Final Environmental Assessment / Initial Study and Negative Declaration

Patterson Irrigation District

Two-Drains Project

U.S. Department of the Interior
Bureau of Reclamation
Mid Pacific Region
Sacramento, California

Patterson Irrigation District

August 2014

Mission Statements

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

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List of Acronyms and Abbreviations

AB 32	Assembly Bill 32
AB 1493	Assembly Bill 1493
afy	Acre Feet per year
Air Basin	San Joaquin Valley Air Basin
APE	area of potential effects
CEQA	California Environmental Quality Act
CFR	Code of Federal regulations
cfs	cubic-feet per second
CNDDB	California Natural Diversity Data Base
CSWRCB	California State Water Resources Control Board
CVP	Central Valley Project
DMC	Delta Mendota Canal
EA	Environmental Assessment
EC	electrical conductivity
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FWCA	Fish and Wildlife Coordination Act
GHG	greenhouse gases
HDPE	high-density polyethylene
IS	Initial Study
ITA	Indian Trust Assets
MBTA	Migratory Bird Treaty Act
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NRHP	National Register of Historic Places
PM_{10}	particulate matter less than 10 microns in diameter
PID	Patterson Irrigation District
Reclamation	U.S. Bureau of Reclamation
SHPO	State Historic Preservation Officer
State	State of California
TDS	total dissolved solids
U.S.	United States
USFWS	U.S. Fish and Wildlife Service

Section 1 Introduction

This Environmental Assessment (EA) / Initial Study (IS) was jointly prepared by the Bureau of Reclamation (Reclamation) as the lead federal agency and Patterson Irrigation District (PID or District) as lead state agency to satisfy the requirements of both the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA). Throughout this document, Proposed Action and Proposed Project are used interchangeably and both terms reflect the Project as described below.

1.1 Background / Project Overview

The Two Drains Project (Proposed Project) would be located approximately four miles southeast of the City of Patterson, within the southerly portion of the District. The District is located south-western Stanislaus County, California (see Figure 1). The Project service area is located in southerly part of the District beginning near the intersection of Alfalfa Road and Marshall Road and stretches northwest to approximately Pomelo Avenue.

The Proposed Project would capture and deliver agricultural drain water from the Marshall Road Drain and Spanish Land Grant Drain to portions of the District's southerly conveyance system. The Project would provide the District's southerly service area with supplemental water and promote on-farm efficiency by giving the District the ability to meet the fluctuating demands of high-efficiency irrigation systems. As a result of this Project, an estimated 5,000 acre-feet per year of supplemental water supply would be made available to growers in the district. A location map of the District and the Proposed Project is included in Figure 1.

Reclamation would help fund the Proposed Project with $1,500,000 in grant funds through the WaterSMART grant program. The remaining funding would be provided by the District.

1.2 Need for Project / Project Objectives

Surface water supplies in the San Joaquin Valley are subject to severe restrictions caused by recurring dry conditions and regulatory pumping restrictions. During these dry periods, growers within the District are forced to rely on poorer quality groundwater or fallow fields. Surface drainage flows from the Marshall Road Drain and the Spanish Land Grant Drain, when blended with other water supplies, are sufficient for agricultural use and could provide a supply of supplemental water.

In addition to water supply issues, both of these drains discharge directly into the San Joaquin River. In compliance with the Irrigated Lands Regulatory Program (IRLP), the Marshall Road Drain has been monitored for water quality by the Westside San Joaquin River Watershed Coalition since 2004. Frequent violations of water quality criteria have been measured for several constituents of concern over just the last five years, including:

- Aquatic toxicity to water flea – 2 occurrences
- Aquatic toxicity to algae – 1 occurrence
- Chlorpyrifos exceedances – 11 occurrences

- Diuron exceedances – 4 occurrences
- Malathion exceedances – 3 occurrences
- Boron exceedances – 5 occurrences
- Total Dissolved Solids (TDS) and Conductivity exceedances – 28 occurrences and 25 occurrences respectively

Because the farmed region drained by the Spanish Land Grant drain is similar in cropping pattern and cultural practices, it is reasonable to assume that the quantity of water quality exceedances from that drain is similar to the Marshall Road Drain. The California Regional Water Quality Control Board has to develop Total Maximum Daily Load (TMDL) allocations for salt (measured as TDS or Conductivity), boron, and chlorpyrifos and it is a priority of the District and the Westside San Joaquin River Watershed Coalition to reduce the discharge of these constituents to the San Joaquin River in order to comply with the TMDLs.

The Proposed Project has two primary objectives:

1. Provide reliable supplemental water supplies to PID.
2. Reduce the discharge of agricultural drainage flows from Marshall Road Drain and Spanish Land Grant Drain.

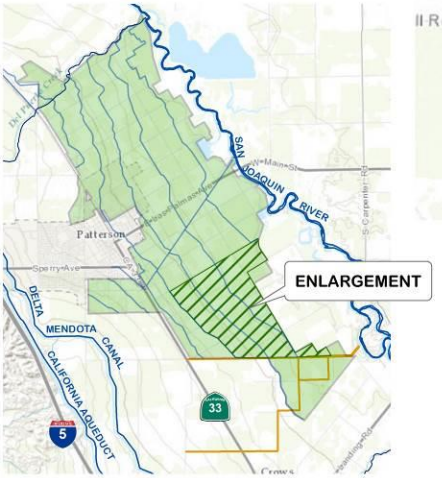
1.3 Scope

This EA/IS was prepared to analyze the potential impacts of the construction and operation of the proposed Two Drains Project. An Environmental Checklist has been included in Section 3**.** The Proposed Project would be located in Western Stanislaus County, south of the City of Patterson. The scope of the Proposed Project would include:

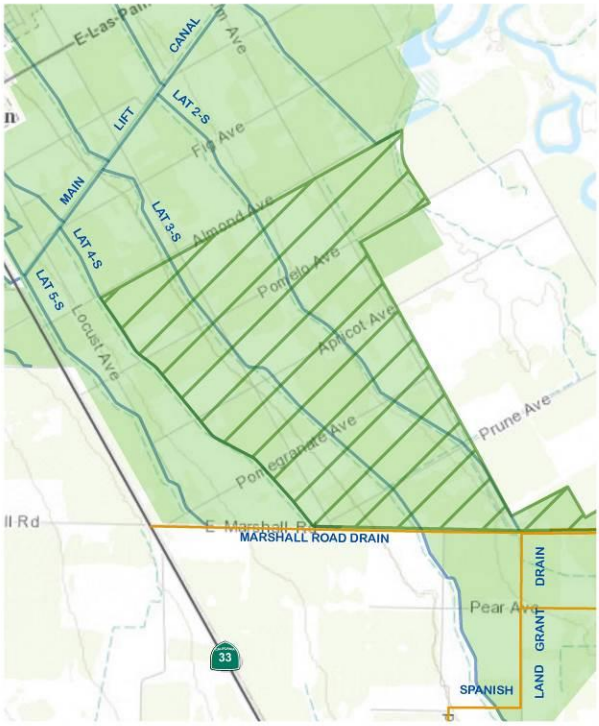
- Construction of three pump stations and four pipelines totaling approximately 20,000 linear feet. Figure 2 shows the Project alignment including aerial photos of the region.
- Capture drain water from the Marshall Road Drain and Spanish Land Grant Drain and recirculate approximately 5,000 acre feet per year of drainage water into the PID irrigation system as a supplemental water supply.

