RECLAMATION
Managing Water in the West

Sutter National Wildlife Refuge Lift Station Project

Draft Environmental Assessment/Initial Study (EA 17-26-MP)

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Contents

Section 1 Introduction

1.1 Background

The Sutter National Wildlife Refuge (SNWR) was established in 1944 and consists of approximately 2,590 acres in Sutter County about eight miles southwest of Yuba City, California (Figure 1). SNWR was established to provide feeding and nesting areas for migratory birds and alleviate crop depredation. The SNWR, owned and operated by the United States Fish and Wildlife Service (USFWS), is located almost entirely within the Sutter Bypass. The SNWR is the only publicly owned wetland habitat area in the Sutter Basin. Historically, flood flows from the Sacramento River, Butte Creek, and Feather River inundated large portions of the Sutter Basin. However, most of this land has been protected from flooding by levees and has been developed for agricultural production (Burleson et al., 2015). Water is used on the SNWR to maintain wetlands that produce food resources for migratory waterfowl, other migratory birds, and many other wetland dependent species.

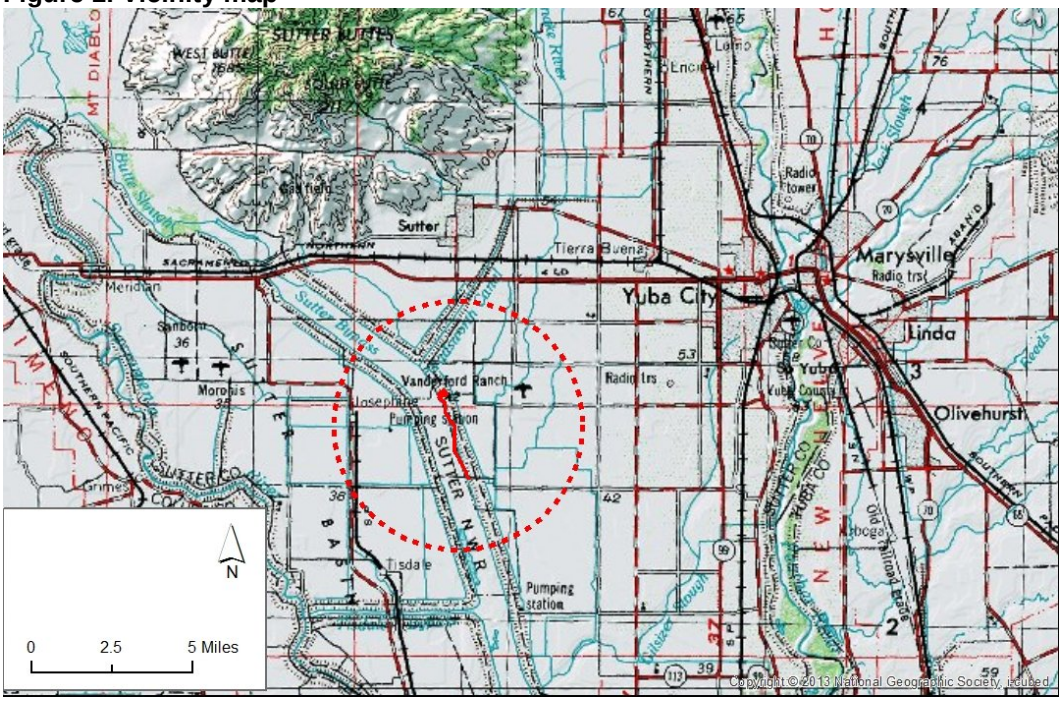
Most water supplies to the SNWR are provided through the Sutter Bypass (2,150-acre portion within the Bypass) or delivered by Sutter Extension Water District (SEWD) (since the SNWR is a landholder in SEWD) to a 440-acre portion outside the Bypass within SEWD boundaries. The SNWR holds two appropriative water rights for flows in the Sutter Bypass, however, these water rights do not have high priority and are not dependable water sources (Burleson et. al, 2015).

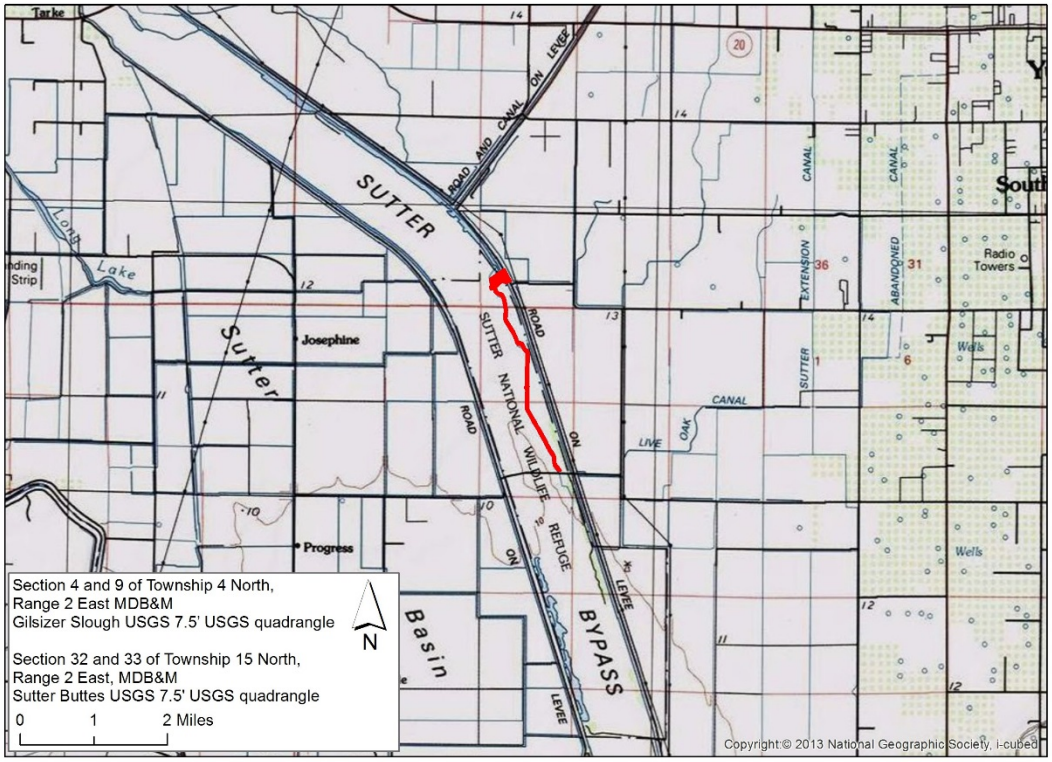
The SNWR is also identified under the Central Valley Project Improvement Act (CVPIA) of 1992 and as such is entitled to Central Valley Project (CVP) refuge water supplies. The CVPIA authorizes a maximum of 23,500 acre feet (AF) of Level 2 (L2) water supplies and an additional 6,500 AF of Incremental Level 4 (IL4) water supplies for a total of 30,000 AF of water available for SNWR. To date, Reclamation has not been able to convey refuge water supplies to SNWR, though studies are underway to determine potential mechanisms to convey CVP refuge water supplies to the SNWR.

1.2 Previous Environmental Analysis

The geotechnical investigation work completed in 2016 to support the Proposed Action/Project was previously analyzed in a Categorical Exemption and within Clean Water Act compliance documents. A Biological Opinion was also issued by the USFWS for the geotechnical investigation work in 2016. These documents and the environmental analysis they contain are incorporated by reference into this document.

Figure 1. Vicinity map





Note: the red line shows the extent of the Project Area, including access road

1.3 Need for the Proposed Action/Project and Objectives

The need for the Proposed Project is to provide reliable Level 2 and Incremental Level 4 refuge water supplies to the SNWR in accordance with requirements under Section 3406(d) of the Central Valley Project Improvement Act (CVPIA). Current SNWR water supplies are taken from the EBD via a gravity main canal inlet. This gravity channel can only be used when water surface elevations in the EBD are at or above elevation 38.1 feet. When water elevations are held at levels needed for optimal use of the gravity channel for SNWR, the higher elevations cause seepage of neighboring agricultural fields. The EBD is managed by DWR in a manner that limits the water elevation at Weir No. 2 to avoid this upstream seepage impact. This severely limits the SNWR's ability to divert water during critical habitat management periods and at the rates needed for optimal habitat management. The Proposed Project will alleviate this impairment to the refuge's water conveyance system, allowing access its existing water supplies and increase its capacity to receive water supplies required for optimal management of its wetland habitat areas.

The objectives for the Proposed Action/Project are as follows:

- Ensure the SNWR's ability to divert licensed water supplies (including future CVPIA water supplies) from the EBD in order to manage for habitat and wildlife needs;
- Design, permit, construct and operate a screened intake pump facility and associated infrastructure to provide the capability to deliver L2 and IL4 water supply to SNWR as required by CVPIA. The facility will be owned and operated by USFWS; and
- Screen the new intake facility in a manner that meets current National Marine Fisheries Service (NMFS) and California Department of Fish and Wildlife (CDFW) fish screen design criteria for screen slot size and approach velocity.

1.4 Anticipated Regulatory Requirements and Permits for the Project

The permits and approvals that may be required for the Proposed Action/Project, as well as the regulatory agencies that may rely on this document and the aforementioned permits and/or approvals for consideration, are identified in the following table (Table 1). State and federal agencies will use this document for compliance with NEPA and CEQA, to the extent applicable, to issue necessary federal and state permits and approvals.

TABLE 1: ANTICIPATED REGULATORY REQUIREMENTS AND PERMITS FOR PROJECT IMPLEMENTATION

Agency	Type of Approval
Federal Agencies	
U.S. Bureau of Reclamation	NEPA Lead Agency Funding Approval National Historic Preservation Act Section 106 Lead Agency Federal Endangered Species Act Section 7 Lead Agency
U.S. Army Corps of Engineers	Clean Water Act Section 404 and 408 Permit
U.S. Fish and Wildlife Service	Federal Endangered Species Act compliance (Section 7) NEPA Cooperating Agency
National Marine Fisheries Service	Federal Endangered Species Act compliance (Section 7)
State Agencies	
California Department of Fish & Wildlife	CEQA Lead Agency California Endangered Species Act compliance Streambed Alteration Agreement (Section 1601)
California Natural Resources Agency	Funding Approval
Central Valley Flood Protection Board	Encroachment Permit Temporary and Permanent Easement
Central Valley Regional Water Quality Control Board	National Pollutant Discharge Elimination System General Construction Storm Water Permit (Section 402) Clean Water Act Water Quality Certification (Section 401) General Order for Dewatering and Other Low Threat Discharge to Surface Waters Permit
State Historic Preservation Office	National Historic Preservation Act (Section 106)
State Lands Commission	Encroachment Permit(s)

1.5 Document Structure

To consider environmental impacts of the Proposed Action/Project pursuant to both NEPA and CEQA, Section 3 includes the analysis of possible effects to resources using an initial study checklist adapted from the CEQA Guidelines, Appendix G. Discussion of potential impacts for the No Action Alternative and Proposed Action/Project are addressed in more detail following each checklist section. The CEQA Checklist does not incorporate all resource areas required by NEPA; Section 4 includes NEPA-specific components.

Section 2 Description of Proposed Action/Project

2.1 No Action Alternative

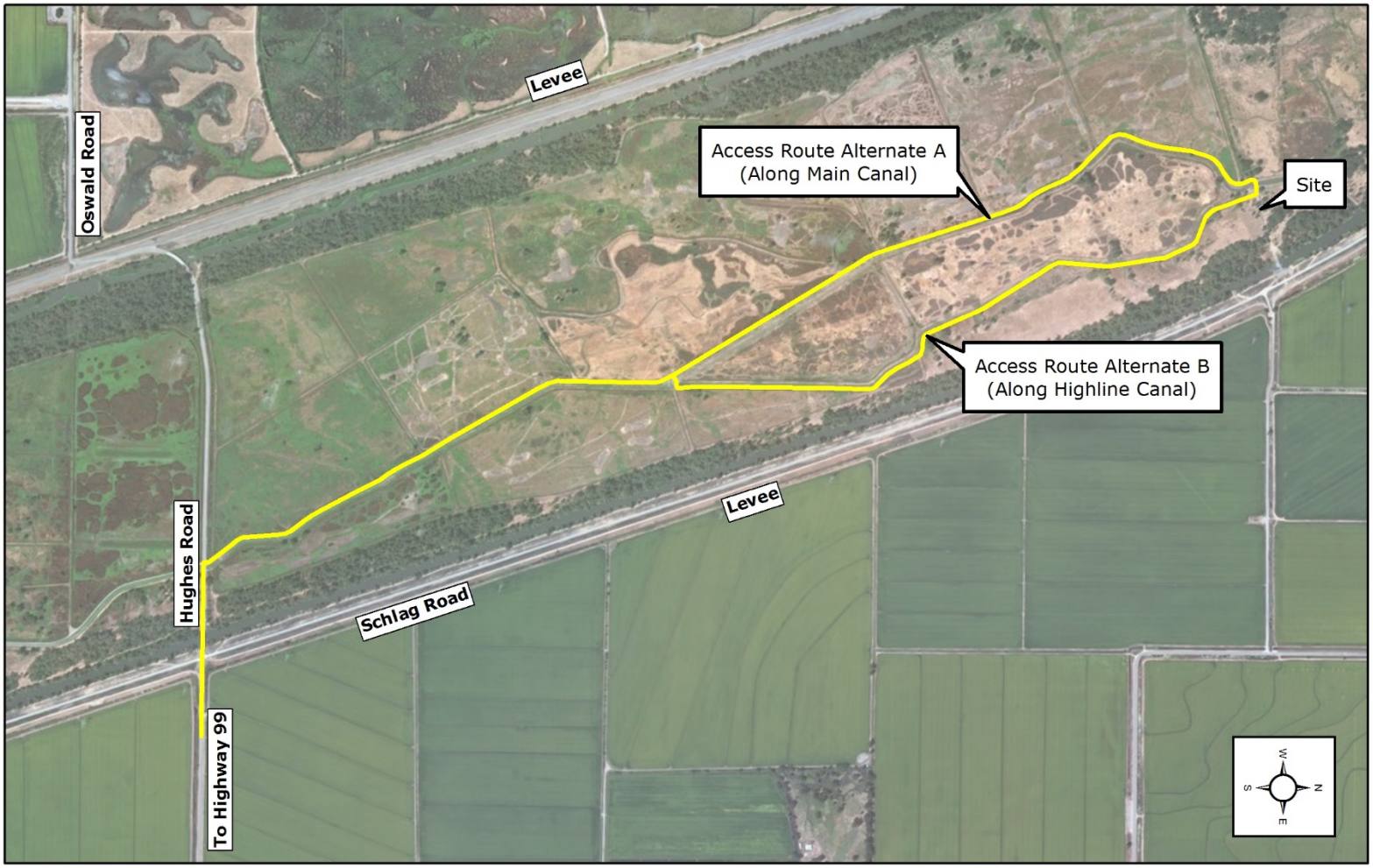
The No Action Alternative would consist of Reclamation and its partners not constructing the SWNR Lift Station to help meet refuge water demands. The delivery of L2 and IL4 refuge water to the SNWR lands would continue to be unreliable due to inadequate surface water conveyance facilities, fluctuating water surface elevations, and fluctuating water availability in the EBD. SNWR would continue to not be able to meet their Section 3406(d) CVPIA water supply requirements, and wildlife and habitat management goals due to an inability to utilize regular dependable refuge water supplies for wetland habitat benefits. In addition, the diversion on EBD would remain unscreened and not meet current NMFS and CDFW screening criteria requirements.

