix B). Projects with total impact rating scores below the threshold value of 160 do not require further consideration under the FPPA. For projects with scores greater than or equal to 160, the FPPA does not require federal agencies to alter projects to avoid or minimize farmland conversion. The Farmland Conversion Impact Rating for the Proposed Action Area is 153 (Appendix B). Therefore, no further action is required under the FPPA.

6.2 Summary of USFWS Consultation

RUS submitted the Biological Assessment for the Sloughhouse Solar Project on November 21, 2023. The Biological Assessment concluded that the Proposed Action may affect, but is not likely to adversely affect, the elderberry longhorn beetle. Additionally, the findings concluded that the Proposed Action may affect, and is likely to adversely affect the tadpole shrimp and fairy shrimp.

USFWS concurred with these findings in their Biological Opinion and Incidental Take Statement for the Sloughhouse Solar Project issued on July 18, 2023 (Appendix D-11). All consultation letters are included in Appendix D.

In the Biological Opinion, USFWS proposed the following conservation measures for the elderberry longhorn beetle:

- Avoidance and fencing of elderberry shrubs during construction,
- If necessary, trimming of shrubs between November and February,

- Mowing within the dripline of shrubs when adult beetles are not active (August through February),
- Monitoring by a qualified biologist during construction, and
- Environmental education program for on-site contractors and personnel.

In addition to implementation of standard BMPs the USFWS also proposed the following conservation measures be considered part of the Proposed Action with respect to the tadpole and fairy shrimp:

- Worker environmental awareness training to address special-status species, habitats, and protected wetlands within the action area,
- Environmentally sensitive area exclusions via buffers for aquatic resources and elderberry shrubs,
- Construction monitoring by a qualified biologist during construction activities involving ground disturbance within undeveloped portions of the project site,
- Maintaining hydrology such that there is no reduction or increase in existing surface water flow offsite,
- Avoidance of or mitigation for vernal pool branchiopod habitat, and
- Compensatory mitigation for impact to branchiopod habitat to offset impacts by purchase of 8.63 tadpole shrimp and fairy shrimp preservation credits or USFWS-approved alternative means such as offsite or onsite preservation.

As part of the Incidental Take Statement, the following reasonable and prudent measures must be undertaken as binding conditions of any grant or permit issued by RUS for the project for the exemption in Section 7(o)(2) to apply:

- Full implementation and adherence to all conservation measures described in the Sloughhouse Solar Biological Assessment as a condition of any permit from the USACE,
- RUS shall provide the Sacramento USFWS office with a copy of the completed bill of sale and payment receipt for purchase of mitigation credits at a USFWS-approved conservation or mitigation bank and/or USFWS-approved permittee-responsible mitigation, and
- RUS shall provide a precise accounting of the total acreage of habitat impacted after completion of construction.

6.3 Summary of SHPO Consultation

Based on the results of the archaeological and architectural cultural resource surveys, a finding of No Adverse Effect in accordance with 36 CFR § 800.5(b) is appropriate for the Proposed Action. RUS submitted this finding in a letter to Indian tribes and the SHPO on July 6, 2023. SHPO concurrence was received on August 15, 2023. These letters are on file at RUS. In consultation

with the tribes, a tribal monitoring plan will be developed and implemented to minimize the potential for adverse impacts to cultural resources.

6.4 Summary of Tribal Consultation

RUS consulted with the following tribes: Buena Vista Rancheria of MeWuk Indians, Ione Band of Miwok Indians, Nashville Enterprise Miwok-Maidu-Nishinam Tribe, Shingle Springs Band of Miwok Indians, Tsi Akim Maidu, United Auburn Indian Community of the Auburn Rancheria, and Wilton Rancheria. Scoping letters were sent to the tribes on July 18, 2022. On July 25, 2022, in an email response, the United Auburn Indian Community recommended a tribal monitoring plan. They also requested information on the disposal process and environmental impacts associated with spent solar panels. Wilton Rancheria responded on August 1, 2022, and requested copies of cultural resource or other assessments, including records reviews, completed within the APE or surrounding area. The request includes Center of the California Historical Resources Information System (CHRIS) records search, archaeology inventory surveys, Sacred Lands File searches, ethnographic studies, geotechnical reports, aerial maps of the proposed action, and soil diagrams. Both the United Auburn Indian Community of the Auburn Rancheria and Wilton Rancheria requested a tribal monitoring plan while in consultation with Sacramento County under the AB 52 process in association with the CEQA review. A tribal monitoring plan will be developed and implemented in consultation with the American Indian tribes.