FIGURE 1

STATE OF CALIFORNIA



DISTRICT MAP



ENLARGEMENT
SCALE IN FEET
0 2,500 5,000

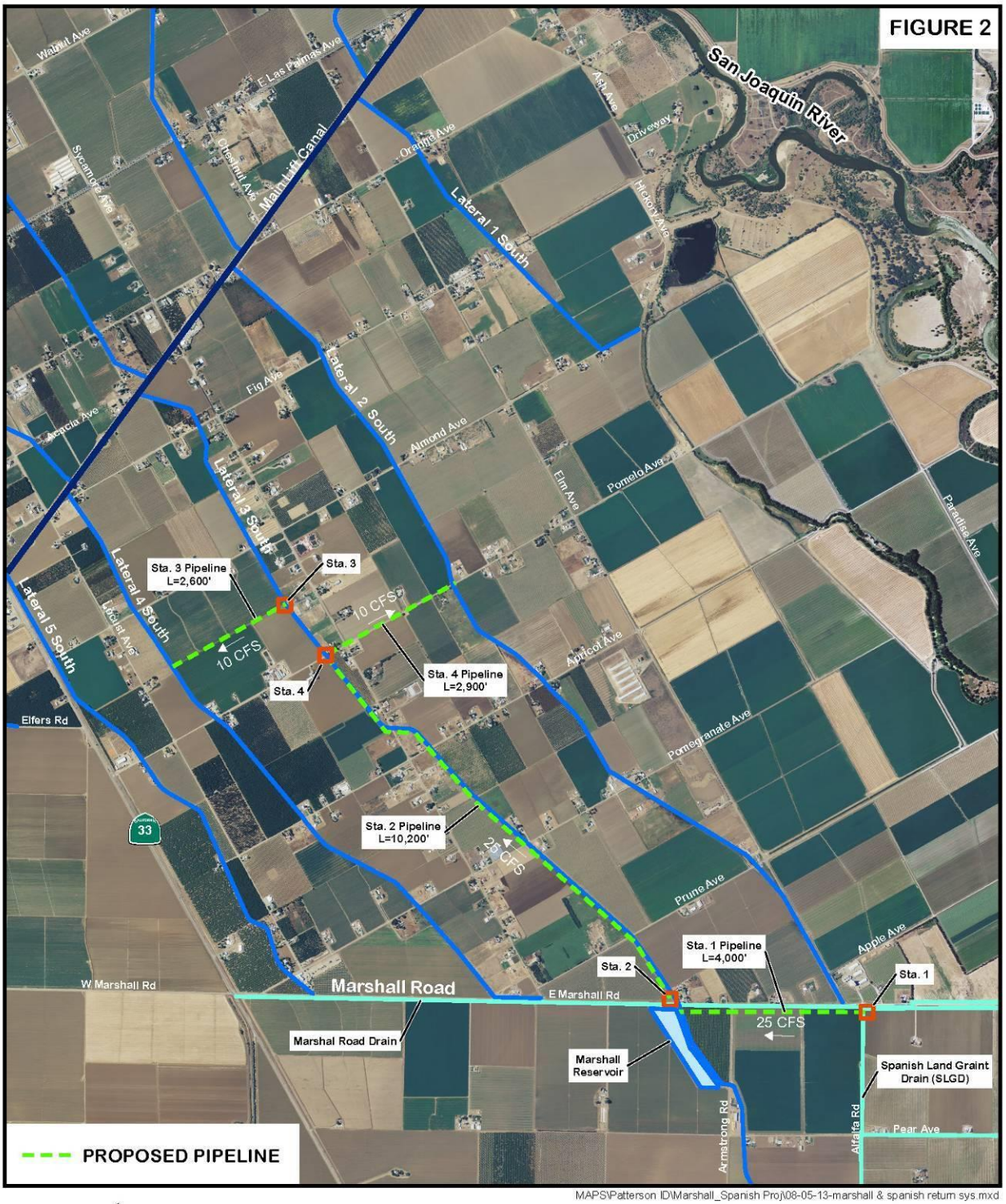
LEGEND

PROJECT SERVICE AREA
PATTERSON ID
DRAIN
WATERWAY

NORTH

TWO-DRAIN RETURN SYSTEM
Location Map & Project Area

SUMMERS ENGINEERING INC.
Consulting Engineers
HANFORD CALIFORNIA
AUGUST 2013



MAPS\Patterson ID\Marshall_Spanish Proj\08-05-13-marshall & spanish return sys.mxd

NORTH

SCALE IN MILES

0 0.25 0.5

Marshal/Spanish Return System

Project Layout & Service Area

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Consulting Engineers
HANFORD CALIFORNIA
AUGUST 2013

Section 2 Alternatives and Proposed Action

This EA/IS considers two possible actions: the No Action Alternative and the Proposed Action. The No Action Alternative reflects future conditions without the Proposed Action 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 existing conditions.

2.1 No Action Alternative

Under the No Action Alternative, Reclamation would not provide the grant funds and PID would not construct the Proposed Project. The Proposed Project objectives listed in Section 1.2 would not be realized. Supplemental water supplies would not be available to PID and the water quality exceedances in Marshall Road Drain and Spanish Land Grant Drain, and their contribution to exceedances in the San Joaquin River, would continue.

2.2 Proposed Action

PID would construct three pump stations and four pipelines to capture drain water and recirculate it into the PID irrigation system. Reclamation would provide $1,500,000 to PID to help fund the Project. The Project is generally described as follows:

The Proposed Project would capture agricultural surface runoff (tailwater) and operational spills from the Marshall Road Drain and Spanish Land Grant Drain and pump this water back into the District's irrigation system. The Project would consist of three pump stations and four pipelines that would allow the recovered water to be delivered to the District's Lateral 4-South, 3-South, and 2-South. Control of the pump stations would be through the District's SCADA system, based on supply, demands, and water levels. Figures 1 and 2 show the general locations of each of the proposed facilities.

- Station 1 – Station 1 would be a 20 to 25 cubic feet per second (cfs) pump station located on the south side of Marshall Road, east of Alfalfa Avenue. The new pump station would connect to both the Marshall Road Drain and Spanish Land Grant Drain pipelines and divert flows from the two drains into the pump sump. The pump station would pump the agricultural drainage and operational spill water into a new pipeline running approximately 4,000 feet west to the District's existing Marshall Reservoir, where the pumped water would be stored.
- Station 2 – Station 2 would be a 20 to 25 cfs pump station located at the District's existing Marshall Reservoir and would pump water from the Reservoir into a new pipeline approximately 10,200 feet along Lateral 3 South, discharging into Lateral 3 South upstream of Pomelo Avenue. A new long crested weir would be required at the Pomelo Avenue check structure in order to properly control water.
- Station 3 – Station 3 would be a 10 cfs pump station located at Lateral 3 South, upstream of Pomelo Avenue and would pump water from Lateral 3 South into a 2,600 foot long pipeline connecting to Lateral 4 South.

- Station 4 – Station 4 would be a SCADA controlled gate structure that would allow flow by gravity into a 2,900 foot long pipeline from Lateral 3 South to Lateral 2 South. No pump would be required at this station and flow rate would be controlled by the gate opening at the headworks of the Station 4 pipeline. The capacity of the pipeline would be up to 10 cfs.
- SCADA Integration – All four stations would be integrated into the District's SCADA system to control pump flow rates and gate operation according to system demands and capacities.

Construction Features.
The Proposed Project would include the construction of pump stations, pipelines, outlet structures, and long crested weirs. Regardless of their individual locations, each of these facilities would be similar in nature. All construction would take place in rural areas, on lands dedicated to agricultural uses.

Pump Stations
Pump stations would include a pre-cast concrete sump structure, pump and motor, steel manifold (including the appropriate valves and flow meters) and electrical equipment. The sump structures would be approximately 10 feet deep with a footprint of 8 feet wide and 14 feet long. An excavator would be used to prepare the hole for the sump, after which it would be placed and backfilled to grade. Where the sump connects to an existing canal lateral, the canal lining would be replaced as required. The pump and motor would be placed by a boom truck and connected to a steel discharge manifold, which would be fabricated in the field with hand labor. The electrical equipment would include switchgear and variable speed drives. These would be housed in pre-cast concrete or concrete block buildings to provide security. Individual pumps would range in size from 50 to 75 horsepower. Pump station electrical equipment would be powered from existing power lines through a new drop service pole at each station location.

Pipelines
Pipelines would be PVC and range in size from 24" to 36" diameter. Pipe trenches would be dug with a trencher or excavator to a depth sufficient to provide a minimum of 36" of cover (total depth ranging from 5 to 6 feet). Consolidated pea-gravel would be placed to the mid-point of the pipe for bedding and the remaining trench would be backfilled to grade with the previously excavated material. Where pipelines cross paved county roads, the existing pavement would be saw-cut and removed from the site. A trench would be excavated to depth according to design, and the pipeline, protective casing, and appurtenances would be installed. The trench would be backfilled and a pavement patch installed according to county requirements. Estimated excavated material is 16,500 cubic yards.

Outlet Structures
The system pipeline would discharge into PID canal laterals or reservoirs into pre-cast concrete structures that would dissipate the energy. The outlet structures would be approximately six feet tall and either 48" square boxes or 48" diameter pipe stubs that would allow the discharge water to spill over the lip of the structure and into the lateral or reservoir as appropriate. These structures would be placed with an excavator.

Long Crested Weirs

New long crested weirs would be required downstream of the system outlets in Laterals 2-South, 3-South, and 4-South. These weirs would be cast-in-place reinforced concrete structures consisting of a footing and wall set the appropriate design elevation. The average height of the walls would range from three to four feet.

Construction time is expected to be nine months. Work would be generally conducted during the non-irrigation season (September through March), although electrical connections, SCADA programming, and testing may occur once the irrigation season has started.

Mitigation Measures

The Proposed Project would not require mitigation measures. Standard avoidance and protection measures would be implemented during construction to protect special status species.

2.2.1 Environmental Protection Measures

The following environmental protection measures would be implemented to reduce environmental consequences associated with the Proposed Project (Table 1). Environmental consequences for resource areas assume the measures specified would be fully implemented.

Table 1

Action	Addressing
Air Quality	Vehicle exhaust emissions and dust generation during construction
Biological Resources	Migratory birds: ▪ If construction occurs during avian breeding season (February 15 to September 1), preconstruction surveys for nesting Swainson's hawks shall be performed within 0.5 mi of the Project area according to established protocol and protective measures to minimize potential effects implemented (CDFG 1994). ▪ To the extent practicable, construction shall be scheduled to avoid the nesting season, which extends from January through August. ▪ If it is not possible to schedule construction between August and January, pre-construction surveys for nesting birds shall be conducted by a qualified ornithologist or wildlife biologist to ensure that no nests of rare or protected species will be disturbed during Project implementation. A pre-construction survey shall be conducted no more than 14 days prior to the initiation of construction activities during the early part of the

	breeding season (January through April) and no more than 30 days prior to the initiation of these activities during the late part of the breeding season (May through August). During this survey, the qualified person shall inspect all potential nest substrates in and immediately adjacent to the impact areas for nests. If an active nest is found close enough to the construction area to be disturbed by these activities, the ornithologist, in consultation with CDFW, shall determine the extent of a construction-free buffer zone to be established around the nest.
Biological Resources	Standard avoidance and minimization measures during construction activities in valley elderberry longhorn beetle habitat shall be followed (USFWS 1999)

Section 3 Analysis of the Proposed Action

3.1 Analysis of Potentially Affected Environment

This section of the EA/IS includes the NEPA and CEQA analysis portion of the potentially affected environment and the environmental consequences involved with the Proposed Action/Proposed Project.