2.2 Proposed Action/Project

Reclamation and its partners, USFWS and Ducks Unlimited Inc. (DU), propose to construct the SNWR Lift Station (Proposed Action/Project). The Proposed Action/Project would further the goals and objectives of the Refuge Water Supply Program by improving refuge water availability at the SNWR. The lift station would allow SNWR to divert water from the EBD when water surface elevations are below 38.1 feet and the current gravity diversion infrastructure in not able to divert water. The lift station would be sized to deliver the maximum refuge water supplies inside the Bypass but versatile enough to efficiently handle a wide range of flow rates to satisfy diverse wildlife habitat management goals of refuge staff.

The Proposed Action/Project consists of the following elements which are described in more detail below: (1) construction of a pump station (lift station) with 4 vertical-turbine pumps located approximately 200 feet upstream of California Department of Water Resources' (DWR) Weir No. 2 structure and on the west side of the EBD; (2) installation of approximately 700 feet of 54-inch diameter buried pipeline from the proposed pump station to a new concrete distribution box; (3) construction of a new concrete distribution box connected to the new buried pipeline and existing internal Sutter NWR water conveyance facilities; (4) installation of two cylindrical fish screens fitted to the new pump station intakes; (5) improving maintenance road; and (6) installing infrastructure to supply power to the pump station. The above elements are located on lands owned by the USFWS (SNWR property) and lands owned by the State of California (Sacramento and San Joaquin Drainage District acting by and through the Central Valley Flood Protection Board). See Figures 2 and 3 for the Proposed Action/Project Area .

Figure 2. Proposed Action/Project Area Access



The Proposed Action/Project footprint is as follows:

	TABLE 2: PROPOSED ACTION/PROJECT FOOTPRINT			
Zone	**Total Area**	**Waters of the U.S. Area**	**Trees Area**	**Non-tree (grass, ruderal) Area**
Primary construction zone (***permanent impacts***)	0.36 acres*	2.34 acres	1.22 acres	1.12 acres
Ancillary construction zone (***temporary impacts***)	7.81 acres	7.81 acres	2.20 acres	5.61 acres

*****Total permanent impacts include new O&M road (0.19 ac), Distribution box/spillway (0.07 ac), and gravel pad/platform for lift station (0.10 ac)

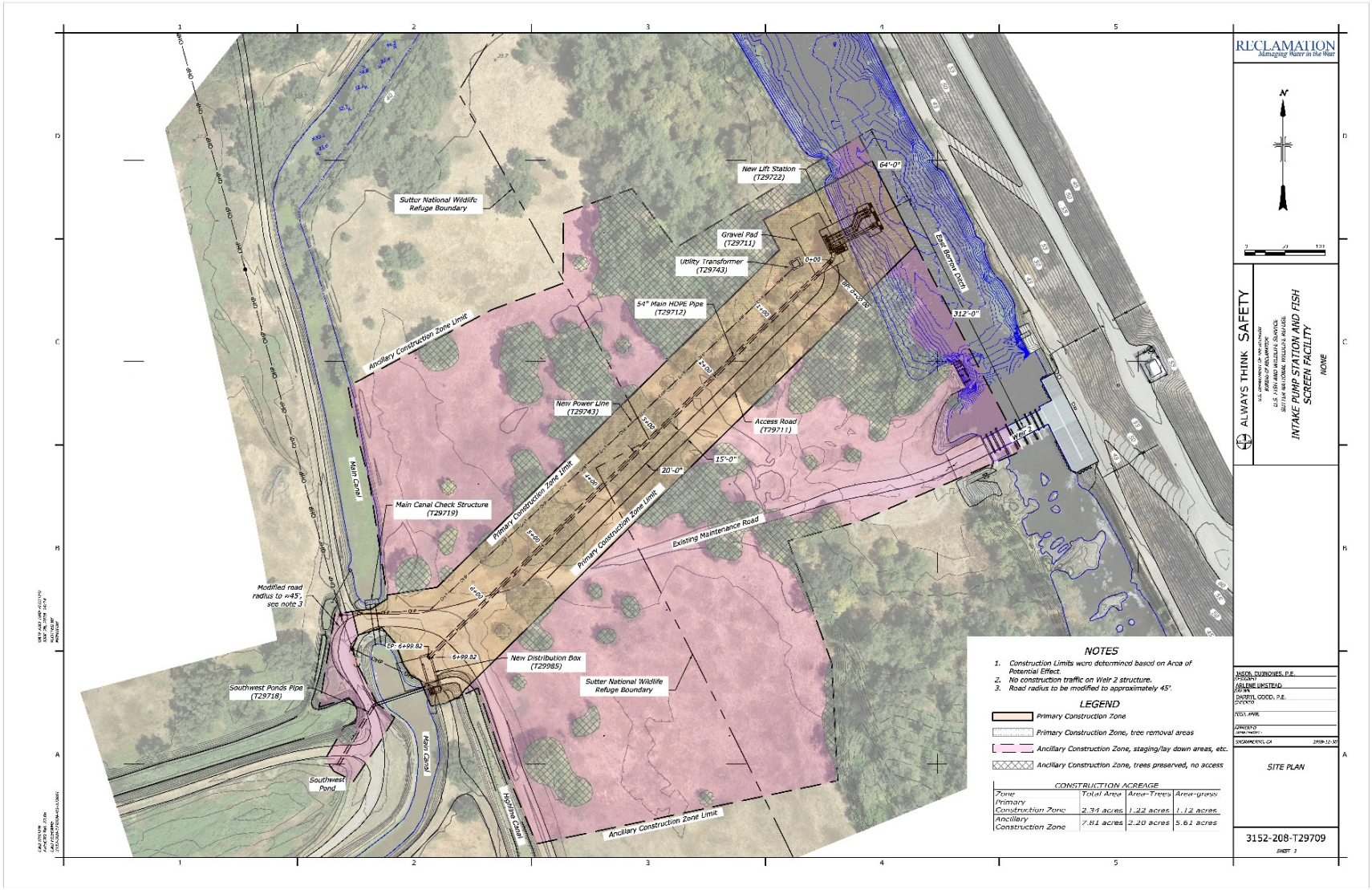
Lift Station

The Proposed Project, consisting of four vertical turbine intake pumps, will be constructed upstream of DWR's Weir No. 2 on the EBD. Dewatering during construction will likely be required for trenching and placing of new buried main line pipe and construction of the new concrete diversion box (there will be no dewatering of any waterbodies, only from where groundwater seeps into the construction area). The construction contractor will be required to submit a dewatering plan for approval, and it will likely entail a series of shallow sumps and wells that are strategically placed and operated to bring down the groundwater table sufficiently to allow for construction activities to be performed. The construction contractor will also be responsible for required National Pollutant Discharge Elimination System (NPDES) permitting and reporting for this dewatering system.

Individual steel pipe intakes will be constructed for each pump and all intakes will be connected to one of two cylindrical fish screens. The pump size configuration is approximately one pump with 40 cubic feet per second (cfs) capacity, one pump with 20 cfs capacity and two pumps with 10 cfs capacity. This configuration provides the needed flexibility for SNWR to efficiently manage their water. The four intake pumps will be located on an elevated steel platform with the bottom of the platform structure set at elevation 59.8 feet (at the 200 year flood stage level). The platform will house all lift station electronics and controls. Individual pump intakes will discharge into a single steel discharge header that is connected to a 54-inch HDPE buried pipeline (described below).

Energy would be transformed at the lift station by a submersible transformer. The transformer will be placed in a vault above ground and would likely be made of aluminum, steel and/or concrete and placed on a reinforced concrete pad at grade near the new elevated platform. The enclosure dimensions would be approximately five feet by nine feet by eight feet. The conduit from the transformer up to the electrical components on the platform will likely be five-inch steel pipe and would be 30 to 50 feet long, depending on where it is connected. The enclosure would be further protected with posts or bollards (to protect from vehicles).

Figure 3. Proposed Action/Project Area



The electrical systems of the proposed lift station would include power distribution, motor control, lighting and convenience receptacles, auxiliary systems, and grounding. Power to run the lift station will be provided via an extension of the existing 12.47 kilovolt (kV) Pacific Gas andElectrical Company (PG&E) distribution lines on the SNWR currently powering an existing lift pump near the proposed distribution box location. Approximately 800 feet of new electrical distribution line, an additional distribution line pole, and a new pole and transformer at the lift station would be likely be required. The 12.47 kV would be transformed at the lift station to 480 volts by a submersible transformer. The new lift station electric power loading is estimated to be in the range of 650 to 850 horsepower. In addition, PG&E will decommission the existing point of delivery that will include removal of the existing overhead, pole mounted transformer and wood power pole.

The lift station would be fitted with a lighting system for safety and operation while refuge staff are at the facility. The elevated platform (accessible by stairs and a locked gate) will be enclosed by an eight-foot tall fence. Lighting designs will minimize direct lighting onto the EBD water surface to protect against potential predation of threatened/listed fish species. Lighting designs and proposed operations and maintenance (O&M) will be reviewed by regulatory agencies for approval.

Buried Pipeline and Concrete Distribution Box

The approximately 700-foot long, 54-inch buried pipeline installation will involve clearing and grubbing and temporary excavation within the primary construction zone (Figure 3). The pipeline will be buried such that a minimum of three feet of cover above the top of pipe is provided from the finished ground surface elevation. Pipe material will be high-density polyethylene (HDPE). A concrete distribution box will be constructed with three outfalls that allow flexible distribution of water to various SNWR canals via existing internal SNWR conveyance facilities. Rip rap will be placed along the west bank of the Main Canal, across from the new distribution box. The area is approximately 45 feet long by 18 feet wide by 1.5 feet deep (810 square feet and 45 CY) of 6- to 9-inch size 0 rip rap. It will be placed on the Main Canal slope across from the distribution box.

Portions of the backfilled pipeline alignment will be planted with appropriate ground cover according to the SNWR managers and biologists. The pipeline alignment will also include a new gravel O&M road to access the new lift station facilities. Buried pipeline and concrete distribution box work will take place while water is present in the EBD but not when the bypass is flooded. Dewatering will likely be required during construction and will be performed by a contractor per approved designs, best practices and permits. Appropriate regulatory agencies will review and comment on the construction contractor’s proposed dewatering plan. A coffer dam in the EBD is not anticipated for this construction work.

Fish Screen Intake Structure

The lift station intakes will be fitted with two 48-inch diameter cylindrical fish screens designed for a maximum approach velocity of 0.33 feet per second (fps) in accordance with National Marine Fisheries Service (NMFS) and CDFW fish screen design criteria (NMFS 1997) for the key fish species of concern at the project site: Central Valley steelhead (federally listed as threatened), winter-run Chinook salmon (federally and state-listed as endangered), spring-run Chinook salmon (federally and state-listed as threatened), fall-run Chinook salmon (not listed), late fall-run Chinook salmon (not listed) and green sturgeon (federally listed as threatened). Maximum lift station diversions would not exceed 80 cfs and is in accordance with CVPIA water supply allocations and terms of SNWR's water right licenses. Timing of diversion and terms of the existing water rights would not change under the Proposed Action/Project. The footprint of the elevated platform structure and fish screens within the EBD (to top of bank) is approximately 0.04 acres (1,700 square feet). The majority of the structure in this footprint is above elevation 54.0 (100-year flood event stage). The cross-sectional area of the elevated platform structure and fish screens within the EBD (to top of bank) is 0.011 acres (500 square feet).

The cylindrical screens are manufactured of stainless steel wedge-wire with 1.75 millimeter slot openings and, due to their cylindrical geometry, are able to economize the size of the overall screen structure. The cylindrical geometry allows the full circumference of the intake screen to accept flow, maximizing the area of the intake and minimizing the overall screen size. The screen cylinders are equipped with interior and exterior cleaning systems (mechanical brushes) which are effective at removing accumulated debris on the screen surfaces.