Based on the results of the archaeological and architectural cultural resource surveys, a finding of No Adverse Effect in accordance with 36 CFR § 800.5(b) is appropriate for the Proposed Action. RUS submitted this finding in a letter to the tribes and the SHPO in June 2023. The United Auburn Indian Community responded on August 4, 2023, with a request for more information about project timing, the NEPA process, and the status of the tribal monitoring, discovery, and treatment plan.

All correspondence associated with Section 106 consultation is on file at RUS.

CHAPTER 7

7.0 LITERATURE CITED

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CHAPTER 8

8.0 LIST OF PREPARERS

Table 8-1 summarizes the expertise and contribution made to the EA by the Project Team.

Table 8-1. Environmental Assessment Project Team

Name/Education	Experience	Project Role
William Risse (DESRI) B.S. Natural Resource Mgmt. Land Use Planning M.A. Urban and Regional Planning- Environmental Planning	11 Years of Experience in Environmental Review/ Permitting Document Preparation and Environmental Analysis, Permitting/ Environmental lead for over 2 GW of renewable energy projects	Applicant Representative-Director, Development Permitting
Daniel Menahem (DESRI) B.S. Finance	23 years of power plant development, including 15 years exclusively in developing utility scale solar projects in the US market	Applicant Representative-Executive Director, Project Development
Carol Butler Freeman (AECOM) M.S., Geological Sciences; M.S., Space Studies; B.S., Geology	14 years of experience in NEPA document preparation; 24 years of experience in technical writing and evaluations	AECOM Project Manager
Anneliesa Barta (AECOM) MBA Finance	12 years in NEPA compliance	Socioeconomics, Environmental Justice
Karin G. Beck, R.P.A (AECOM) M.A., Cultural Resources Management; B.A., Anthropology	26 years in cultural resources and 26 years in NEPA compliance	Cultural Resources (Archaeology)
Adrienne Donovan-Boyd (Dudek) MS, Historic Preservation BA, Community Development	17 years in cultural resource management	Historian
Adam Giacinto (Dudek) MA, Anthropology BA, Anthropology	18 years in cultural resource management	Archaeologist
Regina Greer (AECOM) B.S., Computer Science	27 years in Administration and 15 years in NEPA compliance	Project Administrator, Quality Assurance

Table 8-1. Environmental Assessment Project Team

Name/Education	Experience	Project Role
Morgan Kennedy (Dudek) BA, Biophysical Geography	18 years of experience in regulatory permitting, vegetation and restoration ecology, wetland scientist and mitigation planner.	Compliance Manager and Ecologist
Chandra Miller (AECOM) M.A., Public History; B.A., History	14 years in Cultural Resources and 14 years in NEPA compliance	Cultural Resources (Built Environment)
Heather Miller (AECOM) M.A., Public History; B.A., History	13 years in Cultural Resources and 13 years in NEPA compliance	Cultural Resources (Built Environment)
Matt Natfalay (Dudek) BA, Geological Sciences,	30 years in groundwater and surface water management, administration, and programs	Hydrologist
Larry Neal (AECOM) M.S., Biological Oceanography; B.S., Botany	25 years in Ecology and 25 years in NEPA compliance	AECOM Deputy Project Manager, Floodplains, Wetlands, Biological Resources
Keith Owens (AECOM) B.S. Geology	33 years in Geologic and Environmental and 2 years in NEPA compliance	Geology and Soils, Land Use, Water Resources, Floodplains and Flood Risks
Laura Owens (AECOM) B.S., Physics and Geology	25 years in Human Health Risk Assessment and 7 years in NEPA compliance	Air Quality, Visual Resources, Noise, Human Health and Safety, Transportation
Susie Smith *(Dudek)* BS, Geological Sciences	21 years' experience in Phase I Environmental Site Assessments (ESAs).	Hazardous Materials
Adam Poll (Dudek) MS, Environmental Policy and Management, Energy and Sustainability, BS, Environmental Studies	15 years in greenhouse gas principles, inventories, emissions analysis, planning, and verification	Air Quality