I. AESTHETICS Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
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?	☐	☐	☐	☒

Affected Environment

The region of the Proposed Project includes numerous canals and ditches of varied sizes which are used to convey water for irrigation. Water sources for the region include surface water supplies from the CVP (typically from the DMC), water diverted from the San Joaquin River and tributary streams, recovered tailwater from irrigation activities, and pumped groundwater.

Environmental Consequences

The Proposed Project would have no impact on aesthetic resources. The Proposed Project components would be largely below ground and not visible. Those components that are visible would include pumps, manifolds and electrical control buildings that are all consistent with existing agricultural support facilities.

II. AGRICULTURE 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.

Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
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?	☐	☐	☐	☒

Affected Environment

The region surrounding the Proposed Project is entirely irrigated agriculture or properties for the support of agricultural activities (farm yards and shops, water distribution features, including canals, ditches, drains, and pump stations.

Environmental Consequences

The Proposed Project would have no impact on agricultural resources. The purpose of the Proposed Project is for the support of regional agricultural operations. Approximately 0.13 acres of farm land would be converted for the proposed pump stations. This amounts to a very small fraction of the farmed area.

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:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
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?	☐	☐	☐	☒
f) Substantially alter air movement, moisture, or temperature, or cause any substantial change in climate?	☐	☐	☐	☒

Affected Environment

The Proposed Action lies within the San Joaquin Valley Air Basin. Air basins share a common "air shed", the boundaries of which are defined by surrounding topography. Although mixing between adjacent air basins inevitably occurs, air quality conditions are relatively uniform within a given air basin. The Air Basin experiences episodes of atmospheric mixing caused by inversion layers formed when temperature increases with elevation above ground, or when a mass of warm, dry air settles over a mass of cooler air near the ground.

Table 2 presents the emissions thresholds covering the Project location's overlying air basin.

Table 2. Air Basin Attainment Status and Emissions Thresholds for Federal Conformity Determinations

Pollutant	Federal Attainment Status[a]	(tons/year)[b]	(pounds/day)
Volatile organic compounds (VOC) (as an ozone precursor)	Nonattainment/Serious (8-hour ozone)	50	274
Nitrogen oxides (NO_x) (as an ozone precursor)	Attainment/Unclassified	100	548
Inhalable particulate matter (PM_{10})	Attainment	100	548
Carbon monoxide (CO)	Attainment/Unclassified	100	548

[a] San Joaquin Valley Air Resources Control Board.
[b] 40 CFR 93.153

Environmental Consequences

Short-term air quality impacts would be associated with construction, and would generally arise from dust generation (fugitive dust) and operation of construction equipment. Fugitive dust results from land clearing, grading, excavation, concrete work, and vehicle traffic on paved and unpaved roads. Fugitive dust is a source of airborne particulates, including PM_{10} and $PM_{2.5}$. Large earth-moving equipment, trucks, and other mobile sources powered by diesel or gasoline are also sources of combustion emissions, including nitrogen dioxide (NO_2), CO, VOC, sulfur dioxide, and small amounts of air toxics. **Table 3** below provides a summary of the estimated emissions during construction.

Table 3 - Estimated Project Emissions During Construction

Pollutant	Estimated Project Emissions[a] (tons)
NO_x	3.0
PM_{10}	0.5
CO	1.6

[a] Road Construction Model Version 7.1.4, 2013

Comparison of the estimated Proposed Action emissions (**Table 3**) with the thresholds for Federal conformity determinations (**Table 2**) indicates that Project emissions are estimated to be below these thresholds and a conformity determination is not required.

The Proposed Action also involves the operation of electrically-driven pumps and motors; accordingly, there would not be any direct emissions from the operation of Project facilities/equipment. Accordingly, Project construction and operations under the Proposed Action would not result in adverse impacts to air quality beyond Federal thresholds.

Cumulative Impacts

The Proposed Action, when added to other existing and proposed actions, would not contribute to cumulative impacts to air quality since construction activities are short-term and operations would not result in cumulative adverse air quality impacts.

IV. BIOLOGICAL RESOURCES Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☐	☒
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. 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?	☐	☐	☐	☒

Affected Environment

A USFWS species list was generated on January 30, 2014 using the Sacramento Field Office's website: http://www.fws.gov/sacramento/ES_Species/Lists/es_species_lists-form.cfm. The following USGS 7½ minute quadrangles were used for the list: Crow's Landing, Westley, Brush Lake, Ceres, Patterson, Hatch, Orestimba Peak, Newman, and Gustine. The Project occurs entirely within the Crow's Landing quadrangle and is surrounded by all others making up the list. In addition, the California Natural Diversity Database (CNDDB) was used to determine specific findings for listed species in or around the Project area. The document number for the species list generated is 140130021050. **Table 4** shows the California-listed and Federally-listed species.

Table 4. Federal and State Special status species that could potentially occur within affected area.

Species	***Status[1]***	***Effects[2]***	***Potential to Occur in Study Area[3]***
Amphibians			
California red-legged frog (*Rana draytonii*)	T	NE	**Absent.** No CNDDB-recorded occurrences in action area.
California tiger salamander, central population (*Ambystoma californiense*)	T	NE	**Absent.** No CNDDB-recorded occurrences in action area.
Birds			
Swainson's hawk (*Buteo swainsoni*)	ST, P	NE	**Possible.** May be present during the avian nesting season (March 1 through August 1). Several reports within and near the Project area, ranging from 0.08 to 3.06 miles away.
Least Bell's vireo (*Vireo Bellii pusillus)*	E	NE	**Absent.** No CNDDB-recorded occurrences in action area.
Tricolored blackbird (*Agelaius tricolor)*)	CSSC, P	NE	**Possible.** May be present during avian nesting season (January 1 through August 1).
Fish			
Central Valley spring-run chinook salmon (*Oncorhynchus tshawytscha*)	T, NMFS	NE	**Absent.** No natural waterways within the species' range would be affected by the proposed action.
Central Valley steelhead (*Oncorhynchus mykiss*)	T, X, NMFS	NE	**Absent.** No natural waterways within the species' range would be affected by the proposed action.
delta smelt (*Hypomesus transpacifiicus*)	T	NE	**Absent.** No natural waterways within the species' range would be affected by the proposed action.
California Splittail (*Pogonichthys macrolepidotus)*	CSSC		**Absent.** Suitable habitat not present in Project footprint.
winter-run chinook salmon, Sacramento River (*Oncorhynchus tshawytscha*)	E, NMFS	NE	**Absent.** No natural waterways within the species' range would be affected by the proposed action.
green sturgeon (Acipenser medirostris)	T, NMFS	NE	**Absent.** No natural waterways within the species' range would be affected by the proposed action.
Invertebrates			
Conservancy fairy shrimp (*Branchinecta conservatio*)	E, X	NE	**Absent.** No CNDDB-recorded occurrences in action area.
longhorn fairy shrimp (*Branchinecta longiantenna*)	E, X	NE	**Absent.** No CNDDB-recorded occurrences in action area.

valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)	T	NE	**Possible.** Elderberry shrub observed on alternate route which has been already ruled out.
vernal pool fairy shrimp (*Branchinecta lynchi*)	T, X	NE	**Absent.** No CNDDB-recorded occurrences in action area.
vernal pool tadpole shrimp (*Lepidurus packardi*)	E, X	NE	**Absent.** No CNDDB-recorded occurrences in action area.
Mammals			
Fresno kangaroo rat (*Dipodomys nitratoides exilis*)	E	NE	**Absent.** No CNDDB-recorded occurrences in action area.
San Joaquin kit fox (*Vulpes macrotis mutica*)	E	NE	**Possible.** No CNDDB-recorded occurrences in action area or Stanislaus County.
Riparian brush rabbit (*Sylvilagus bachmani riparius)*	E	NE	**Absent.** No CNDDB-recorded occurrences in action area.
Reptiles			
blunt-nosed leopard lizard (*Gambelia sila*)	E	NE	**Absent.** No CNDDB-recorded occurrences in action area.
giant garter snake (*Thamnophis gigas*)	T	NE	**Absent.** No natural waterways within the species' range would be affected by the proposed action.
Vegetation			
Alkali milk-vetch (*Astragalus tener var. tener)*	CNPS 1B.2	NE	**Absent.** Suitable habitat not present in Project footprint.
Heartscale (*Atriplex cordulata var. cordulata)*	CNPS 1B.2	NE	**Absent.** Suitable habitat not present in Project footprint.
Lesser saltscale (*Atriplex minuscula)*	CNPS 1B.1	NE	**Absent.** Suitable habitat not present in Project footprint.
Vernal pool smallscale (*Atriplex persistens)*	CNPS 1B.2	NE	**Absent.** Suitable habitat not present in Project footprint.
Delta button-celery (*Eryngium racemosum)*	CNPS 1B.1	NE	**Absent.** Suitable habitat not present in Project footprint.