Cylindrical screens attach directly to the intake bowls of the vertical turbine pumps, eliminating the need for a sump structure to house the pump column and support the fish screen system. One cylindrical screen will provide flow to the 40 cfs pump and the second screen will provide flow to the 20 cfs and two 10 cfs pumps. Each screen will be able to be operated independently. The cylindrical screens would be supported on individual pile-supported vertical steel frames. A rail system would be constructed above the pump column to allow the screen to be retracted using a cable and winch system (electronically powered and controlled) to facilitate maintenance and repair.

Flow approach velocity, normal to the screen face, shall be a maximum of 0.33 fps. Velocity is based on the gross screen area less the area of major structural supports. Screens must be configured to keep transport velocity either constant or increasing through the screen area. Screen panels will be designed to ensure at least 27 percent open area across the entire screen surface. Submerged cylinder screens will be located a minimum of three feet below the normal operating water surface elevation. The screens are to be designed to meet operational criteria during minimum and maximum flows in the canal.

Maintenance Road

The Proposed Action/Project area will be accessed via either the existing access road within the SNWR that parallels the main canal (Figure 2) or via another existing access road within the refuge that parallels the Hi-Line Canal (Figure 2). Alternative B would need to be enhanced for construction equipment and as such, excess spoil material (approximately 600 cubic yards) excavated from the project area and not used to backfill the new buried pipeline, will be utilized by the SNWR for standard O&M road and internal levee maintenance/repair needs. Road enhancement would be on top of the existing road (a width of approximately 12 feet) and for a distance of approximately 600 feet, depending on how much material is needed in areas. No spoils will be placed within wetlands or canals.

Construction Details

Construction activities are expected to begin in fall/winter 2018. Approximately 18 months are needed to complete the construction work activities. Activities will be staged in a manner to minimize impacts to species. For example, tree clearing activities within the pipeline alignment will be performed outside the bird nesting window (September 1 through March 1), in-water construction activities will be performed during a time when listed fish species will not be impacted (July 1 through October 31) and GGS are active (May through October), and construction activities adjacent to managed wetlands and ponds will restricted when waterfowl are using these areas (October 1 through March 1). DU and its construction contractor and potential subcontractors will employ standard best management practices during construction to avoid and minimize water quality impacts including turbidity, sedimentation, etc. and will work with SNWR biologists regarding construction windows. The temporary construction features include staging areas and road access. Construction site access is available from the south via an existing access road beginning at Hughes Rd. Additionally, there is potential construction site access from the north via an existing access road and an EBD bridge crossing approximately 0.6 miles to the north. Means and methods will not be prescribed to the construction contractor, but an estimated project phasing may include the following tasks/sequencing:

Tree clearing activities

- Removal of trees (primarily oaks) within pipeline alignment, powerline corridor, and lift station footprint and disposal of those materials outside of the Bypass (a total of 1.22 acres of trees will be permanently impacted)

Mobilization

- Establishment and preparation of staging areas
- Placement of work trailer, if necessary
- Placement of gravel/ballast, if necessary
- Establishment of temporary power, if necessary
- Delivery of equipment and material to the work site (front end loaders, pile driving equipment, cranes, dump/haul truck, man-lifts, excavator with bucket, bulldozer, compaction equipment, motor grader, etc.)
- Survey and setting of benchmarks submittal review for survey, various materials, safety, means & methods, etc.

Dewatering

- Installation of dewatering system if necessary (sumps, wells, discharge piping, monitoring devices, pumps, electrical controls, etc.)
- Operation and monitoring of dewatering system (per submittals and applicable permits)
- Decommissioning and removal of dewatering system per specs and permits when no longer needed

Distribution box construction

- Survey and site preparation (clearing and grubbing)
- Excavation of site
- Forming, rebar placement and connections (main pipeline)
- Placement of concrete
- Final site work around box (placement of riprap, grading, etc.)

Main pipeline installation

- Survey and site preparation (clearing and grubbing)
- Excavation and preparation of trench (e.g., placement of bedding material)
- Placement and connection of pipe (fused HDPE)
- Connection to concrete distribution box and steel pipe manifold
- Backfill and compaction of pipeline
- Final site work along pipeline alignment (grading, O&M road installation, revegetation etc.)

Lift station installation

- Survey and site preparation (clearing and grubbing, topography work)
- Installation of piles on EBD embankment
- Installation of steel platform and fish screen guides
- Installation of pumps, motors, electrical equipment and controls
- Installation of steel pipe intake and steel header, connection of main line pipe
- Extension of electrical power to the pump station and maintenance platform
- Connection of electrical components
- Installation of fish screens
- Testing of all equipment

Demobilization

- Site remediation per specifications and permits, including on-site habitat revegetation/restoration
- Removal of applicable equipment and material

Miscellaneous items

- As-built designs
- Hydraulic analysis of fish screens
- Design close out reports
- Habitat compensation/mitigation, as required

Geotechnical Considerations

A geotechnical investigation of the project site was completed in 2016, and was utilized to prepare the geotechnical report titled: *Sutter National Wildlife Refuge, East Borrow Ditch Lift Station, 2016 Geologic Investigation Report, Sutter County, California* (Jan 2017). This Geotechnical Report is incorporated into this project description by reference as it covers the same area of potential effect as the Proposed Action/Project. No additional geotechnical fieldwork is anticipated for completion of final design of the Proposed Action/Project.

Environmental Protection Measures

1) Work will be conducted when Sutter Bypass is not being used to bypass flood waters.
2) Ground disturbing activities will not occur within 24 hours of a qualifying rain event (more than 0.25 inches in a 24-hr period) in order to avoid turbidity impacts.
3) Soil disturbance will be minimized by using mats (or similar measures) for heavy equipment when the ground is soft.
4) Work will be stopped immediately in areas where earthwork exposes human remains, historic artifacts, or prehistoric resources and the appropriate regulatory agencies will be notified for guidance on how to proceed, per requirements of the Section 106 permit.
5) Where practical, excess spoils will be placed on existing road and internal levees for maintenance/repair needs during the giant garter snake active period (May through October).
6) Project staging activities will occur greater than 30 feet from the EBD and the Main and Hi-Line Canals.
7) A USFWS/CDFW-qualified biologist will conduct pre-construction surveys for special-status species, as required for compliance with the Federal and State Endangered Species Acts and the various project permits.
8) A biological monitor will inspect the site prior to work beginning each day and will be present during construction activities to reduce or avoid impacts on special-status species and other biological resources.
9) Refer to the Biological Resources section later in this document for specific mitigation measures for giant garter snakes (GGS 1-10), yellow-billed cuckoo, Swainson's hawk and other migratory birds and raptors (YBCU 1-3 and SWHA 1-2), special-status fish species (FISH 1-3), western pond turtle (WPT-1), western red bat (WRB-1), and waters of the U.S. (WOUS-1) to avoid potential impacts to these special-status species and waters of the U.S.
10) Plant surveys will be conducted prior to construction to ensure that no listed plant species are within the area of all construction activities (RPS-1).
11) Access into and out of the SNWR will be limited to two locations along existing dirt roads, minimizing interference with wetlands and waters of the U.S. Use of these two routes will be at the discretion of the contractor.
12) Post construction re-contouring and restoration efforts in the SNWR will be done within 30 days of construction activity completion if feasible for planting, and coordinated with the USFWS.

13) The Proposed Project/Action is designed to minimize and avoid impacts in the Proposed Project/Action area. Much of the project footprint (including construction staging and access) is located on unvegetated or previously-disturbed areas. Additionally, temporal or spatial avoidance measures were incorporated into the project to minimize short and long-term impacts to biological resources including: minimization of the project footprint (spatial impacts); minimum construction period (temporal impacts); minimization of disturbance to riverine and riparian habitat; minimize direct habitat loss during project design and construction; and revegetation of areas of disturbed soil.
14) Refer to the Tribal Cultural Resources section later in this document for specific mitigation measures (TCR 1-2) to avoid potential impacts to these resources.

2.3 Operation and Maintenance

The USFWS would be responsible for the O&M activities of the proposed project facilities as described below.

Lift Station Operation and Maintenance Activities
When diverting, the pumps would be operated to maintain a constant flow rate through the system to the concrete distribution box. Water will then be diverted out of the concrete distribution box into the existing SNWR water conveyance facilities via manual gate structures or stop logs. An overflow will be incorporated into the concrete distribution box that would spill into the main SNWR conveyance structure to avoid overtopping and erosion around the concrete distribution box.

Pumps will be equipped with electronic timers that allow SNWR staff to better control when and how water is delivered to efficiently divert water to benefit wildlife. Flows at the lift station will be measured via an electronic measurement and data collection device such that hourly measurements can be made and stored for reporting requirements. Pumps would be accessed weekly for inspection and maintenance during operation. Pumps would be removed every 10 years for inspection and repair if needed.

The lift station will be accessed by SNWR operators via existing and acquired rights of way along the alignment of the proposed buried pipeline. An access road will be maintained along the alignment of the buried pipeline similar to the existing access road maintained to the DWR Weir No. 2 structure, which is a gravel road at or slightly above the existing ground surface. Access to the elevated platform that houses pumps, motors, electronics and controls will be accessible via a metal staircase.

Gate, lighting and fencing along the lift station platform would be inspected annually and repaired as needed.

PG&E Facility Operation and Maintenance Activities
PG&E will own and maintain all new power conveyance facilities and equipment up to and including the submersible transformer. It is anticipated that any O&M activities will follow PG&E established standards and best practices.

Fish Screen Intake Operation and Maintenance Activities
It is anticipated that SNWR personnel would visit the intake site four to five times per week during operations for general inspection of equipment and site security. The intake screens will be equipped with a cleaning system that includes a brush mechanism driven by an electric drive unit. The speed of the brush would be controlled by an electric drive unit. The Local Control Panel would allow operation and testing of the brush assembly.

The starting, stopping, and operating time of the cleaning would be adjustable and possible through a pre-determined schedule.

It is anticipated that intake screen maintenance would be performed at least annually during times when the associated pumps are not required to deliver refuge water. For inspection, the screens will be retracted to the level of the elevated platform. At times the screens may need to be removed for repair. The screens would be removed utilizing a crane operating from the stable embankment. The intakes would be capped when the screens are retracted or removed.

Buried Pipeline Operation and Maintenance Activities
The buried 54-inch HDPE pipeline will be accessed via the concrete distribution box inlet as necessary for inspection and maintenance regarding sediment, integrity of fused pipe joints, egging of pipe, etc. Dewatering of the pipeline will be performed prior to this inspection.

Concrete Distribution Box Maintenance Activities
The concrete distribution box will be designed to allow SNWR equipment access for efficient sediment removal. The concrete distribution box will be accessed annually for inspection and sediment removal as needed. The concrete distribution box will be accessible via existing access roads owned and maintained by the SNWR.

Collapsible metal guardrails will be installed where sheer edges with a height over 4 feet are located along the concrete distribution box (at or near inlet and outlets). Guardrails will be collapsed prior to flood events in the Sutter Bypass and inspected upon erecting after flood events. The distribution box will be designed to allow for wildlife to escape via the Main Canal overflow.

Gravity Channel Maintenance Activities
Operations and maintenance of the existing gravity channel will only change in that the use of this channel may be reduced with the availability of the new lift station. The cost of operating the lift station is such that if able, SNWR would prefer to continue using the gravity channel; therefore, if water elevations are appropriate and it is not a risk to fish due to being unscreened, this channel would be used rather than the lift station, with approval of fisheries agencies.

Section 3 Environmental Setting & Evaluation of Environmental Impacts

To satisfy the need to consider environmental impacts of the Proposed Action/Project Alternative pursuant to both NEPA and CEQA, possible effects to resources were analyzed using an initial study checklist adapted from the CEQA Guidelines Appendix G. The factors that were determined to be particularly relevant to the Proposed Action/Project are addressed in more detail following each listed resource; resources that would not be affected are briefly discussed. Unless more specifically defined in a resource section, the general Project Area analyzed is within the Project activity footprint.

The No Action Alternative reflects future conditions without the Proposed Action/Project and serves as a basis of comparison for determining potential effects to the human environment. For purposes of analysis, the No Action Alternative is the same as status quo.

3.1 Aesthetics

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
I. AESTHETICS: Would the project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☒	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

Proposed Action/Project

a) and b) **No Impact**: The Proposed Action/Project area is not within a scenic vista or highway. The scenic character of the Proposed Action/Project area is defined by the Main, Hi-Line and East Borrow canals and by the riparian and open grassy areas. The general public could see the lift station looking to the east from McClatchy Road; the view from the west would be on SNWR property in a restricted area, so the public would not view the lift station from that direction. Removal of riparian vegetation will be limited to the immediate construction areas and a small area of shaded riverine habitat at the lift station. Staging areas are characterized by mostly ruderal vegetation and weedy herbaceous species. Again, these areas are not open to the public.

c) and d) **Less Than Significant Impact**: There is no permanent nighttime lighting as part of the Proposed Action/Project; lighting of the area will occur only if staff is on site and manually turn on. In addition, no lighting will be directed at the water, only on platform as needed for work.

3.2 Agriculture and Forestry Resources

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
II. AGRICULTURE AND FOREST RESOURCES: In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and the forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒

Proposed Action/Project

a) through e) **No Impact:** There are no agricultural or forestry resources that would be impacted as there are none within the Proposed Project area's scope.

3.3 Air Quality

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
III. AIR QUALITY: Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☒	☐
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non- attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	☒	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☐	☒
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☐	☒

Proposed Action/Project

a) through c) **Less Than Significant Impact**: The Proposed Action/Project lies within the Feather River Air Quality Management District (FRAQMD) of the Sacramento Valley Air Basin (SVAB). The FRAQMD includes Sutter and Yuba Counties. Air basins share a common "air shed", the boundaries of which are defined by surrounding topography and meteorology. Although mixing between adjacent air basins inevitably occurs, air quality conditions are relatively uniform within a given air basin.