1 Status= Listing of state or Federal special status species
E: Federally listed as Endangered
NMFS: Species under the Jurisdiction of the National Oceanic & Atmospheric Administration Fisheries Service
P: Birds protected under the Migratory Bird Treaty Act
T: Federally listed as Threatened
ST: Listed as Threatened by the State of California
X: Critical Habitat designated for this species
CSSC: California species of special concern
CNPS 1B.1: Seriously endangered plants in California and elsewhere
CNPS 1B.2: Fairly endangered plants in California and elsewhere
2 Effects = Effect determination under Section 7 of the Endangered Species Act
NE: No Effect
3 Definition Of Occurrence Indicators
Possible: Species recorded in area but habitat suboptimal or lacking entirely
Absent: Species not recorded in study area and/or habitat requirements not met
4 CNDDB = California Natural Diversity Database 2014
5 CNPS = California Native Plant Society

The predominate habitat located within the Proposed Project site is agricultural and other developed lands and offers limited habitat value to wildlife.

Migratory Birds

The Migratory Bird Treaty Act prohibits killing, possessing, or trading in migratory birds except in accordance with regulations prescribed by the Secretary of the Interior. This act encompasses whole birds, parts of birds, and bird nests and eggs. Migratory birds, specifically tricolored blackbirds have been documented in the vicinity of the Project.

Federally- and State- listed Species

Swainson's Hawk. Swainson's hawks are listed as threatened under the California Endangered Species Act. Generally, their habitat consists of largely open and undeveloped landscapes, and includes suitable grassland or agricultural foraging habitat and sparsely distributed trees for nesting (England et al. 1997). They exhibit a high degree of nest site fidelity, and will return to the same tree for many years (Estep 1989). Swainson's hawks begin to arrive to their breeding grounds in the Central Valley late February to early March. The nesting season occurs from March 1st – September 15th and will breed in riparian areas and oak savannahs. Prey items include small mammals, insects, and birds.

Suitable nesting and foraging habitat is present within the Project area. There are CNDDB records for nesting Swainson's hawk adjacent to the Project Area (CNDDB 2014).

Valley Elderberry Longhorn Beetle. Valley elderberry longhorn beetles are currently listed as threatened under the Endangered Species Act. The species is found only in the California central valley and then only with blue elderberry (*Sambucus mexicana*) (CNDDB 2014). Blue elderberry is primarily found in riparian habitats but can also be found along other waterways such as irrigation canals and waste ways. During the initial site review, no elderberry bushes were observed along the chosen alignment.

Giant Garter Snake (GGS). GGS is federally and state threatened. This giant water snake is endemic to the Central Valley wetland habitats, and includes freshwater marshes, low-gradient streams, as well as man-made waterways, drainage canals, irrigation ditches, slough habitats, rice fields, and adjacent uplands (USFWS 1993, 1999b). These waterways typically contain cattails and other herbaceous vegetation for cover or foraging. Garter snakes are active foragers and feed primarily on small fish, frogs, and tadpoles (Fitch 1941, Hansen 1988; Hansen and Brode 1980). GGS active season is between May 1st to October 1st. During their dormant season, these snakes will seek shelter from flood waters during the winter months in burrows in upland habitat (USFWS 1993).

The closest CNDDB report for GGS is in northern Merced County, more than 10 miles away from the Proposed Project. No suitable GGS habitat occurs within the vicinity of the Project area.

San Joaquin Kit Fox (SJKF). SJKF is federally listed as an endangered species. Their diet varies based on prey availability, and includes small to mid-sized mammals, ground-nesting birds, and insects. SJKF excavate their own dens, or use other animals, and human-made

structures (culverts, abandoned pipelines, and banks in sumps or roadbeds). Primary reasons for the species decline include loss and degradation of habitat (USFWS 1998).

A search of the CNDDB showed no sightings of SJKF within the USGS 7½ minute quadrangle (Crow's Landing) that the Project is located in. Additionally, none of the adjacent quadrangles to the north or east contained records. Two sightings were made in the mid-1980's to the southeast near the Kesterson National Wildlife Refuge. In the three quadrangles (Orestimba Peak, Gustine, and Westley) bordering the western edge of the Crow's Landing quad, 8 records ranging from 1975 to 2004 occur along the I-5 corridor. The only record more recent than 1990, was a road kill incident approximately 4.5 miles away in 2004 near I-5.

Based on CNDDB records and mapping information from the Endangered Species Recovery Program, Stanislaus County does not appear to support a population of SJKF.

Environmental Consequences

The majority of special-status plants and animals would most likely not occur within the boundaries of the disturbed land areas, as described in Table 2 above. However, federal- and State-protected species that occur or could occur in the vicinity of the Proposed Action area include Swainson's hawk and valley elderberry longhorn beetle.

Pre-construction biological surveys would be performed along the construction alignment no more than 30 days prior to the start of construction. Also prior to construction, construction crews would be trained by a certified biologist on the proper actions to be taken should a special-status species be encountered during construction.

Migratory Birds

The Migratory Bird Treaty Act prohibits killing, possessing, or trading in migratory birds except in accordance with regulations prescribed by the Secretary of the Interior. This act encompasses whole birds, parts of birds, and bird nests and eggs. Construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings or otherwise lead to nest abandonment. Disturbance that causes nest abandonment and/or loss of reproductive effort is considered "take" by the California Department of Fish and Wildlife (CDFW). Loss of fertile eggs or nesting birds or any activities resulting in nest abandonment could constitute a significant impact if the species is particularly rare in the region.

Migratory birds, specifically tricolored blackbirds have been documented in the vicinity of the Project. However, the following conservation measures will be included in the conditions of approval to comply with CEQA and MBTA.

- To the extent practicable, construction shall be scheduled to avoid the nesting season, which extends from January through August.

- If it is not possible to schedule construction between August and January, pre-construction surveys for nesting birds shall be conducted by a qualified ornithologist or wildlife biologist to ensure that no nests of rare or protected species will be disturbed during Project implementation. A pre-construction survey shall be conducted no more than 14 days prior to the initiation of

construction activities during the early part of the breeding season (January through April) and no more than 30 days prior to the initiation of these activities during the late part of the breeding season (May through August). During this survey, the qualified person shall inspect all potential nest substrates in and immediately adjacent to the impact areas for nests. If an active nest is found close enough to the construction area to be disturbed by these activities, the ornithologist, in consultation with CDFW, shall determine the extent of a construction-free buffer zone to be established around the nest.

Federally- and State- listed Species

Swainson's hawk. Construction activities, such as earthmoving with heavy construction equipment occurring within the area for the Proposed Project could cause the failure of a Swainson's hawk nest, if a pair was nesting in the vicinity. The loss of an active nest could contribute to continuing local and statewide declines of Swainson's hawks.

Suitable nesting and foraging habitat is present within the Project area. There are CNDDB records for nesting Swainson's hawk adjacent to the Project Area (CNDDB 2014). However, construction activities will occur outside the nesting season, when Swainson's hawks have migrated out of the Central Valley. This would reduce impacts to Swainson's hawk to less than significant levels. See Appendix A.

Valley Elderberry Longhorn Beetle. A pre-construction survey will be performed prior to construction and if elderberry beetle habitat is detected, appropriate buffer zones (100 feet) will be established per USFWS guidance (USFWS 1999 – see Appendix B). This buffer zone provides complete avoidance of the habitat, and thus no adverse effect (USFWS 1999). If the buffer zone cannot be maintained, DFG and FWS shall be contacted for direction on how to proceed.

Giant garter snake. No CNDDB (2010) records of GGS exist in the vicinity of the Proposed Project alignment. All potential habitats within 200 feet of the Two-Drains Project alignment are unsuitable for and/or incapable of supporting giant garter snakes due largely to their isolation from historically occupied habitats and to their general lack of emergent aquatic and terrestrial vegetation and subterranean retreats that giant garter snakes rely on for cover. Considering the overall character of the potential habitat assessed, the incompatible land uses immediately surrounding the Project site, the lack of suitable habitats in the general region, and the distance of the site from habitats where giant garter snake presence has been verified recently, it is highly unlikely that giant garter snakes are present within the Project area. Consequently, the Project is not likely to result in any impacts to giant garter snake.

San Joaquin kit fox. Since CNDDB records and mapping information from the Endangered Species Recovery Program indicates that Stanislaus County does not appear to support a population of SJKF and the habitat consists of farmland and other developed areas, the Proposed Action would not affect the San Joaquin kit fox.

Cumulative Impacts

Biological resources would continue to be affected by other types of activities that are ongoing but unrelated to the Proposed Action. However, the Proposed Action would have little effect on

habitats of importance to special-status species, and all effects to habitats would be temporary. Impacts to biological resources from the implementation of the Proposed Action could occur only during construction activities, and these impacts would be avoided or minimized to less than significant levels through the implementation of avoidance and minimization measures. Therefore, the Proposed Action, when added to other existing and proposed actions, does not contribute to adverse cumulative impacts to wildlife, plants, or habitat resources since construction activities would be short-term.

V. CULTURAL RESOURCES

The proposed action requires compliance with the California Environmental Quality Act (CEQA) as well as the National Historic Preservation Act (NHPA) of 1966, as amended. Both the NHPA and CEQA essentially mandate that government agencies take into consideration the effects of their actions on cultural resources listed on or eligible for inclusion in the California Register of Historical Resources (CRHR) (defined as historical resources at 14 CCR § 15064.5[a]) and the National Register of Historic Places (NRHP) (defined as historic properties at 36 CFR § 800.16[l]). A cultural resource is a broad term that includes prehistoric, historic, architectural, and traditional cultural properties. While the NRHP and CRHR significance criteria are similar, the former 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]). Therefore, employing the federal standards will be applicable in both federal and state regulatory contexts. Reclamation initiated NHPA Section 106 consultations with the California State Historic Preservation Officer (SHPO) on a finding of no adverse effects to historic properties, pursuant to 36 CFR §800.5(b).

Would the project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☐	☒	☐

The Proposed Action/Project area/Area of Potential Effects (APE) has been subjected to cultural resources investigations. (Lloyd et al. 2014). As a result of a records search at the South San Joaquin Valley Information Center, historical research, and architectural and archaeological field surveys, one significant cultural resources was identified with the APE: the Patterson Lift irrigation system, which was built by the Patterson Ranch Company and delivering water by 1910, and consists of a 3.25 mile long canal (referenced as the Main Canal) and a series of ten distribution canals totaling approximately 35 linear miles. A small portion of this system, specifically segments of PID Laterals 2-South (originally Lateral G), 3-South (originally Lateral H), and 4-South (originally Lateral J), intersect the APE (Lloyd et al. 2014, incorporated by reference). No archaeological resources were identified.

Reclamation identified the segments of Laterals 2-South, 3-South, and 4-South within the project area as a contributing element to the Patterson Lift irrigation system, which is potentially eligible

for inclusion in the California Register of Historical Resources (CRHR) and the National Register of Historic Places (NRHP) under Criterion 1\A, for local contributions to the history of early settlement, reclamation, and agriculture near the city of Patterson and in Stanislaus County, and Criterion 3\C, as an example of engineering advances in canal construction that served as a working model for subsequent systems in California's Central Valley. The canal segments are contributing elements to the larger system under Criterion 1/A given that the they have retained integrity of location, association, and setting; however, they do not retain key structural elements (such as the original head gates, basins, weirs) that were unique to the design of this system, and are therefore not eligible as contributing elements under Criterion 3/C. The characteristics that make these three laterals eligible will not be altered by the structural addition of three new concrete outlet structures and weirs, which will not affect the purpose or function for which the laterals and this system were built. The proposed project will not alter any significant historic characteristics as the resource's ability to deliver water will not be altered. Therefore, the proposed project will result in no significant impacts/adverse effect to historical resources/historic properties pursuant to 14 CCR § 15064.5(b)(1) and 36 CFR § 800.5(b), respectively.

No plant resources of potential value for Native Americans such as sedge or deer grass, which are of importance in the traditional methods of basketry construction, were observed in the surveyed area.

No evidence of subsurface cultural resources was found in the records search or the field survey. Should an unanticipated discovery of cultural resources be made, implementation of the following mitigation measure will reduce any potential impacts to less than significant.

CR-1: In the unlikely event that buried archaeological deposits are encountered during construction, excavation, grading or leveling or development related activities, work in the immediate vicinity of the discovery shall cease until the finds have been evaluated by a qualified archaeologist. Should human remains and associated materials be encountered during construction on non-Federal lands, work in that area must be halted and the Fresno County Coroner's Office shall be immediately contacted pursuant to Health and Human Safety Code Section 7050.5 and 14 CCR § 15064.5(e). If the remains are determined to be of Native American origin, the Native American Heritage Commission (NAHC) shall be notified within 24 hours of determination, as required by PRC Section 5097. Work at the location of the discovery may not proceed until all requirements of PRC Section 5097 are met through the NAHC.

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

See remarks under V-a.

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

The geological formations identified in the project area do not contain paleontological resources or unique geologic features (Lloyd et al. 2014).

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

No evidence of human remains was identified through cultural resources investigations (Lloyd et al. 2014). Should an unanticipated discovery be made, implementation of the following mitigation measure will reduce any potential impacts to less than significant.

CR-1: In the unlikely event that buried archaeological deposits are encountered during construction, excavation, grading or leveling or development related activities, work in the immediate vicinity of the discovery shall cease until the finds have been evaluated by a qualified archaeologist. Should human remains and associated materials be encountered during construction on non-Federal lands, work in that area must be halted and the Fresno County Coroner's Office shall be immediately contacted pursuant to Health and Human Safety Code Section 7050.5 and 14 CCR § 15064.5(e). If the remains are determined to be of Native American origin, the Native American Heritage Commission (NAHC) shall be notified within 24 hours of determination, as required by PRC Section 5097. Work at the location of the discovery may not proceed until all requirements of PRC Section 5097 are met through the NAHC.

Environmental Consequences

Impact Criteria

The Proposed Project would have an adverse impact on cultural resources if it were to conflict with the regulations, policies, and laws of Section 106 of the NHPA, and other cultural resources related law and regulations, or Reclamation cultural resource policies.

Implementing the Proposed Project would also have a significant impact on cultural resources if it were to do any of the following:

- Cause a substantial adverse change in the significance of a historical resource, as defined in §15064.5;
- Cause a substantial adverse change in the significance of an archaeological resource, in accordance with §15064.5; or
- Disturb any human remains, including those interred outside of formal cemeteries.

No Action
Under the no action alternative, there would be no impacts on cultural resources because the proposed action would not be implemented. Conditions related to cultural resources would remain the same as existing conditions.

Proposed Action
Under the Proposed Action, there will be no impact on historic properties or on cultural resources. The proposed action will result no significant impacts/adverse effect to historical resources/historic properties pursuant to 14 CCR § 15064.5(b)(1) and 36 CFR § 800.5(b), respectively.

Cumulative Impacts
The Proposed Action will not contribute to cumulative effects on cultural resources as it will have no significant impacts/adverse effect to historical resources/historic properties.

VI. GEOLOGY AND SOILS

Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
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 most recently adopted Uniform Building Code 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?	☐	☐	☐	☒

Affected Environment

The region surrounding the Proposed Project is generally a moderately well drained Capay series clay, sloping to the northeast towards the San Joaquin River. There are no known faults near the Proposed Project.

Environmental Consequences

The Proposed Project would not have any impact on soil erosion or expose people or structures to potential adverse effects.

VII. HAZARDS AND HAZARDOUS MATERIALS Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
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?	☐	☐	☐	☒

Affected Environment

The Hazardous Waste and Substances Sites List (Cortese List) is a planning document used to comply with the CEQA requirements for providing information about the location of hazardous materials release sites. A search of the Cortese List was completed to identify any known hazardous release sites located on or adjacent to the Project. The records search revealed no sites within 1/8-mile of the Proposed Project alignments.

Environmental Consequences

The Proposed Project would not make use of any hazardous materials nor would it be located near any known listed sites. The Proposed Project would not create any hazards or hazardous materials.

VIII. HYDROLOGY AND WATER QUALITY Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
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	☐	☐	☐	☒

VIII. HYDROLOGY AND WATER QUALITY

Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
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?	☐	☐	☐	☒
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?	☐	☐	☐	☒

Affected Environment

The Proposed Project would be located Southeast of the City of Patterson, approximately 2.5 miles due west from the San Joaquin River. Patterson Irrigation District pumps the majority of its water supply from the San Joaquin River and delivers water to the Project service area through a main lift canal and subsequent delivery laterals. Growers within the service area take headgate deliveries from these laterals to irrigate crops. Applied irrigation water may leave the fields in the form of surface runoff (tailwater), which is discharged to the Marshall Road Drain and Spanish Land Grant Drain, which transports this water, along with suspended silt and pesticides, to the San Joaquin River.

Environmental Consequences

The Proposed Project would capture up to 5,000 afy of drain water from the Marshall Road Drain and Spanish Land Grant Drain. These two drains currently discharge to the San Joaquin River, and may carry pesticides (including chlorpyrifos and malathion), suspended silt, salt, and born with the flows and contributing to water quality concerns within the river.

Average combined annual discharge from the two drains ranges from approximately 5,000 to 9,000 afy and the Proposed Project would reduce drainage discharge by an estimated 60%-90% (depending on actual flows) along with the transported pollutants. This will:

- Provide a supplemental water supply that would allow for the irrigation of approximately 2,000 acres of farmland.
- Reduce the fallowing of farmland during periods of drought by up to 2,000 acres.
- Reduce the discharge of pesticides and silt to the San Joaquin River and contribute to compliance with the San Joaquin River Chlorpyrifos and Diazinon TMDL program implemented by the Central Valley Regional Water Quality Control Board.

The Proposed Project would not cause a change to the drainage pattern or flood hazard zone. There would be a water quality improvement in the San Joaquin River caused by a reduction in tailwater discharge, however this would not be substantial.

IX. LAND USE AND PLANNING

Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
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?	☐	☐	☐	☒

Affected Environment

The area in the vicinity of the Proposed Project is entirely surrounded by cultivated agriculture and agriculture-supporting infrastructure. The general topography is sloping eastwards towards the San Joaquin River and the region has been actively farmed for the last century. Crops typically include alfalfa, annual fruit, vegetable, and forage crops (such as tomatoes, beans, and corn) and the soil is tilled annually. A variety of water conveyance facilities exist within the

Proposed Project area including canals, drainage ditches, reservoirs, wells, pump stations, pipelines, and associated appurtenances.