The U.S. Environmental Protection Agency (USEPA) developed air quality standards, known as National and California ambient air quality standards (NAAQS), for criteria air pollutants. Criteria air pollutants consist of carbon monoxide, ozone (volatile organic compounds [VOC] or reactive organic gas [ROG] are ozone precursors), sulfur dioxide, nitrogen dioxide, inhalable particulate matter between 2.5 and 10 microns in diameter (PM10), particulate matter less than 2.5 microns in diameter (PM2.5), and lead. Section 110(a) of the Clean Air Act (42 U.S.C. 7401(a)) requires states to develop plans, known as State Implementation Plans (SIPs), that describe how they will attain NAAQS. Section 176(c) of the Clean Air Act (42 U.S.C. 7506(c)) requires that any entity of the federal government that engages in, supports, or in any way provides financial support for, licenses or permits, or approves any activity to demonstrate that the action conforms to the applicable SIP before the action is otherwise approved. The USEPA promulgated the General Conformity Rule to ensure that such federal actions are consistent with a SIP's purpose of eliminating or reducing the severity and number of violations of the NAAQS for criteria air pollutants and achieving expeditious attainment of those standards. If an action does not conform to the SIP, the Federal agency must submit a conformity determination to the USEPA, State and local air pollution control agencies, and to the public. The general conformity regulations apply to a proposed Federal action in a non-attainment or maintenance area if the total of direct and indirect emissions of the relevant criteria pollutants and precursor pollutant caused by a proposed action exceed certain emissions thresholds, thus requiring the Federal agency to make a conformity determination. Federal actions that are exempt from the General Conformity Regulations include, but are not limited to, actions with associated emissions clearly at or below specified de minimis levels and activities covered under transportation conformity (USEPA 2016).

A comparative analysis was used to demonstrate Federal conformity with NAAQS. The RD [Reclamation District No.] 2035/Woodland Davis Clean Water Agency Joint Intake and Fish Screen Final Initial Study/Environmental Assessment (October 2012) analyzed the potential affects to air quality of a project similar in nature and within the same air basin, but where the activities were much greater in magnitude. The air quality analysis in the RD 2035 EA and Finding of No Significant Impact are hereby incorporated by reference for comparison to the Proposed Action/Project. The RD 2035 analysis resulted in a determination that the RD 2035 project would not require general conformity analysis since project emissions fell below federal general conformity *de minimis* thresholds for all criteria pollutants.

The RD 2035 project included the construction of a 400 cfs pump station on the Sacramento River, resulting in more ground disturbing activities, material hauling, and equipment emissions than the Proposed Action/Project. Therefore, emissions from the Proposed Action/Project would also be expected to fall below the *de minimis* thresholds. Calculated emissions from that project were estimated using Urban Emissions Model (URBEMIS 2007). Since the RD 2035 FONSI was signed, URBEMIS 2007 has been replaced with the California Emissions Estimator Model® (CalEEMod). However, this does not pose an issue with comparison as both estimating tools are California specific and cover the SVAB. Additionally, CalEEMod assumes the use of "cleaner," newer equipment (less polluting), therefore, estimates using URBEMIS result in a conservative result compared to CalEEMod.

d) and e) **No Impact**: There would be no pollutants or objectionable odors resulting from the Proposed Action/Project, therefore, there would be no impact.

3.4 Biological Resources

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
IV. BIOLOGICAL RESOURCES: Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Wildlife or US Fish and Wildlife Service?	☐	☒	☐	☐
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☒	☐	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☒	☐	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒

Proposed Action/Project

a) and d) **Less Than Significant With Mitigation**: The Proposed Project is designed to minimize and avoid impacts to biological resources. Some of the project footprint (including construction staging and access) is located on unvegetated or previously-disturbed areas. Additionally, temporal or spatial avoidance measures were incorporated into the project to minimize short and long-term impacts to biological resources (see Project Description species-specific measures listed below by species).

Special-status Wildlife Species

Federal and state special-status species were identified through a search of the USFWS IPaC and California Natural Diversity Database (CNDDB), queried on February 20 and March 7, 2018, respectively, for the Tisdale Weir and surrounding USGS 7.5 minute quadrangles (Meridian, Sutter Buttes, Sutter, Grimes, Gilsizer Slough, Dunnigan, Kirkville, and Sutter Causeway; see Table 3 below). Habitat requirements for each species were compared with habitat features in the Proposed Action/Project area to determine if the species has potential to be found in the area. If potential habitat is present or the species was actually found in surveys, potential impacts due to the project were assessed and mitigation measures proposed. It is anticipated that adverse impacts to biological resources will be less than significant with mitigation and conservation measures incorporated into the project as described below and within the Project Description.

For the purpose of this EA/IS, special-status species are those plants and animals listed, proposed for listing, or candidates for listing as threatened or endangered by the USFWS under the federal Endangered Species Act; those listed or proposed for listing as rare, threatened, or endangered by the CDFW under the California Endangered Species Act (CESA); animals designated as "Species of Special Concern," "Fully Protected," or "Watch List" by the CDFW; and plants with a California Rare Plant Rank (CRPR) of 1, 2, 3, and 4.

Based on information from the CNDDB (CDFW 2018), 49 special-status species were identified for analysis within the study area, including: six fish species; two reptile species; and 14 bird species; and 13 plant species. Special-status plants and animals, their listing status, habitats, and potential to occur within the study area are presented in Table 3. The potential for each species to occur within the project site was evaluated with consideration of site-specific conditions. Based on that evaluation, the potential for each species to occur was evaluated using the following categories:

- **None** indicates that suitable habitat for the species is absent in the action area, the local range for the species is restricted to areas outside of the action area, and/or the species is extirpated in this region.
- **Not Expected** indicates that suitable habitat or key habitat elements may be present in the action area, but may be of poor quality or isolated from the nearest extant occurrences. Habitat suitability refers to factors such as elevation, soil chemistry and type, vegetation communities, microhabitats, and the quality of habitats present with regard to the needs of species.
- **Possible** indicates the presence in the action area of suitable habitat or key habitat elements that potentially support the species.
- **Present** indicates the target species was either observed directly or its presence was confirmed by diagnostic signs (i.e. tracks, scat, burrows, carcasses, castings, prey remains, etc.) during field investigations.

Table 3 Special-status Species Potentially Occurring in the Proposed Action/Project Area

Common Name	Scientific Name	Federal/ State Status	Species and/or Habitat Known to Occur in Project Area	Potential Impact to Species
BIRDS				
American peregrine falcon	*Falco peregrinus anatum*	--/FP	None	Not expected
Bank swallow	*Riparia riparia*	--/ST	None	Not expected
Burrowing owl	*Athene cunicularia*	--/SSC	None	Not expected
California black rail	*Laterallus jamaicensis coturniculus*	--/ST	None	None
Cooper's hawk	*Accipiter cooperii*	--/SSC	Possible	Possible
Greater sandhill crane	*Grus canadensis tabida*	--/ST	None	None
Least Bittern	*Ixobrychus exilis*	--/SSC	None	None
Mountain plover	*Charadrius montanus*	--/SSC	None	None
Northern harrier	*Circus cyaneus*	--/SSC	Possible	Possible
Song sparrow	*Melospiza melodia*	--/SSC	Possible	Possible
Swainson's hawk	*Buteo swainsoni*	--/ST	Possible	Likely
Tri-colored blackbird	*Agelaius tricolor*	--/SC (E)	Possible	Possible
White-tailed kite	*Elanus leucurus*	--/FP	Possible	Possible
Yellow-billed cuckoo	*Coccyzus americanus*	FT/SE	Possible	Possible
REPTILES				
Giant garter snake	*Thamnophis gigas*	FT/ST	Possible	Likely
Western pond turtle	*Emys marmorata*	--/SSC	Possible	Likely
San Joaquin coachwhip	*Masticophis flagellum ruddocki*	--/SSC	None	None
AMPHIBIANS				
California red-legged frog	*Rana draytonii*	FT/--	None	None
California tiger salamander	*Ambystoma californiense*	FT/--	None	None
Foothill yellow-legged frog	*Rana boylii*	--/SC (T)	None	None

Common Name	Scientific Name	Federal/ State Status	Species and/or Habitat Known to Occur in Area	Potential Impact to Species
FISHES				
Central Valley steelhead (and Critical Habitat)	*Oncorhynchus mykiss*	FT/--	Present	Possible
Delta smelt	*Hypomesus transpacificus*	FT/SE	None	None
Fall/Late Fall-run chinook salmon (and Critical Habitat)	*Oncorhynchus tshawytscha*	--/SSC	Present	Possible
Hardhead	*Mylopharodon conocephalus*	--/SSC	Possible	Possible
Sacramento hitch	*Lavinia exilicauda exilicauda*	--/SSC	Possible	Possible
Sacramento splittail	*Pogonichthys macrolepidotus*	--/SSC	Present	Possible
Southern DPS green sturgeon (and Critical Habitat)	*Acipenser medirostris*	FT/SSC	Possible	Possible
Spring-run chinook salmon (and Critical Habitat)	*Oncorhynchus tshawytscha*	FT/ST	Present	Possible
White sturgeon	*Acipenser transmontanus*	--/SSC	Possible	Possible
Winter-run chinook salmon (and Critical Habitat)	*Oncorhynchus tshawytscha*	FE/SE	Possible	Possible
INSECTS				
Valley elderberry longhorn beetle	*Desmocerus californicus*	FT/--	None	Not expected
CRUSTACEANS				
Vernal pool fairy shrimp	*Branchinecta lynchi*	FT/--	None	None
Vernal pool tadpole shrimp	*Lepidurus packardi*	FE/--	None	None
PLANTS				
Baker's navarretia	*Navarretia leucocephala ssp. bakeri*	--/Rare 1B.1	Possible	Possible

Common Name	Scientific Name	Federal/ State Status	Species and/or Habitat Known to Occur in Area	Potential Impact to Species
Colusa layia	*Layia septentrionalis*	--/Rare 1B.2	Not Expected	None
Coulter's goldfields	*Lasthenia glabrata ssp. Coulteri*	--/Rare 1B.1	None	None
Ferris' milk-vetch	*Astragalus tener var. ferrisiae*	--/Rare 1B.1	None	None
Hartweg's golden sunburst	*Pseudobahia bahiifolia*	FE/SE	None	None
Heartscale	*Atriplex cordulata var. cordulata*	--/Rare 1B.2	Not expected	None
Northern California black walnut	*Juglans hindsii*	--/Rare 1B.1	Possible	Possible
Palmate-bracted salty bird's-beak	*Chloropyron palmatum*	FE/SE	None	None
Recurved larkspur	*Delphinium recurvatum*	--/Rare 1B.2	Not expected	None
San Joaquin spearscale	*Extriplex joaquinana*	None/ Rare 1B.2	Not expected	None
Veiny monardella	*Monardella venosa*	None/ Rare 1B.1	Not expected	None
Woolly rose-mallow	*Hibiscus lasiocarpos var. occidentalis*	None/ Rare 1B.2	Possible	Possible
Wright's trichocoronis	*Trichocoronis wrightii var. wrightii*	None/ Rare 2B.1	Possible	Possible
MAMMALS				
Marysville California kangaroo rat	*Dipodomys californicus eximius*	--/ SSC	None	None
Pallid bat	*Antrozous pallidus*	--/ SSC	None	None
Western mastiff bat	*Eumops perotis californicus*	--/ SSC	None	None
Western red bat	*Lasiurus blossevillii*	--/ SSC	Possible	Possible

Key:
FE: federally listed endangered ST: state listed threatened SE: state listed endangered
FT: federally listed threatened FP: California fully-protected species SC: state candidate for listing
SSC: California species of concern
Rare 1B: CA Native Plant Society List 1: Rare, threatened, or endangered plants in CA and elsewhere
Rare 2B: CA Native Plant Society List 2: Rare, threatened, or endangered plants in CA but more common elsewhere

Giant Garter Snake

The Proposed Project/Action Area within the Sutter Basin, is identified as a "snake population unit" in the June 2012 snake 5-year review (Service 2012). The closest known occurrence of the snake in the CNDDB is approximately one mile southwest of the action area, along the west levee road (Service 2016). Two additional occurrences are just over three miles to the southeast, along irrigation ditches within and adjacent to the SNWR. Refuge staff has not reported any GGS sighting within the action area (M. Peters, pers. comm., February 2018).

Most of the Proposed Project/Action Area is managed by SNWR for waterfowl and is seasonally flooded (typically September through February) to provide migratory and nesting habitat. Due to annual flooding, most of the Proposed Project/Action Area is not suitable for year round GGS occupation. Ditches within the SNWR may have water in them at any time, but are used specifically for moving water to ponds within the refuge and are not watered as habitat. Should GGS be present within the upland areas adjacent to ditches in the Proposed Project/Action Area during flooding, they would likely move to find higher ground so as not to be affected by water going through the ditches. The Proposed Project/Action Area supports areas of open water (varying seasonally) with emergent vegetation. Potential prey species for GGS, including small fish and frogs, are common in these areas. The EBD can act as a travel pathway between wetland areas that provide suitable escape cover and foraging habitat. Due to the presence of shallow fresh water habitat in the EBD, potential GGS predators (warm water fish species such as bass) are common within the Proposed Project/Action Area.

GGS are unlikely to be found within the Proposed Project/Action Area because banks have little terrestrial vegetation for cover, dense riparian overstory provides few basking sites, and the area is frequently flooded during the inactive season (November – April). Outside of the Sutter Bypass, within close proximity to the Proposed Project/Action Area, there is suitable GGS habitat composed of a permanently flooded irrigation ditch that has abundant herbaceous emergent vegetation, adjacent uplands, no riparian overstory, and is adjacent to cultivated rice fields.