Environmental Consequences

The Proposed Project features would construct three pump stations and four pipelines, all of which support agricultural activities and would be consistent with the property zoning designations (all property is zoned for agricultural use). Where possible, the proposed conveyance facilities would be constructed over existing farm roads and canal banks. All of the pipelines would be located below ground and not interfere with agricultural activities. The pump stations would be similar to other existing stations and would have small footprints. The Project would provide the District's southerly service area with supplemental water which would reduce fallowing of crop land during periods of severe water shortages.

X. MINERAL RESOURCES

Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
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?	☐	☐	☐	☒

Affected Environment

The area in the vicinity of the Proposed Project has no know mineral resources.

Environmental Consequences

The Proposed Project would have no impact on mineral resources.

XI. NOISE

Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
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?	☐	☐	☐	☒

Affected Environment

The area in the vicinity of the Proposed Project is entirely surrounded by cultivated agriculture and agriculture-supporting infrastructure. Background noise levels are typical of agricultural practices, including vehicle traffic, farm equipment operations, and aviation operations (including airplane and helicopter crop dusting).

Environmental Consequences

The Proposed Project features would construct three pump stations and four pipelines, all of which support agricultural activities. Pump station motors would be electrical and would not contribute significantly to existing noise or vibration levels. Some ground-borne vibration and noise would be generated during construction but this would be limited to the construction period and would not be different from existing agricultural activities in terms of duration or intensity. Additionally, there are very few residences and business located near the Project. This impact would be less than significant.

XII. POPULATION AND HOUSING

Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
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?	☐	☐	☐	☒

Affected Environment

The Proposed Project would be located in western Stanislaus County, approximately four miles southeast of the City of Patterson. A handful of rural residences and farmworker housing complexes are scattered throughout the landscape surrounding the Proposed Project area.

Environmental Consequences

The Proposed Project would have no impact on population or housing.

XIII. PUBLIC SERVICES

Would the Project:

	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Would the Project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, 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?	☐	☐	☐	☒

Affected Environment

Law enforcement for the Proposed Project area is provided through the Stanislaus County Sherriff Department and fire protection is provided through the West Stanislaus County Fire Protection Department. Local schools are operated through the Patterson Joint Unified School District.

Environmental Consequences

The Proposed Project would have no impact on any public services.

XIV. RECREATION

Would the Project:	Potentially Significant Impact	Less than Significant	Less than Significant Impact	No Impact

		With Mitigation Incorporation		
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?	☐	☐	☐	☒

Affected Environment

There are no recreational facilities in the vicinity of the Proposed Project.

Environmental Consequences

The Proposed Project would have no impact on any recreation or recreational facilities.

XV. TRANSPORTATION/TRAFFIC

Would the Project:	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
a) Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?	☐	☐	☒	☐
b) Exceed, either individually or cumulatively, a level of service standard 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)	Result in inadequate parking capacity?	☐	☐	☐	☒
g)	Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	☐	☐	☐	☒

Affected Environment

Traffic corridors within the Proposed Project area include a number of county road, Highway 33, and Interstate 5. Traffic on these roads varies from light to moderate and fluctuates seasonally, mostly as a function of farming activities. Marshall Road and Sycamore Avenue are the county roads with the most traffic in the immediate vicinity of the Proposed Project.

Environmental Consequences

The Proposed Project would result in a small increase in traffic during the construction period as construction workers commute to the Project site and construction vehicles were operated. Construction workers would commute to the Project via county roads and state highways. Construction would generally occur on existing field roads. This increase would be limited to the construction phase of the Proposed Project and would not be substantial in relation to the existing traffic load nor exceed the capacity of existing roads or highways. County roads would need to be crossed in four locations, which would require detours and temporary closures of the affected roads during construction, with no more than one intersection closed at a time. These closures would not last longer than one day each and would be performed in conformance with Stanislaus County requirements. Alternate routes around each intersection would add no more than ½ mile of travel. This is a less than significant impact.

XVI. UTILITIES AND SERVICE SYSTEMS Would the Project:		Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
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?	☐	☐	☐	☒

Affected Environment

A variety of public utilities and services are provided in the Proposed Project Region. Electrical power is provided by Turlock Irrigation District and natural gas is provided through PG&E. Irrigation water and agricultural drainage services are provided through Patterson Irrigation District. There are no public sewer systems, water treatment plants, or wastewater treatment plants in the vicinity of the Proposed Project.

Environmental Consequences

The Proposed Project would not result in any impact to public utilities in terms of exceeding existing capacity, increasing demand of use, or violating water quality or waste regulations. The Proposed Project would result in an increase in irrigation water available for distribution by Patterson Irrigation District, which is a beneficial impact.

XVII. MANDATORY FINDINGS OF SIGNIFICANCE	Potentially Significant Impact	Less than Significant With Mitigation Incorporation	Less than Significant Impact	No Impact
Would the Project:				
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, 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?	☐	☐	☐	☒

XVII a): The Proposed Project would not degrade the quality of the environment. The Proposed Project would reduce the volume of tailwater discharged to the San Joaquin River, which could potentially improve water quality and habitat in that river. With the implementation of the proposed avoidance measures, would not impact special status species.

XVII b): The Proposed Project would not any cumulatively considerable impacts.

XVII c): The Proposed Project would provide up to 5,000 acre feet per year in recovered water, which would be used to augment local irrigation supplies. In times of severe drought, this would provide irrigation water for up to 2,000 acres of farmland that would otherwise go unfarmed. This is a beneficial impact.

3.2 Global Climate Change

Climate change refers to significant change in measures of climate (e.g., temperature, precipitation, or wind) lasting for decades or longer. Many environmental changes (changes in sun's intensity, changes in ocean circulation, deforestation, urbanization, burning fossil fuels, etc.) can contribute to climate change (EPA 2009). Gases that trap heat in the atmosphere are often called greenhouse gases (GHG). Some GHG such as carbon dioxide (CO_2) occur naturally and are emitted to the atmosphere through natural processes and human activities. Other GHG (e.g., fluorinated gases) are created and emitted solely through human activities. The principal greenhouse gases that enter the atmosphere because of human activities are: CO_2, methane (CH_4), nitrous oxide, and fluorinated gasses (EPA 2009).

During the past century, humans have contributed to the amount of GHG in the atmosphere by burning fossil fuels such as coal, natural gas, oil, and gasoline to power our cars, factories, utilities, and appliances. At present, there are uncertainties associated with the science of climate change (EPA 2009).

More than 20 million Californians rely on regulated delivery of water resources such as the State Water Project and the CVP, as well as established water rights from rivers. Climate change could affect precipitation patterns, runoff timing and volume, sea level, and the amount of irrigation water needed due to modified evapotranspiration rates. These changes may lead to impacts to the State's water resources and Project operations.

Affected Environment

In 2002 California adopted Assembly Bill 1493 (AB 1493) which required the California Air Resources Board to develop and implement regulations to reduce automobile and light truck GHG emissions beginning with their respective 2009 models The State has adopted Assembly Bill 32 (AB 32) and has identified GHG reduction goals. While the emissions of one single Project would not cause global climate change, the State's objective is to reduce GHG emissions.

Environmental Consequences

No Action Alternative

Under the No Action Alternative there would be no impact on GHG emissions since no construction would take place, and there would not be any long-term electrical energy requirement.

Proposed Action

The Proposed Action would involve a short-term increase in emissions during the construction and long-term impacts attributable to the generation of electrical energy for pumping. These emissions would vary annually, but have been estimated to average about 122 tons/year of CO_2 (PG&E Carbon Footprint Calculator website, 2009), which is negligible compared to the threshold for annually reporting GHG emissions (25,000 metric tons/year). Accordingly, construction and operation of the Proposed Action would result in below *de minimis* impacts to global climate change.

Cumulative Impacts

Greenhouse gas impacts are considered to be cumulative impacts. The Proposed Action, when added to other existing and proposed actions, would not contribute to cumulative impacts to global climate change owing to the *de minimis* magnitude of annual GHG emissions.

3.3 Federal Disclosure Requirements

Department of the Interior Regulations, Executive Orders, and Reclamation guidelines require a discussion of the following items when preparing environmental documentation:

Indian Sacred Sites

Sacred sites are defined in Executive Order 13007 (May 24, 1996) as "any specific, discrete, narrowly delineated location on Federal land that is identified by an Indian tribe, or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion; provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site." The Proposed Project would not affect and/or prohibit access to and ceremonial use of Indian sacred sites.

Indian Trust Assets

Indian Trust Assets (ITAs) 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 ITA is the Chicken Ranch Rancheria, approximately 48 miles northeast of the Project location (Appendix D). Therefore, the Project would not affect ITAs.

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. No significant changes in agricultural communities or practices would result from the Proposed Action. Therefore, the Proposed Action would not have disproportionately negative impacts on low-income or minority individuals or populations within the Project area.

Section 4 Consultation and Coordination

4.1 National Historic Preservation Act (16 USC § 470 et seq.)

The NHPA of 1966, as amended (16 U.S.C. 470 et seq.), requires that federal agencies give the Advisory Council on Historic Preservation an opportunity to comment on the effects of an undertaking on historic properties, properties that are eligible for inclusion in the National Register. The 36 CFR Part 800 regulations implement Section 106 of the NHPA.