Reclamation has determined that the Proposed Action/Project *may affect, and is likely to adversely affect* GGS. All work adjacent to potential GGS habitat is planned to occur during the snake's active season. Although the Proposed Project/Action Area is within a floodplain and GGS could use the area for dispersal, woody riparian vegetation covers the ground for a distance of at least 30 feet of the EBD, and therefore it is unlikely that GGS would disperse through this area. The woody riparian vegetation does not provide the escape cover and foraging habitat that GGS typically use (Reclamation 2016). Because work will occur during the active season, typically when snakes are using aquatic habitat, it is unlikely that construction activities will result in take of GGS.

The following mitigation measures for GGS would reduce impacts to less than significant:

- GGS-1: Ground disturbing activities along the canals would occur during the GGS active season (May through October) to avoid take of GGS burrowing in canals or staged construction materials.
- GGS-2: Twenty-four hours prior to the commencement of construction activities, the construction area will be surveyed for GGS by a USFWS/CDFW-approved biologist to determine if GGS are likely to be present. The biologist will advise work crews on areas to be avoided to avoid effects to GGS. If the biologist determines GGS likely in the area, construction will be delayed and USFWS and CDFW notified. The construction area will be re-inspected by the monitoring biologist whenever a lapse in construction activity of two weeks or greater has occurred. If a GGS is encountered within the construction area, all work will cease and the animal will be allowed to leave the area on its own. The qualified biologist will be immediately contacted to provide further guidance before work continues. The biologist will provide USFWS and CDFW with a written report that adequately documents the monitoring efforts within 24 hours of commencement of construction activities;
- GGS-3: A Worker Environmental Awareness Training Program for construction personnel will be conducted by a USFWS/CDFW-approved biologist for all construction workers, including contractors, prior to the commencement of construction activities. Interpretation will be provided for non-English speaking workers and the same instruction provided for any new workers prior to performing work on site. The training will include information regarding the appearance, biology, distribution and habitat needs of any special-status species that may be present, legal protections for those species, and penalties for violations and project-specific protective measures;
- GGS-4: During construction, stockpiling of construction materials, portable equipment, vehicles and supplies will be restricted to designated construction staging areas and all operations will be confined to the minimal area necessary;
- GGS-5: Project-related vehicles will observe a 15-mph speed limit within construction areas;
- GGS-6: Once construction is completed, all construction debris will be removed and wherever feasible, disturbed areas will be restored. Restoration will be coordinated with refuge staff to ensure that refuge management goals are reflected. A photo documentation report showing pre- and post-project area conditions will be submitted to USFWS and CDFW one month after the implementation of the restoration;
- GGS-7: Project staging activities will remain greater than 30 feet from the EBD and the Main and Hi-Line Canals;
- GGS-8: Temporary impacts to approximately 0.16 acres of potential upland GGS habitat as a result of placing spoil piles on the existing levee access road (Alternative Access road). Impacts to GGS habitat will be mitigated by purchasing credits at an approved GGS mitigation bank at a 0.5:1 replacement ratio. Permanent impacts to approximately 0.02 acres of potential upland GGS habitat as a result of placing rip rap along the west bank of the Main Canal, across from the new distribution box. Permanent impacts to GGS habitat during the active season will be mitigated by purchasing credits at an approved GGS mitigation bank at a 3:1 replacement ratio.;

- GGS-9: Dewatered areas (within the Main Canal) will remain dry and absent of aquatic prey for 15 days prior to the initiation of construction activities. If complete dewatering is not possible, USFWS and CDFW will be contacted to determine what additional measures may be necessary to minimize effects to GGS; and
- GGS-10: Prior to October 1 and after dewatering, high visibility fencing will be erected around the Main Canal to identify and protect these areas from encroachment of personnel and equipment. These areas will be avoided by all construction personnel. The fencing shall be inspected by the contractor before the start of each work day and maintained by the contractor until completion of the project. Fencing will be established in the uplands immediately adjacent to aquatic snake habitat and extending up to 200 feet from construction activities. GGS exclusionary fencing will be buried at least six inches below the ground to prevent snakes from attempting to burrow or move under the fence.

Yellow-billed Cuckoo

The Proposed Project/Action Area is located within one of the most regularly occupied sites in the Sacramento Valley (Service 2014a). Critical habitat has not yet been designated for YBCU at the time of writing this document. Refuge staff conducted YBCU surveys in 2000 and 2015. In 2000, they encountered an estimated eight individuals. The survey route was developed to sample all potential YBCU habitat within SNWR (riparian strips along the East and West Borrow Ditches). Seven of the eight birds were detected along the West Borrow Ditch and one was detected along the East Borrow Ditch, with the majority of those located on the north half of the refuge, north of Hughes Road (south of the action area). The survey conducted in 2015 was along the West Borrow Ditch only and between one and four individuals were detected north of Hughes Road, though the biologist conducting the survey felt this may have been just one individual following the call-playback (M. Peters, pers. comm., April 2018). YBCU nesting has been known to occur along the West Borrow Ditch (approximately 0.75 miles from the action area) in an area of riparian cover of over 400 acres. The Proposed Project/Action Area would be within foraging distance for a breeding pair during the breeding season (Reclamation 2016). The amount of trees within the Proposed Project/Action Area being directly affected is 1.22 acres, which is too small to support nesting YBCU (Federal Register, 2001), but could be suitable for foraging habitat. Patch size in the Proposed Project/Action Area is smaller than YBCU require and more suitable habitat is available within the SNWR, further south of the Proposed Project/Action Area.

YBCU rarely nest at sites less than 50 acres and sites less than 37 acres are considered unsuitable habitat (Laymon and Halterman, 1989). The optimal size of habitat patches for YBCU are generally greater than 200 acres in extent and have dense canopy closure and high foliage volume of willows (*Salix* sp.) and cottonwoods (*Populus* sp.) and thus provide adequate space for foraging and nesting (Laymon and Halterman, 1989). The Proposed Project/Action Area is at the northern extent of a strip of riparian woodland that is approximately 275 feet wide. The Proposed Project/Action Area is separated from the rest of the strip by about 200 feet of open area and is approximately five acres.

Reclamation has determined that the Proposed Action/Project *may affect, but is not likely to adversely affect* the YBCU. Suitable nesting habitat exists for the YBCU south and west of the Proposed Project/Action Area, in other areas of the SNWR, therefore, the Proposed Project/Action Area is considered potential foraging habitat. The amount of suitable riparian habitat within the project footprint is limited to a corridor about 100 feet wide adjacent to the EBD, yet the YBCU requires relatively large (more than 20 hectares), contiguous patches of multilayered riparian habitat for nesting. Construction noise and activity have the potential to harass any YBCUs that may be foraging within the project footprint during project actions; however, there is approximately 390 acres of wooded riparian habitat within the SNWR alone that could be used for foraging during construction. A qualified biologist will make an initial site visit prior to beginning construction to survey for YBCUs within the vicinity of the project footprint and where suitable habitat is present.

The following mitigation measures for YBCU would reduce impacts to less than significant:

- YBCU-1: The Proposed Action/Project will result in the removal of approximately 2.20 acres of mature woody vegetation (primarily oaks) and Shaded Riverine Aquatic habitat (SRA). Removal of trees shall be conducted from September 1 through March 1 outside the YBCU nesting season to avoid disturbance to YBCU during other construction activities;
- YBCU-2: Within 24 hours prior to the commencement of construction activities, the Proposed Action/Project area will be surveyed for YBCU by a USFWS/CDFW-approved biologist. The Proposed Action/Project area will be re-inspected by the monitoring biologist whenever a lapse in construction activity of two weeks or greater has occurred; and
- YBCU-3: If any YBCU are observed to be nesting (not just foraging), all work will cease and the animal will be allowed to leave the area on its own. The USFWS/CDFW-approved biologist will be immediately contacted to provide further guidance before work continues.

<u>Western pond turtle</u>

Western pond turtles (WPT) have been observed in the EBD, and the upland areas within the Bypass provide suitable nesting habitat; however, frequent flooding and disturbance from routine maintenance activities may substantially reduce nest success if hatchlings over-winter in the nest (DWR 2008). The mostly grass-covered bypass levees may provide more successful nesting habitat, especially the south-facing slopes. This species may also inhabit the larger irrigation ditches near the spoil areas. Western pond turtles may be directly and indirectly adversely affected by the proposed project.

The following mitigation measures for WPT would reduce impacts to less than significant:

- WPT-1: In-water work will be avoided to the extent practicable. In cases where this is unavoidable, a biological monitor will survey the sites before work commences. If WPTs are found, efforts will be made to move them to suitable habitat outside the disturbance area.

Swainson's hawk

Swainson's hawks (SWHA) are known to nest in the large trees along the inside levee toes and toe drains of the Tisdale Bypass and EBD of the Sutter Bypass (DWR 2008). Because Swainson's hawks could potentially nest near the project area, a pre-construction survey will be completed 15 days prior to construction will be implemented to protect nesting hawks. If nests are observed within ¼ mile of the project area, CDFW will be contacted to implement protective measures including buffers. This species could potentially be impacted by construction activities, although the likelihood that a take will occur is minimal.

The following mitigation measures for SWHA would reduce impacts to less than significant:

- SWHA-1: Surveys for SWHA will be conducted 15 days prior to construction and again if there is a lapse in work for 15 days. Surveys will cover a minimum of a 0.5-mile radius around the construction area. If nesting SWHA are detected, buffers will be established around nests that are sufficient to ensure that breeding is not likely to be disrupted or adversely impacted by construction. Buffers around active raptor nests will be 500 feet for non-listed raptors, unless a qualified biologist determines that smaller buffers would be sufficient to avoid impacts to nesting raptors. Factors to be considered for determining buffer size will include: the presence of natural buffers provided by vegetation or topography; nest height; locations of foraging territory; and baseline levels of noise and human activity. Buffers will be maintained until a qualified CDFW biologist has determined that young have fledged and are no longer reliant upon the nest or parental care for survival.
- SWHA-2: If construction occurs between February 1 and August 31, surveys will be conducted for nesting raptors in accordance with established CDFW raptor survey protocols. See YBCU-1 regarding tree removal which also applies to SWHA.

Migratory Birds

Potential habitat exists for Cooper's hawk, Northern harrier and white-tailed kite within the area that cannot be avoided. Pre-project surveys will be conducted and protective measures will be implemented. Equipment noise from project activities has potential to disturb nesting or foraging migratory birds, however, the impacts are expected to be minimal. To prevent impacts to migratory birds, avoidance and minimization measures will be implemented as described in SHWA 1-2 and YBCU 1-3.

Special-status Fish Species

The following special-status fish species are considered to have at least some potential to occur within the region or have been recorded historically in the project area: green sturgeon, Central Valley steelhead, Central Valley spring-run Chinook salmon, winter-run Chinook salmon, fall/late-fall run Chinook salmon, and Sacramento splittail (DWR 2008). Although spring-run Chinook salmon and Central Valley steelhead adults use the lower Butte Creek system, which is hydrologically connected to EBD, in the winter months for upstream migration to spawning habitat, the greatest use of this area is by the juveniles of all anadromous salmonid species as they emigrate to the ocean either as fry (30-40 millimeters [mm]) or yearlings (80-150 mm). When the Sacramento River floods during the winter, juvenile salmonids emigrating downstream are pushed into the SNWR where they rear, eventually leaving the SNWR as the water level

drops and waters warm. The majority of juvenile salmonids of the species of concern leave the lower Butte Creek system by mid-May, but some do not leave until late-June. CDFW has stated that no or few salmonids pass through the Sutter Bypass from July 1 through September 30 and that while juvenile salmonids do emigrate through the Sutter Bypass in October and November, the number of fish is relatively small (Burleson 2015). As such, the safest window for construction work in the SNWR is July 1 through October 31 so as not to impact any special-status fish species. Should this be an insufficient time for the construction, an extended work window may be possible (in consultation with NMFS and CDFW).

Green Sturgeon

The green sturgeon is listed as threatened by NMFS and is listed as a Species of Special Concern (SSC) by CDFW. Green sturgeon occur in the Sacramento, Klamath, and Rogue rivers. Historically, spawning in the Sacramento River may have extended up into its three major branches: the Little Sacramento River, the Pit River System, and the McCloud River. Spawning may also have occurred in the Feather River. Loss of habitat in river reaches blocked by dams is the primary factor in this species' decline. Shasta and Keswick Dam on the Sacramento River and Oroville Dam on the Feather River block access to historical spawning and rearing areas, restricting spawning and rearing to the Sacramento River downstream of Keswick Dam. Other factors contributing to the species' decline include degradation of habitat conditions, entrainment in water diversions, and over-harvest.

Critical habitat for the Southern DPS of North American green sturgeon was designated on October 9, 2009 (74 FR 52345), and includes the Sacramento River from the Sacramento I-Street Bridge upstream to Keswick Dam, including the waters encompassed by the Yolo Bypass and the Sutter Bypass areas and the lower American River from the confluence with the mainstem Sacramento River to State Route 160 bridge over the American River. Although there are no spawning populations of green sturgeon in Sutter Bypass, their presence in the Bypass is likely because of the connection to the Sacramento River during high flows.

Central Valley Steelhead

The Central Valley steelhead, listed as threatened by NMFS historically inhabited large and small streams throughout the Sacramento-San Joaquin watershed. Currently populations are found in the Sacramento River and its tributaries and the Cosumnes and Mokelumne Rivers. Loss of habitat in river reaches blocked by dams is the primary factor in this species' decline. Below dams, steelhead populations are affected by varying flow conditions, high summer and fall water temperature, and entrainment losses at unscreened diversions.

Steelhead use the project area as rearing habitat and as a migration corridor to and from spawning grounds in Butte Creek and other tributaries. They are present within the Butte Creek System year-round, either as juveniles rearing or migrating downstream or as adults migrating upstream or downstream. Although there are only limited observations, steelhead are thought to ascend Butte Creek in the late-fall and winter where they proceed to spawn in both the mainstem and tributaries (DWR 2008). Spawning takes place through the winter and into spring (generally December through April). There is very little information regarding the numbers of steelhead in Butte Creek. Estimating production of steelhead in Butte Creek is complicated because of its hydrologic connections with the Sacramento River. Adult steelhead have been captured in Butte Creek during CDFW trapping efforts for juvenile spring-run salmon, and the Sutter Bypass is

known to be used as rearing habitat by juveniles (DWR 2008). In the Sacramento River, juvenile steelhead migrate to the ocean in spring and early summer, with peak migration through the Delta in March and April (DWR 2008).

Critical Habitat for Central Valley steelhead is designated as all river reaches accessible to listed steelhead in the Sacramento and San Joaquin Rivers and their tributaries in California, river reaches and estuarine areas of the Sacramento-San Joaquin Delta, all waters from Chipps Island westward to Carquinez Bridge, including Honker Bay, Grizzly Bay, Suisun Bay, and Carquinez Strait, all waters of San Pablo Bay (north of the San Francisco/Oakland Bay Bridge) from San Pablo Bay to the Golden Gate Bridge (Federal Register 1993).

Central Valley Spring-run Chinook Salmon

Central Valley spring-run Chinook salmon is listed as threatened by NMFS and CDFW. This run of Chinook salmon historically inhabited large and small streams throughout the Sacramento-San Joaquin watershed. Spring-run Chinook salmon have been completely extirpated in the San Joaquin drainage. Currently spawning populations are consistently found only in Butte, Deer, and Mill Creeks, which are tributaries to the Sacramento River (DWR 2008). Recent restoration efforts have opened up habitat in Big Chico Creek, but currently this is considered a remnant non-sustaining population and is not used as a population trend indicator (DWR 2008). Loss of habitat in river reaches blocked by dams is the primary factor in this species decline. Other factors contributing to the decline include degradation of habitat conditions, entrainment in water diversions, and over-harvest. Adult spring-run Chinook salmon migrate up the Sacramento River to upstream spawning areas from February through June. Adults seek deep holding pools to over-summer and spawn when water temperatures begin to cool in mid-September. Juveniles emerge from the gravel as early as late November.

Spring-run Chinook salmon juveniles migrate downstream primarily from December through February, entering the Sacramento River either through the Butte Slough Outfall or through the Sutter Bypass. Life history investigations have shown that many juveniles entering the Sutter Bypass remain there for several weeks: the average passage time from January through April for fish that were marked just below the spawning grounds and recaptured in the Sutter Bypass near its confluence with the Sacramento River was 46 days during the 2003-2004 season (DWR 2008), supporting the value of the Sutter Bypass as a nursery for spring-run Chinook salmon.

Critical Habitat for spring-run Chinook salmon is designated as all river reaches accessible to listed Chinook salmon in the Sacramento River and its tributaries in California, river reaches and estuarine areas of the Sacramento-San Joaquin Delta, all waters from Chipps Island westward to Carquinez Bridge, including Honker Bay, Grizzly Bay, Suisun Bay, and Carquinez Strait, and all waters of San Pablo Bay (north of the San Francisco/Oakland Bay Bridge) from San Pablo Bay to the Golden Gate Bridge (Federal Register 2000).

Central Valley Fall/Late-Fall Run Chinook Salmon

The Central Valley fall/late fall-run Chinook salmon is a candidate for listing by NMFS and has been designated a species of special concern by CDFW. This run of Chinook salmon historically inhabited the entire Sacramento-San Joaquin watershed. Currently populations are found in the Sacramento River and its tributaries and the Cosumnes and Mokelumne Rivers. Loss of habitat in river reaches blocked by dams is the primary factor in this species decline. Below dams, populations are affected by varying flow conditions, alteration of stream flows, high summer and fall water temperature, over-harvest, and entrainment losses at unscreened diversions. No Critical Habitat has been designated for fall/late fall-run Chinook salmon.

Sacramento River Winter-run Chinook Salmon

The winter-run Chinook salmon is listed as endangered by NMFS and CDFW. This run of Chinook salmon historically spawned in the upper reaches of the Sacramento River and its major tributaries, the McCloud and Pit Rivers. Shasta and Keswick Dam block access to historical spawning and rearing areas, restricting spawning and rearing to the Sacramento River downstream of Keswick Dam. Impedance of migration and predation below the Red Bluff Diversion Dam, deterioration of water temperatures below Keswick Dam, and entrainment losses at unscreened diversions are the primary factors in this species' decline. Winter-run adults migrate through the Delta and into the Sacramento River in winter and early spring and spawn in the mainstem Sacramento River and Battle Creek during late spring and early summer (DWR 2008).

Critical Habitat for winter-run Chinook salmon is designated as the Sacramento River from Keswick Dam, Shasta county (River Mile 302) to Chipps Island (River Mile 0) at the westward margin of the Sacramento-San Joaquin Delta, all waters from Chipps Island westward to Carquinez Bridge, including Honker Bay, Grizzly Bay, Suisun Bay, and Carquinez Strait, and all waters of San Pablo Bay (north of the San Francisco/Oakland Bay Bridge) from San Pablo Bay to the Golden Gate Bridge (Federal Register 1993).

Sutter Bypass does not contain spawning populations of Sacramento River Winter-run Chinook salmon. Sacramento River flows in excess of approximately 22,000 cubic feet per second (cfs) are diverted into the lower Butte Sink and Sutter Bypass via overflows from the Tisdale, Colusa, and Moulton weirs (DWR 2008). During these flows, the Sutter Bypass functions as a migratory corridor for juvenile winter-run Chinook salmon (DWR 2008).

Sacramento Splittail

Sacramento splittail is listed as a species of special concern by CDFW. Splittail are found primarily in the Delta, Suisun Bay, Suisun Marsh, and Napa Marsh. During wet years, they may migrate as far upstream as Red Bluff Diversion Dam (Moyle 2002). Historically, they ranged throughout the Sacramento and San Joaquin Rivers and their tributaries. They have disappeared from much of these waterways because of dams, diversions or drastically altered habitat.

The Sutter Bypass offers good spawning habitat for splittail when it is flooded for several weeks in March and April. When these conditions occur, an abundance of juvenile splittail can be expected in the Sutter Bypass through the spring (DWR 2008).

Hardhead

Hardhead is listed as a California Species of Concern. Hardhead are typically found in small to large streams in a low to mid-elevation environment as well as lakes or reservoirs. Within a stream hardhead tend to prefer warmer temperatures than salmonids and they are often found associated with pikeminnows and suckers. Hardhead spawn in the spring around April-May, though spawning may take place as late as August. Hardhead are found within the Sacramento River watershed, including Sutter Bypass. (http://calfish.ucdavis.edu/species/?uid=37&ds=241)

Sacramento hitch

Sacramento hitch is listed as a California Species of Concern. Hitch are most often found in slow warm water, including lakes and quiet stretches of rivers. Hitch are sometimes found in cool and clear, low-gradient streams, hiding among aquatic vegetation in sandy runs or pools. They are the most heat tolerant of the native Central Valley fishes and can withstand water temperatures greater than 30°C under some conditions. Spawning typically happens in the tributaries to lakes and rivers, and may begin as early as February and end as late as July. Sacramento hitch are found within the Sacramento River watershed, including Sutter Bypass. (http://calfish.ucdavis.edu/species/?uid=38&ds=241).

White sturgeon

White sturgeon is listed as a California Species of Concern. White sturgeon are anadromous fish that spend most of their lives within an estuary, usually returning to freshwater only to spawn. The sturgeon begin migrating in streams during winter, with large peak flows triggering the spawning between February and early June. Fish biologists believe the white sturgeon pick deep swift water areas to spawn such as riffles or pools with rock and gravel substrate. White sturgeon are found within the Sacramento River watershed, including Sutter Bypass. (http://calfish.ucdavis.edu/species/?ds=241&uid=113)

Potential Impacts to Special-status Fish Species

All previously described listed fish species have similar life histories, biological and habitat requirements, with the main difference being the time of year when each of these species, as juveniles or adults, will migrate to and from the ocean. Although the timing of migration is different, all listed fish species use the Sutter Bypass as a migratory corridor. The potential environmental consequences resulting from construction of the Proposed Action are expected to be similar for Central Valley winter-run Chinook salmon, Central Valley spring-run Chinook salmon, Central Valley steelhead, the Southern DPS of North American green sturgeon and Sacramento splittail, hardhead, Sacramento hitch, and white sturgeon.

Impact pile driving has the potential to injure, kill, or alter behavior of fish. Pile driving in EBD will occur sometime between July 1 and October 31 and would be temporary (taking approximately one to two days to complete). The month of May coincides with the tail end of the spring-run Chinook adult migration and the juvenile Chinook out-migration for spring-run and fall/late-fall run. Pile driving could potentially delay adult spring-run during upstream migration or delay juvenile fall-run and spring-run during their out migration, but the majority of the spring-run adult population is expected to be upstream of the EBD in Butte Creek at that time. There is also potential to delay fall-run Chinook during the upstream migration in October, but pile driving is expected to be completed by October. Reclamation will abide by the requirements of the Biological Opinion for the Proposed Action, which will be issued by NMFS. Impacts due to impact pile driving will also be minimized by requiring that the contractor implement best management practices, such as those described in the Caltrans Technical Guidance for Assessment and Mitigation of the Hydroacoustic Effects of Pile Driving on Fish (2009) or other measures.

The fish screens are designed to prevent salmon fry and larger fish from entering the pumps. There would be a temporary adverse modification of critical habitat for Chinook, steelhead and sturgeon during construction as sound from pile driving would be higher than ambient in the EBD. This would occur only during pile driving, be limited in duration, and only during daylight hours. Conditions would return to baseline once pile driving was complete. Regardless, this would be considered a temporary adverse modification of designated critical habitat.

The following mitigation measures for fish would reduce impacts to less than significant:

- FISH-1: Contractor shall perform any in-water construction activities between July 1 and October 31 to avoid impacting fish during migratory periods. When in-water work is conducted, a qualified biologist shall be present during such work to monitor construction activities and ensure compliance with mitigation requirements and permit terms and conditions.
- FISH-2: Pipe pile shall only be driven by vibratory or non-impact methods (hydraulic) that result in sound pressures below threshold levels (see Effects Analysis) to the extent practical, but may be finished with the diesel hammer as needed to reach required tip elevation. Pile driving equipment will start at low power levels and strike frequency to minimize sound pressure levels harmful to fish and allow fish in the area to move away. A minimum of a 15-minute break between each pile installation will allow fish within the action area to move. Affected fish should only be temporarily impacted.
- FISH-3: Permanent impacts to approximately 0.03 acres of SRA habitat as a result of putting piles to support the fish screen structure in the EBD will be mitigated by purchasing credits at an approved SRA habitat mitigation bank at a 3:1 replacement ratio.

Special-status Plant Species

Baker's navarretia

Baker's navarretia (*Navarretia leucocephala ssp. Bakeri)* is an annual herb that is native to California and is endemic to California. Communities include yellow pine forest, Northern oak woodland, foothill woodland, valley grassland, freshwater wetlands and wetland-riparian. Habitat includes meadows, vernal pools and wetlands. Blooming period is from April to July.

Northern California black walnut

Northern California black walnut *(Juglans hindsii)* grows in riparian woodlands, either in mono-species stands, or mixed with California oak species (*Quercus* spp.) and Fremont cottonwood (*Populus fremontii*) trees. The historical range of *Juglans hindsii* is from the San Joaquin Valley and Sacramento Valley to the Inner Northern California Coast Ranges and San Francisco Bay Area, in Northern California.

Wooly rose mallow

Wooly rose mallow (*Hibiscus lasiocarpos)* grows along freshwater river banks and marshes. Often found in riprap on sides of levees, marshes and swamps (freshwater). While it has been found in the Sutter Bypass and potential habitat is present adjacent to both project sites, no individuals have been found in the project area during past botanical surveys. Blooming period is from June to September.

Wright's trichocoronis

Wright's trichocoronis *(Trichocoronis wrightii var. wrightii)* can be found in freshwater wetlands, wetland-riparian, riparian, meadows, marsh and vernal pools. Can bloom anywhere from May to September.

Potential Impacts to Special-status Plant Species

The following mitigation measures for plants would reduce impacts to less than significant:

- RPS-1: Rare Plant Survey. A pre-construction plant survey shall be performed during the appropriate blooming period for all State listed and special-status plants with potential to occur within the project site. If the survey results are negative, no further action by the Permittee is needed. If the survey finds that any State listed or special-status plants are present, the Permittee will consult with CDFW on the appropriate action prior to continuing project activities with the potential to impact the plants.

Special-status Mammal Species

Western Red Bat

The western red bat (WRB) is a state species of concern and is locally common in some areas of California, occurring from Shasta County to the Mexican border, west of the Sierra Nevada/ Cascade crest and deserts. Roosting habitat includes forests and woodlands from sea level up through mixed conifer forests. Roost sites often are in edge habitats adjacent to streams, fields, or urban areas. Preferred roost sites are protected from above, open below, and located above dark ground-cover. Feeds over a wide variety of habitat including grasslands shrublands, open woodlands and forests, and croplands.