Section 106 of the NHPA requires federal agencies to consider the effects of federal undertakings on historic properties, properties determined eligible for inclusion in the National Register. Compliance with Section 106 follows a series of steps that are designed to identify interested parties, determine the APE, conduct cultural resource inventories, determine if historic properties are present within the APE, and assess effects on any identified historic properties.

Reclamation sent a letter to SHPO on July 21, 2014 requesting concurrence with Reclamations' finding of "no adverse effect to historic properties pursuant to 36 CFR § 800.5(b)." SHPO concurred with Reclamations' findings and determination on August 22, 2014. (Appendix C).

4.2 Public Review Period

The EA/IS was released for a 30-day public review period. Through the State Clearing House, the PID (acting as Lead Agency for CEQA) made the CEQA portion of the draft EA/IS and the proposed adoption of a negative declaration available to the public. The EA/IS was available for public review on June 17, 2014. The review period ended on July 18, 2014. The Native American Heritage Commission sent a letter to the District recommending actions to assess and mitigate project impacts to cultural resources. Reclamation and the District have already done these actions.

Section 5 References

CDFG (California Department of Fish and Game). 1994. Staff Report Regarding Mitigation for Impacts to Swainson's Hawks (*Buteo swainsoni*) in the Central Valley of California. California Department of Fish and Game, Sacramento, CA

CDFG (California Department of Fish & Game). 1995. Staff Report on Burrowing Owl Mitigation. California Department of Fish and Game, Sacramento, CA.

CNDDB (California Natural Diversity Database). 2010. California Department of Fish and Game's Natural Diversity Database, Version 3.1.1. RareFind 3 (computer application). Last Updated: July 6, 2010.

Cunniff, P. F. 1977. *Environmental Noise Pollution* (New York: Wiley).

EPA (Environmental Protection Agency) 2009. Final Mandatory Reporting of Greenhouse Gases Rule. Website: http://www.epa.gov/climatechange/emissions/ghgrulemaking.html. Accessed: December 10, 2009.

England, A. S., M. J. Bechard, and C. S. Houston. 1997. Swainson's hawk (*Buteo swainsoni*) in A. Poole and F. Gill (eds.), *The Birds of North America*, No. 265. The Academy of Natural Sci., Philadelphia, PA, and The American Ornithologists' Union. Washington, D.C.

Estep, J. A. 1989. Biology, movements, and habitat relationships of the Swainson's hawk in the Central Valley of California, 1986-87. Calif. Dept. Fish and Game, Nongame Bird and Mammal Sec. Rep., 52pp.

Fitch, H. S. 1941. The feeding habits of California garter snakes. Department of Fish & Game 27: 2-32.

Hansen, G. E. 1988. Review of the status of the giant garter snake (*Thamnophis couchi gigas*) and its supporting habitat during 1986-1987. Final report for California Department of Fish and Game, Contract C-2060. 31 pp.

Hansen, G.E. and J.M. Brode. 1980. Status of the giant garter snake, *Thamnophis couchi gigas* (Fitch). California Department of Fish & Game, Inland Fisheries Endangered Species Program Special Publication Report. 80-5: 1-14.

Lloyd, Jay B., Randy Baloian, and Matthew Armstrong. 2014. *Cultural Resources Survey and Eligibility Evaluation for the Patterson Irrigation District Two Drains Project, Stanislaus County, California*. Applied Earthworks, Inc., Fresno, California.

Lutz, R.S. and D.L. Plumpton. 1999. Philopatry and nest site reuse by Burrowing Owls: implications for productivity. Journal of Raptor Research 33:149-153.

Martin, D.J. 1973. Selected aspects of Burrowing Owl ecology and behavior. Condor 5: 446-456.

PG&E (Pacific Gas & Electric Company). 2009. Pacific Gas and Electric Company Carbon Footprint Calculator Assumptions. Website: http://www.pge.com/includes/docs/pdfs/about/environment/calculator/assumptions.pdf.

Rich, T. 1984. Monitoring burrowing owl populations: Implications of burrow re-use. *Wildlife Society Bulletin* 12:178-180.

Roadway Construction Emissions Model, Version 7.1.4. August 2013.Website: http://airquality.org.

USFWS (U.S. Fish and Wildlife Service). 1998. Recovery plan for the upland species of the San Joaquin Valley, California. Portland, OR.

USFWS (U.S. Fish and Wildlife Service). 1993. Endangered and threatened wildlife and plants; determination of threatened status for the giant garter snake. Federal Register 58: 54053-54066.

USFWS (U.S. Fish and Wildlife Service) 1999a. Standardized Recommendations for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance. Sacramento Fish and Wildlife Office, US Fish and Wildlife Service, June 1999.

USFWS (U.S. Fish and Wildlife Service). 1999b. Draft recovery plan for the giant garter snake (*Thamnophis gigas*). U.S. Fish and Wildlife Service, Portland, OR. 192 pp.

USFWS (U.S. Fish and Wildlife Service) 2010. Sacramento Fish and Wildlife Office. Endangered Species List. Available http://www.fws.gov/sacramento/es/spp_list.htm. Accessed: 2010.

Appendix A
California Department of Fish and Game Staff Report Regarding Mitigation for Impacts to Swainson's Hawks in the Central Valley of California

Nongame Bird and Mammal Section Report # 94.18

State of California

Memorandum

To : Div. Chiefs - IFD, BDD, NHD, WMD
Reg. Mgrs. - Regions 1, 2, 3, 4

Date : November 8, 1994

From : Department of Fish and Game

Subject : Staff Report Regarding Mitigation for Impacts to Swainson's Hawks (*Buteo swainsoni*) in the Central Valley of California

I am hereby transmitting the Staff Report Regarding Mitigation for Impacts to Swainson's Hawks in the Central Valley of California for your use in reviewing projects (California Environmental Quality Act [CEQA] and others) and in developing 2081 Management Authorizations and 2090 Biological Opinions which may affect Swainson's hawk habitat in the Central Valley. The staff report has been developed during the last 18 months by the Environmental Services Division (ESD) in cooperation with the Wildlife Management Division (WMD) and Regions 1, 2, and 4. It has been sent out for public review on several occasions and redrafted as appropriate.

Either the mitigation measures in the staff report may be used or project specific measures may be developed. Alternative project specific mitigation measures proposed by the Department Divisions/Regions or by project sponsors will also be considered. However, such mitigation measures must be submitted to ESD for review. The review process will focus on the consistency of the proposed measure with Department, Fish and Game Commission, and legislative policy and with laws regarding raptors and listed species. ESD will coordinate project specific mitigation measure review with WMD.

If you have any questions regarding the report, please contact Mr. Ron Rempel, Program Supervisor, Habitat Conservation Planning and Endangered Species Permitting, Environmental Services Division at (916) 654-9980.

COPY Original signed by
A. Petrovich, Jr.
For
Boyd Gibbons
Direction

Enclosure

cc: Mr. Ron Rempel
Department of Fish and Game
Sacramento

file; d, exfile, esd, chron
Vouchilas/seh/pdl SRPBUTEO.DS1

Staff Report regarding Mitigation
for Impacts to Swainson's Hawks (*Buteo swainsoni*)
in the Central Valley of California

INTRODUCTION

The Legislature and the Fish and Game Commission have developed the policies, standards and regulatory mandates which, if implemented, are intended to help stabilize and reverse dramatic population declines of threatened and endangered species. In order to determine how the Department of Fish and Game (Department) could judge the adequacy of mitigation measures designed to offset impacts to Swainson's hawks in the Central Valley, Staff (WMD, ESD and Regions) has prepared this report. To ensure compliance with legislative and Commission policy, mitigation requirements which are consistent with this report should be incorporated into: (1) Department comments to Lead Agencies and project sponsors pursuant to the California Environmental Quality Act (CEQA); (2) Fish and Game Code Section 2081 Management Authorizations (Management Authorizations); and (3) Fish and Game Code Section 2090 Consultations with State CEQA Lead Agencies.

The report is designed to provide the Department (including regional offices and divisions), CEQA Lead Agencies and project proponents the context in which the Environmental Services Division (ESD) will review proposed project specific mitigation measures. This report also includes "model" mitigation measures which have been judged to be consistent with policies, standards and legal mandates of the Legislature and Fish and Game Commission. Alternative mitigation measures, tailored to specific projects, may be developed if consistent with this report. Implementation of mitigation measures consistent with this report are intended to help achieve the conservation goals for the Swainson's hawk and should complement multi-species habitat conservation planning efforts currently underway.

The Department is preparing a recovery plan for the species and it is anticipated that this report will be revised to incorporate recovery plan goals. It is anticipated that the recovery plan will be completed by the end of 1995. The Swainson's hawk recovery plan will establish criteria for species recovery through preservation of existing habitat, population expansion into former habitat, recruitment of young into the population, and other specific recovery efforts.