Potential Impacts to Special-status Mammal Species
The following mitigation measures for WRB would reduce impacts to less than significant:

- WRB-1: A pre-construction survey for roosting sites for WRB shall be performed prior to tree removal or trimming activities. If the survey results are negative, no further action by the Permittee is needed. If the survey finds that any WRB roosting sites are present, the Permittee will consult with CDFW on the appropriate action prior to continuing tree removal or trimming activities with the potential to impact the species.

b) and c) **Less Than Significant With Mitigation**: A U.S. Army Corps of Engineers Section 404 Permit will be obtained for the discharge of materials into waters of the U.S. (WOUS) within the Proposed Action/Project area. The footprint of the elevated platform structure, gravel pad and fish screens within the EBD (to top of bank) is approximately 0.1 acre. Twenty-eight 12-inch diameter steel pipe piles will be driven into the EBD for the fish screen structure. The majority of the structure in this footprint is above elevation 54.0 (100-year flood event stage). The cross-sectional area of the elevated platform structure and fish screens within the EBD (to top of bank) is 0.011 acres (500 square feet). A permanent O&M road will be placed adjacent to the pipeline, permanently impacting 0.19 acres of wetland and the distribution box/spillway will permanently impact 0.07 acre of wetland. Approximately 600 cubic yards of excavated spoils generated during construction of the lift station, pipeline/O&M road, and distribution box will be used to improve existing O&M road conditions along Hi-line Canal within SNWR lands. These repairs will occur on an internal levee road currently maintained by the NWR and will include filling low spots and filling areas affected by erosion outside wetlands, but still within the OHWM of Sutter Bypass. There is no anticipated net fill within the primary construction zone; the net estimated 600 cubic yards of spoils removed from the primary construction zone will be placed on the existing O&M maintenance road within the SNWR. Any temporary spoils stockpiled would be within the primary construction zone.

A total of 0.36 acres of WOUS will be permanently impacted within the primary construction zone (as a result of the permanent O&M road, distribution box/spillway and lift station /fish screen structure) and 7.81 acres of WOUS will be temporarily impacted during construction (7.45 acres of which are expected to return to its natural state following construction).

The following mitigation measures for WOUS would reduce impacts to less than significant:

- WOUS-1: Permanent and temporary impacts to WOUS as a result of the Proposed Action/Project will be mitigated through purchases of mitigation credits to offset impacts and reduce the level of impacts to less than significant in accordance with the U.S. Army Corps of Engineers Section 404 permit.

e) and f) **No Impact**: The Proposed Action/Project would not interfere with any local ordinances, Habitat Conservation Plans or Natural Community Conservation Plans.

3.5 Cultural Resources

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
V. CULTURAL RESOURCES: Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in California Public Resources Code §15064.5?	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to California Public Resources Code §15064.5?	☐	☐	☐	☒
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	☒
d) Disturb any human remains, including those interred outside of dedicated cemeteries?	☐	☐	☐	☒

Proposed Action/Project

Cultural resource is a broad term that includes prehistoric, historic-era, architectural, and traditional cultural properties. Cultural resources that meet criteria for listing on the California Register of Historical Resources (CRHR) (defined at 14 CCR § 15064.5[a]) are called "historical resources" and cultural resources that meet the criteria for listing on the National Register of Historic Places (NRHP) (defined at 36 CFR § 60.4) are called "historic properties." While the CRHR and NRHP significance criteria are similar, NRHP is given precedence in this analysis because cultural resources eligible for the NRHP are also eligible for inclusion in the CRHR, but the reverse is not necessarily true (PRC 5024.1[c]). Employing the Federal standards will fulfill both Federal and State requirements for cultural resources.

Federal agencies are required to consider the effects of their actions on historic properties pursuant to Title 54 U.S.C. § 306108, commonly known as Section 106 of the NHPA, and its implementing regulations found at 36 CFR Part 800. Federal agencies must complete the Section 106 process when an undertaking has the potential to cause effects on historic properties. The Section 106 process is consultative and involves defining an area of potential effects (APE), identifying historic properties within the APE, assessing the effects of the undertaking on historic properties by applying the criteria of adverse effect [36 CFR § 800.5(a)], and resolving adverse effects, if needed, through measures negotiated and documented in memorandum of agreement with consulting parties.

Reclamation uses information obtained through the Section 106 process to inform its analysis of impacts to cultural resources under NEPA. Typically, an undertaking found to have no effect on historic properties under Section 106 would also constitute an action resulting in no significant impacts to cultural resources under NEPA. Correspondingly, if an undertaking will result in an adverse effect under Section 106, measures agreed upon to avoid, minimize, or mitigate that adverse effect through the Section 106 process are considered sufficient to mitigate impacts to cultural resources under NEPA.

For the current undertaking, Reclamation conducted archival research, a records search through the Northeast Information Center of the California Historical Resources Information System, and a pedestrian survey of the area of potential effects. Three structures—Bridge EL-5 Pilings, the EBD, and Weir #2—were identified through the records search as previously recorded cultural resources within the current APE. All three of these resources previously had been determined not eligible for the NRHP with State Historic Preservation Officer (SHPO) consensus. Another resource—an existing booster pump—was identified and recorded by Reclamation during the pedestrian survey. This structure was built in 1953 as a separate system to distribute water from the EBD to the internal Sutter NWR water distribution system. Based on several considerations, Reclamation determined the likelihood of encountering intact buried cultural resources within the APE to be very low.

a) through d) **No Impact:** For the current undertaking only, Reclamation treated the existing SNWR internal water distribution system, including the Main Canal and Hi-Line Canal, as eligible for listing on the NRHP. The existing booster pump was determined not eligible for listing as it does not meet any of the criteria for eligibility. Installing a lift station and pipelines to connect to the existing SNWR water distribution system will not adversely affect any of the characteristics of the Main Canal and Hi-Line Canal that would make that system eligible for NRHP listing. This project is consistent with the purpose of the SNWR to provide migratory bird habitat and consistent with the use of water distribution facilities within the SNWR. No other cultural resources will be impacted by construction of this project.

Based on the above information, Reclamation determined that the proposed undertaking would result in no adverse effect to historic properties pursuant to 36 CFR § 800.5(b). Reclamation consulted with and received concurrence from the California SHPO on this finding of no adverse effect. The Proposed Action/Project will result in no significant impacts to cultural resources. In the event of any post-review discovery of historic properties, the procedures outlined at 36 CFR § 800.13 would be followed. As the project is on lands under the jurisdiction of the USFWS, the inadvertent discovery of Native American human remains during project implementation would be subject to the requirements of the Native American Graves Protection and Repatriation Act, as implemented by USFWS.

3.6 Geology and Soils

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
VI. GEOLOGY AND SOILS: Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:	☐	☐	☐	☒
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42?	☐	☐	☐	☒
ii) Strong seismic ground shaking?	☐	☐	☐	☒
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	☒
iv) Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☐	☒
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☐	☒	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☐	☒
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒

Proposed Action/Project

a), b), d) and e) **No Impact**: The nearest fault zones exhibiting historic displacement (activity within the last 200 years) to the Proposed Action/Project area are the Concord-Green Valley, Marsh Creek-Greenville, and Hayward fault zones, located approximately 60 miles west, 80 miles west, and 90 miles southwest of the project area, respectively (Reclamation 2012). Other active faults within 70 miles of the Project area are the Dunnigan Hills (Zamora), West Napa, Healdsburg-Rodgers Creek, and San Andreas.

A seismically-active, concealed (blind) fold and thrust fault belt situated within the Coast Range-Central Valley (CRCV) Geomorphic Boundary is located approximately 50 miles west of the Project area. Earthquakes associated with this fault system include the 6.1 magnitude (Mw) Kettleman Hills and 6.5 (Mw) Coalinga events (Reclamation 2012).

The Proposed Action/Project area could experience the effects of a major earthquake from one of the active or potentially active faults located within 70 miles of the site. The four major hazards associated with earthquakes are fault surface rupture (ground displacement), ground motion (or ground shaking), ground failure (e.g., liquefaction), and differential settlement, slope instability, and land subsidence.

The California Geological Survey has determined the probability of earthquake occurrences and their associated peak ground accelerations throughout the State of California. The seismic hazard assessment determines the earthquake hazard that geologists and seismologists agree could occur in California. Current maps produced by the California Geological Survey are based on 10 percent exceedance in 50 years.

The Concord-Green Valley and Marsh Creek-Greenville fault zones are the closest active faults zoned under the Alquist-Priolo Earthquake Fault Zoning Act to the region and are situated approximately 60 to 80 miles southwest of the Proposed Action/Project area. The Proposed Action/Project is neither located within, nor crosses, a delineated Alquist-Priolo Earthquake Fault Zone. Therefore, the risk of surface fault rupture within the Project area is considered low (Reclamation 2012). The project is not located on expansive soils.

c) **Less Than Significant:** The Proposed Action/Project area is in the Sacramento Valley, a wide alluvial plain. Soils found in the area within and adjacent to the project site are predominantly alluvial silt and clay loams. The Proposed Action/Project is not in a seismically active area and is not near any known faults, and therefore will not expose people to rupture of earthquake fault, strong seismic ground shaking, seismic-related ground failure, or landslides. Construction and staging will temporarily disturb soil in the project area. Best Management Practices will be followed for erosion control, and levee banks, streambeds and adjacent uplands disturbed by construction vehicles, constructed ramps will be reseeded with an appropriate seed mix or otherwise treated to reduce erosion and/or siltation. The geology and soils at the project site will not become unstable as a result of the project.

3.7 Greenhouse Gas Emissions

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
VII. GREENHOUSE GAS EMISSIONS: Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☒	☐

Proposed Action/Project

a) and b) **Less Than Significant Impact**: State law defines greenhouse gases (GHG) to include hydrofluorocarbons, perfluorocarbons and sulfur hexafluoride. These latter GHG compounds are usually emitted in industrial processes, and therefore not applicable to the Proposed Action/Project. As with the discussion of air quality impacts previously, a comparative analysis was used to identify potential impacts to GHG. The RD 2035/Woodland Davis Clean Water Agency Joint Intake and Fish Screen Final Initial Study/Environmental Assessment (October 2012) analyzed the potential affects to GHG of a project similar in nature and within the same air basin, but where the activities were much greater in magnitude. The GHG analysis in the RD 2035 EA and Finding of No Significant Impact are hereby incorporated by reference for comparison to the Proposed Action/Project. The RD 2035 analysis resulted in a determination that the RD 2035 project would not result in impacts to GHG. Therefore, the Proposed Action/Project would not conflict with any local regulations pertaining to GHGs. Based upon the analysis of Criteria A, B, C and D presented above, the Proposed Action/Project would not result in a cumulatively considerable increase in GHG emissions such that the project would impair the State's ability to implement AB 32. This impact would be less-than-significant.

3.8 Hazards and Hazardous Materials

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
VIII. HAZARDS AND HAZARDOUS MATERIALS: Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☒	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☐	☐	☒
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☒

Proposed Action/Project

a) and b) **Less Than Significant Impact:** Land use within the majority of the project/action area consists primarily of rural land and agricultural uses, but also includes local county roadways and a railroad. Past and present use of hazardous materials typical to agricultural production include agricultural fertilizers, pesticides, herbicides, and fuels. Because the land use in the project/action area has not significantly changed in the last 50 years, historic hazardous materials use was likely similar to present day hazardous materials use, however, current regulatory restrictions have limited the use and control of many substances.

Construction, welding and other areas where spark-producing equipment will be used will be cleared of dried vegetation or other materials that could serve as fire fuel. Any construction equipment that normally includes a spark arrester will be equipped with an arrester in good working order. All construction-related hazardous materials will be transported, stored, and handled in a manner consistent with relevant regulations and guidelines, including those recommended and enforced by the state and federal Departments of Transportation, CVRWQCB, Sutter County, the local Fire District and other appropriate fire districts, among others as appropriate. A Hazardous Materials Management Plan (or equivalent) will be prepared and/or followed to provide specific emergency response protocols for the accidental release or threatened release of hazardous materials used as part of the construction.

c) through h) **No Impact:** There are no hazardous sites, schools or airports in the vicinity of the Proposed Project area. The Proposed Project would not interfere with emergency response or evacuation plans nor would it result in increased risk of wildfires.

3.9 Hydrology and Water Quality

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
IX. HYDROLOGY AND WATER QUALITY: : Would the project:				
a) Violate any water quality standards or waste discharge requirements?	☐	☐	☐	☒
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☐	☒
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☐	☐	☒
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	☐	☒
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☐	☒
f) Otherwise substantially degrade water quality?	☐	☐	☐	☒
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
IX. HYDROLOGY AND WATER QUALITY: : Would the project:				
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☒	☐
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☒
j) Inundation by seiche, tsunami, or mudflow	☐	☐	☐	☒

Proposed Action/Project

a) through g), i) and j) **No Impact**: The Proposed Action/Project will not violate any water quality standards nor will it interfere with groundwater in the area. The Proposed Action/Project will not alter existing drainage patterns in the area, resulting in increased flooding, siltation or erosion nor will it create runoff or degrade water quality in the area. There is no housing within the Proposed Project area. The Proposed Action/Project would not expose people or structures to flooding as a result of levee or dam failure and there is no risk of inundation by seiche, tsunami or mudflows.

h) **Less Than Significant Impact**: The Sutter Bypass flows south to Fremont Weir and into the Yolo Bypass, eventually flowing into the Sacramento-San Joaquin Delta. The U.S. Geological Survey (USGS) and CDFW maintained gages in the bypass in the past with data collection ending in the 1980s. This gage data covers flow conditions in the north end of the bypass and in Tisdale Bypass during the 1955 and 1963 events, but does not offer much else in terms of stage height and flow for conditions within the study area (Reclamation 2017).

The USACE recurrence interval plot for Sutter Bypass indicates that the 1986 event was a 30-year event. The USACE estimated that the 1986 event generated 155,000 cfs (47-foot stage) in the Sutter Bypass at Tisdale Bypass, which is below the 180,000 cfs (48.2-foot stage) design flow capacity for that location. The ordinary high water mark (OHWM) would thus be expected to be below 47 feet msl. (Reclamation 2017)

A draft technical report prepared by a consulting firm in 2013 to calibrate a 2-D flood model, estimated the channel flow in the Sutter Bypass for the 1997 and 2006 flood events (MWH, 2013). In January1997, flow in the bypass at Tisdale Bypass was approximately 150,000 cfs and a stage of 47 feet. In January 2006, flow was approximately 130,000 cfs and at a stage of approximately 46.8 feet. (Reclamation 2017)

The new lift station is comprised of an elevated steel platform supported by piles. The profile length of the structure (perpendicular to the flow of water in the bypass) is approximately 70 feet. Between the Design Water Surface Elevation (DWSE) of El. 51.0 and average operating water surface elevation in the EBD of El. 37.74, this translates to a blockage area of approximately 930 square feet (assuming pile spacing less than 10 feet or complete blockage). There are no floating elements or gangways associated with this structure.

The cross-sectional length of the bypass at this location is approximately 4,000 feet. Between a DWSE of El. 51.0 and average operating water surface elevation in the EBD of El. 37.74, this translates to an approximate cross-sectional flow area of 53,040 square feet. The estimated blockage of the new lift station within this cross section is then 1.75%. Though the blockage of the structure exceeds the 1% USACE threshold, additional project features will likely reduce the overall blockage in the bypass and should be considered. Using a similar estimation method as above, the trees along a 600 linear foot section of the alignment (assuming distances of less than 10 feet, or complete blockage) represent approximately 7,956 square feet of blockage area that will be removed. Finally, the SNWR currently utilizes a small elevated lift station on the refuge to pump water into their conveyance facilities. This structure will be removed as part of the project, and with an estimated length of 10 feet perpendicular to bypass flows, presents an estimated 132 square feet of blockage that will be removed. Considering the removal of trees and existing lift station structure, it estimated that the project provides a net benefit in terms of removal of flow blockages within the Sutter Bypass.

3.10 Land Use and Planning

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
X. LAND USE AND PLANNING: Would the project:				
a) Physically divide an established community?	☐	☐	☐	☒
b)Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☐	☒
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒

Proposed Action/Project

a) through c) **No Impact**: The Proposed Project is within a National Wildlife Refuge and would not impact any communities or land use plans. There are no habitat or natural community conservation plans in the area.

3.11 Mineral Resources

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

Proposed Action/Project

a) through b) **No Impact:** There are no known mineral resources in the area, therefore, there is no impact as a result of the Proposed Action/Project.

3.12 Noise

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
XII. NOISE: Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☐	☒
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☐	☒
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Proposed Action/Project

a) through c) **No Impact**: There would be no generation of noise levels exceeding standards as part of the Proposed Action/Project. Noise currently occurs in the Proposed Action/Project area due to the presence of the current pump and Weir 2 and the new pumps will not generate noise in excess of what is already occurring in the area.

d) **Less Than Significant Impact:** Construction activities will generate some noise due to the increased presence of construction equipment and personnel, however the increase would be less than significant.

e) through f) **No Impact:** There are no airports or airstrips in the area, therefore, there would be no impact as a result of the Proposed Project.

3.13 Population and Housing

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
XIII. POPULATION AND HOUSING: Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Proposed Action/Project

a) through c) **No Impact:** The Proposed Project would not impact population or housing as it is within the National Wildlife Refuge.

3.14 Public Services

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

Proposed Action/Project

a) **No Impact:** The Proposed Project would not impact public services.

3.15 Recreation

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

Proposed Action/Project

a) through b) **No Impact:** The Proposed Project would not impact recreation as this part of the SNWR is not open to recreational use. Recreational activities are allowed on other areas of the refuge and long-term positive impacts as a result of the Proposed Action/Project are anticipated due to a more reliable water supply, improved wildlife habitat, and more habitat being available for public hunting in the fall/winter. There are no neighborhood or regional parks/facilities in the area.

3.16 Transportation/Traffic

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
XVI. TRANSPORTATION/TRAFFIC: Would the project:				
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☒	☐
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☒	☐
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
e) Result in inadequate emergency access?	☐	☐	☐	☒
f) Conflict with adopted policies, plans or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☐	☒

Proposed Action/Project

a) and b) **Less Than Significant Impact:** Sutter County is primarily a rural area with people and businesses concentrated in several small to medium-sized communities, including the Yuba City, Live Oak, Sutter and Meridian. The roadway network that would be used for the project is in Sutter County, near the city of Sutter and Yuba City. The transportation system in the region is composed of an interconnected network of state, county, and city roadways. There are no local transit systems or delineated pedestrian and bicycle facilities near the project area.

Regional access to the project area is provided primarily by California State Route 99 (SR 99). SR 99 is located east of project area and serves as a major route connecting the Sacramento Valley north to south. Oswald Road, Schlag Road and Hughes Road are county roads that provide immediate access to the project site. The local roadways support light rural farm traffic

Construction of the Proposed Action/Project would intermittently and temporarily generate increases in vehicle trips by construction workers and construction vehicles on area roadways over the duration of project construction activities. Construction activities will not result in any temporary reduction in the number of, or the available width of, travel lanes on roads adjacent to construction activities, resulting in short-term traffic delays for vehicles traveling past the construction zones. Construction activities will not require temporary closure of road segment, or resulting disruption to access for adjacent land uses or streets for general traffic or emergency vehicles.

Construction activities would generate short-term increases in vehicle trips by construction workers and construction vehicles on area roadways to and from construction areas. Construction generated traffic would be temporary and therefore would not result in any long-term degradation in operating conditions or level of service (LOS) on any local or regional roadways. The primary off-site impacts from the movement of construction trucks, primarily any materials hauling trucks, would include short-term and intermittent lessening of roadway capacities due to slower movements and larger turning radii of the trucks compared to passenger vehicles. Because these vehicles are similar to existing rural agricultural vehicles that are common in the areas, and because their use will be limited use, construction activities associated with the Proposed Project/Action would have no impact on existing traffic and capacity on local or regional roadways.

c) through f) **No Impact:** The Proposed Action/Project would not increase safety concerns relating to traffic, nor would it result in changes for emergency access.

3.17 Tribal Cultural Resources

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
XVII. TRIBAL CULTURAL RESOURCES: Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	☐	☐	☐	☒
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☒	☐	☐

Proposed Action/Project

a) **No Impact:** Reclamation uses information obtained through the Section 106 process to inform its analysis of impacts to tribal cultural resources under NEPA. Typically, an undertaking found to have no effect on historic properties under Section 106 would also constitute an action resulting in no significant impacts to cultural resources under NEPA. Correspondingly, if an undertaking will result in an adverse effect under Section 106, measures agreed upon to avoid, minimize, or mitigate that adverse effect through the Section 106 process are considered sufficient to mitigate impacts to cultural resources under NEPA.

For the current undertaking, Reclamation conducted archival research, a records search through the Northeast Information Center of the California Historical Resources Information System, and a pedestrian survey of the area of potential effects. Reclamation sent letters to the United Auburn Indian Community of the Auburn Rancheria (UAIC), Enterprise Rancheria of Maidu Indians, Mooretown Rancheria of Maidu Indians, and the Maidu Band of Strawberry Valley Rancheria inviting their participation in the Section 106 process. The UAIC requested copies of cultural resource inventory reports and other environmental documents and notification regarding any Native American cultural resources of which Reclamation may be aware. A copy of the cultural resources inventory report prepared by Reclamation was provided to UAIC as requested.

CDFW sent a request to the Native American Heritage Commission (NAHC) for a search of the Sacred Lands File and a list of tribes that may be affiliated with the Project area. The NAHC performed a record search of the Sacred Lands File: the results were negative. A list of Native American tribes who may have knowledge of cultural resources in the project area were provided.

b) **Less than Significant Impact with Mitigation:** On May 29, 2018, CDFW mailed notification letters to its list of California Native American tribes that have requested an opportunity for CEQA consultation with CDFW and NAHC's list. These were the Mechoopda Indian Tribe of the Chico Rancheria, Middletown Rancheria, UAIC, Mooretown Rancheria of Maidu Indians, Strawberry Valley Rancheria, and Estom Yumeka Maidu Tribe of the Enterprise Rancheria, The letters included a description of the Project, a list of potential impacts to natural resources, and invited consultation pursuant to CEQA PRC 21080.3.1(b) and CDFW's Tribal Communication and Consultation Policy.

UAIC requested consultation with CDFW due to Tribal Cultural Resources (TCR) within the vicinity of the project area. CDFW responded to UAIC's request for consultation on June 19, 2018.

The following mitigation for TCR would reduce impacts to less than significant.

- TCR-1: A paid tribal monitor shall be present during ground disturbing activities to identify tribal cultural resources as they are uncovered.

- TCR-2: If a tribal cultural resource is encountered during construction activity, all work within 100 feet of the discovery area will stop, and further work will avoid disturbing the tribal cultural resources. Tribal representatives shall be contacted immediately and consulted with to determine appropriate and respectful treatment of the find.

If avoidance of work at the tribal resource is not feasible, the responsible federal agency will consult with tribal representatives and interested parties on the appropriate action prior to continuing project activities.

3.18 Utilities and Service Systems

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
XVIII. UTILITIES AND SERVICE SYSTEMS: Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☐	☒
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒

Proposed Action/Project

a) through g) **No Impact:** The SNWR is predominantly within the Sutter Bypass and consists of wetland impoundments with some riparian and grassland habitat. The existing land use is for waterfowl breeding and wintering habitat, and general conservation.

3.19 Mandatory Findings of Significance

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
XIX. MANDATORY FINDINGS OF SIGNIFICANCE				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☒	☐	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☐	☐	☒
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☒	☐

Proposed Action

a) Less Than Significant With Mitigation: The project has a less than significant impact with mitigation. Potential impacts to biological resources are expected to occur during the construction of the project which will be avoided or mitigated until the impacts are less than significant. Temporary impacts to 7.81 acres of habitat would be avoided by limiting the construction window, pre-construction surveys, and monitoring to minimize effects to biological resources. A USFWS/CDFW biologist would be consulted if avoidance of impacting biological resources is not possible. Upon completion of construction, water diversion will be screened to fully mitigate impacts to fish.

Permanent impacts of approximately 2.34 acres of potential upland GGS habitat, mature woody riparian vegetation and SRA habitat will be mitigated by purchasing mitigation credits at a mitigation bank. Permanent impacts of 0.36 acres to WOUS will be mitigated by purchasing mitigation credits at a mitigation bank.

b) **No Impact:** The project does not cause a cumulative impact due to past, current, or probable future projects. The prior geotechnical investigation in 2016 and current 2-year water supply study do not cause a significant cumulative impact as they do not have the same impact and therefore would not contribute to the temporary or permanent impacts identified for this project.

The project would allow for the future delivery of an additional 6,500 AF of IL4 water supplies above the historical 23,500 AF L2 water supply. A 2015 SNWR Water Supply Study identified two potential surface water conveyance alternatives: the existing conveyance through the Sutter Extension Water District Canal System and supply from the Sacramento River via Reclamation District 1004. No decision has been made in choosing any of these identified IL4 water conveyance alternatives.

c) **Less Than Significant Impact:** The project will cause intermittently and temporarily impacts from increases in vehicle trips by construction workers and construction vehicles in rural area roadways duration of project construction activities. Impact to traffic and noise would be similar to existing rural agricultural vehicles that are common in the areas, and because their use will be limited use, construction activities associated with the project would have less than significant impact on existing traffic and capacity on local or regional roadways.

All construction-related hazardous materials will be transported, stored, and handled in a manner consistent with relevant regulations and guidelines, including those recommended and enforced by the state and federal Departments of Transportation, CVRWQCB, Sutter County, the local Fire District and other appropriate fire districts, among others as appropriate. A Hazardous Materials Management Plan (or equivalent) will be prepared and/or followed to provide specific emergency response protocols for the accidental release or threatened release of hazardous materials used as part of the construction.

No permanent adverse environmental effects on human beings are expected to occur, either directly or indirectly, as a result of the project.

Section 4 Other Federal Environmental Compliance Requirements

4.1 Indian Sacred Sites and Indian Trust Assets

Indian Trust Assets (ITA) are legal interests in assets that are held in trust by the United States for federally recognized Indian tribes or individuals. There are no Indian reservations, rancherias or allotments in the project area. The nearest Indian Trust Asset is the Cachil DeHe Band of Wintun Indians of the Colusa Indian Community, about 17 miles to the northwest of the project site. Based on the nature of the planned work it does not appear to be in an area that will impact Indian hunting or fishing resources or water rights nor is the proposed activity on actual Indian lands. It is reasonable to assume that the Proposed Action/Project will not have any impacts on ITAs.

Executive Order 13007 (May 24, 1996) requires Federal agencies to protect and preserve Indian religious practices on Federal lands through accommodating access to and ceremonial use of Indian sacred sites by Indian religious practitioners and avoiding adversely affecting the physical integrity of such sacred sites. Executive Order 13007 is applicable to sacred sites identified by Federally-recognized Indian tribes on Federal land. No Sacred Sites have been identified on project lands. Reclamation requested information under Executive Order 13007 in Section 106 coordination letters to federally recognized tribes and no Sacred Sites were identified.

4.2 Environmental Justice

Executive Order 12898 requires each Federal agency to identify and address disproportionately high and adverse human health or environmental effects, including social and economic effects of its program, policies, and activities on minority populations and low-income populations. Reclamation has not identified adverse human health or environmental effects on any population as a result of implementing the Proposed Action/Project. Therefore, implementing the Proposed Action/Project could not have a significant or disproportionately negative impact on low-income or minority individuals within the Proposed Action/Project area.

4.3 Consultation and Coordination

Reclamation and/or CDFW coordinated with the State Water Resources Control Board, Central Valley Flood Protection Board, California Department of Water Resources, USFWS, U.S. Army Corps of Engineers (USACE), California SHPO, and tribes in the preparation of this EA/IS. Reclamation coordinated with the USFWS, NMFS and CDFW on the federal and state-listed species. Separate Biological Assessments were submitted to USFWS and NMFS in March 2018.

Reclamation has been designated as the lead federal agency for NEPA by USACE and USFWS. The USACE's and USFWS's actions of issuing the Section 404 permit and ESA consultations will be covered by Reclamation's Section 106 and Section 7 consultations.

Section 5 References

Bureau of Reclamation. 2017. Aquatic Resources Delineation, Sutter Lift Station Project. October 2017.

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