During project review the Department should consider whether a proposed project will adversely affect suitable foraging habitat within a ten (10) mile radius of an active (used during one or more of the last 5 years) Swainson's hawk nest(s). Suitable Swainson's hawk foraging habitat will be those habitats and crops identified in Bechard (1983), Bloom (1980), and Estep (1989). The following vegetation types/agricultural crops are considered small mammal and insect foraging habitat for Swainson's hawks:

- alfalfa
- fallow fields
- beet, tomato, and other low-growing row or field crops
- dry-land and irrigated pasture

- rice land (when not flooded)
- cereal grain crops (including corn after harvest)

The ten mile radius standard is the flight distance between active (and successful) nest sites and suitable foraging habitats, as documented in telemetry studies (Estep 1989, Babcock 1993). Based on the ten mile radius, new development projects which adversely modify nesting and/or foraging habitat should mitigate the project's impacts to the species. The ten mile foraging radius recognizes a need to strike a balance between the biological needs of reproducing pairs (including eggs and nestlings) and the economic benefit of developments) consistent with Fish and Game Code Section 2053.

Since over 95% of Swainson's hawk nests occur on private land, the Department's mitigation program should include incentives that preserve agricultural lands used for the production of crops, which are compatible with Swainson's hawk foraging needs, while providing an opportunity for urban development and other changes in land use adjacent to existing urban areas.

LEGAL STATUS

Federal

The Swainson's hawk is a migratory bird species protected under the Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. 703-711). The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in Section 50 of the Code of Federal Regulations (C.F.R.) Part 10, including feathers or other parts, nests, eggs or products, except as allowed by implementing regulations (50 C.F.R. 21).

State

The Swainson's hawk has been listed as a threatened species by the California Fish and Game Commission pursuant to the California Endangered Species Act (CESA), see Title 14, California Code of Regulations, Section 670.5(b)(5)(A).

LEGISLATIVE AND COMMISSION POLICIES, LEGAL MANDATES AND STANDARDS

The FGC policy for threatened species is, in part, to: "Protect and preserve all native species ... and their habitats...." This policy also directs the Department to work with all interested persons to protect and preserve sensitive resources and their habitats. Consistent with this policy and direction, the Department is enjoined to implement measures that assure protection for the Swainson's hawk.

The California State Legislature, when enacting the provisions of CESA, made the following findings and declarations in Fish and Game Code Section 2051:

> a) "Certain species of fish, wildlife, and plants have been rendered extinct as a consequence of man's activities, untempered by adequate concern and conservation";
>
> b) "Other species of fish, wildlife, and plants are in danger of, or threatened with, extinction because their habitats are threatened with destruction, adverse modification, or severe curtailment because of overexploitation, disease, predation, or other factors (emphasis added)";and
>
> c) "These species of fish, wildlife, and plants are of ecological, educational, historical, recreational, esthetic, economic, and scientific value to the people of this state, and the conservation, protection, and enhancement of these species and their habitat is of statewide concern" (emphasis added).

The Legislature also proclaimed that it "is the policy of the state to conserve, protect, restore, and enhance any endangered or threatened species and its habitat and that it is the intent of the Legislature, consistent with conserving the species, to acquire lands for habitat for these species" (emphasis added).

Section 2053 of the Fish and Game Code states, in part, "it is the policy of the state that state agencies should not approve projects as proposed which would jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of habitat essential to the continued existence of those species, if there are reasonable and prudent alternatives available consistent with conserving the species and or its habitat which would prevent jeopardy" (emphasis added).

Section 2054 states "The Legislature further finds and declares that, in the event specific economic, social, and or other conditions make infeasible such alternatives, individual projects may be approved if appropriate mitigation and enhancement measures are provided" (emphasis added).

Loss or alteration of foraging habitat or nest site disturbance which results in:

(1) nest abandonment; (2) loss of young; (3) reduced health and vigor of eggs and/or nestlings (resulting in reduced survival rates), may ultimately result in the take (killing) of nestling or fledgling Swainson's hawks incidental to otherwise lawful activities. The taking of Swainson's hawks in this manner can be, a violation of Section 2080 of the Fish and Game Code. This interpretation of take has been judicially affirmed by the landmark appellate court decision pertaining to CESA (DFG v. ACID, 8 CA App.4, 41554). The essence of the decision emphasized that the intent and purpose of CESA applies to all activities that take or kill endangered or threatened species, even when the taking is incidental to otherwise legal activities. To avoid potential violations of Fish and Game Code Section 2080, the Department recommends and encourages project sponsors to obtain 2081 Management Authorizations for their projects.

Although this report has been prepared to assist the Department in working with the development community, the prohibition against take (Fish and Game Code Section 2080) applies to all persons, including those engaged in agricultural activities and routine maintenance of facilities. In addition, sections 3503, 3503.5, and 3800 of the Fish and Game Code prohibit the take, possession, or destruction of birds, their nests or eggs.

To avoid potential violation of Fish and Game Code Section 2080 (i.e. killing of a listed species), project-related disturbance at active Swainson's hawk nesting sites should be reduced or eliminated during critical phases of the nesting cycle (March 1 - September 15 annually). Delineation of specific activities which could cause nest abandonment (take) of Swainson's hawk during the nesting period should be done on a case-by-case basis.

CEQA requires a mandatory findings of significance if a project's impacts to threatened or endangered species are likely to occur (Sections 21001 (c), 21083, Guidelines Sections 15380, 15064, 15065). Impacts must be avoided or mitigated to less than significant levels unless the CEQA Lead Agency makes and supports findings of Overriding Consideration. The CEQA Lead Agency's Findings of Overriding Consideration does not eliminate the project sponsor's obligation to comply with Fish and Game Code Section 2080.

NATURAL HISTORY

The Swainson's hawk (Buteo swainsoni) is a large, broad winged buteo which frequents open country. They are about the same size as a red-tailed hawk (Buteo jatnaicensis), but trimmer, weighing approximately 800-1100 grams (1.75 - 2 lbs). They have about a 125 cm. (4+foot) wingspan. The basic body plumage may be highly variable and is characterized by several color morphs - light, dark, and rufous. In dark phase birds, the entire body of the bird may be sooty black. Adult birds generally have dark backs. The ventral or underneath sections may be light with a characteristic dark, wide "bib" from the lower throat down to the upper breast, light colored wing linings and pointed wing tips. The tail is gray ventrally with a subterminal dusky band, and narrow, less conspicuous barring proximally. The sexes are similar in appearance; females however, are slightly larger and heavier than males, as is the case in most sexually dimorphic raptors. There are no recognized subspecies (Palmer 1988).

The Swainson's hawk is a long distance migrator. The nesting grounds occur in northwestern Canada, the western U.S., and Mexico and most populations migrate to wintering grounds in the open pampas and agricultural areas of South America (Argentina, Uruguay, southern Brazil). The species is included among the group of birds known as "neotropical migrants". Some individuals or small groups (20-30 birds) may winter in the U.S., including California (Delta Islands). This round trip journey may exceed 14,000 miles. The birds return to the nesting grounds and establish nesting territories in early March.

Swainson's hawks are monogamous and remain so until the loss of a mate (Palmer 1988). Nest construction and courtship continues through April. The clutch (commonly 3-4 eggs) is generally laid in early April to early May, but may occur later. Incubation lasts 34-35 days, with both parents participating in the brooding of eggs and young. The young fledge (leave the nest) approximately 42-44 days after hatching and remain with their parents until they depart in the fall. Large groups (up to 100+ birds) may congregate in holding areas in the fall and may exhibit a delayed migration depending upon forage availability. The specific purpose of these congregation areas is as yet unknown, but is likely related to: increasing energy reserves for migration; the timing of migration; aggregation into larger migratory groups (including assisting the young in learning migration routes); and providing a pairing and courtship opportunity for unattached adults.

Foraging Requirements

Swainson's hawk nests in the Central Valley of California are generally found in scattered trees or along riparian systems adjacent to agricultural fields or pastures. These open fields and pastures are the primary foraging areas. Major prey items for Central Valley birds include: California voles (*Microtus californicus*), valley pocket gophers (*Thomomys bottae*), deer mice (*Peromyscus maniculatus*), California ground squirrels (*Spermophilus beecheyi*), mourning doves (*Zenaida macroura*), ring-necked pheasants (*Phasianus colchicus*), meadowlarks (*Sturnella neglecta*), other passerines, grasshoppers (*Conocephalinae sp*.), crickets (*Gryllidae sp*.), and beetles (Estep 1989). Swainson's hawks generally search for prey by soaring in open country and agricultural fields similar to northern hariers (*Circus cyaneus*) and ferruginous hawks (*Buteo regalis*). Often several hawks may be seen foraging together following tractors or other farm equipment capturing prey escaping from farming operations. During the breeding season, Swainson's hawks eat mainly vertebrates (small rodents and reptiles), whereas during migration vast numbers of insects are consumed (Palmer 1988).

Department funded research has documented the importance of suitable foraging habitats (e.g., annual grasslands, pasture lands, alfalfa and other hay crops, and combinations of hay, grain and row crops) within an energetically efficient flight distance from active Swainson's hawk nests (Estep pers. comm.). Recent telemetry studies to determine foraging requirements have shown that birds may use in excess of 15,000 acres of habitat or range up to 18.0 miles from the nest in search of prey (Estep 1989, Babcock 1993). The prey base (availability and abundance) for the species is highly variable from year to year, with major prey population (small mammals and insects) fluctuations occurring based on rainfall patterns, natural cycles and agricultural cropping and harvesting patterns. Based on these variables, significant acreages of potential foraging habitat (primarily agricultural lands) should be preserved per nesting pair (or aggregation of

nesting pairs) to avoid jeopardizing existing populations. Preserved foraging areas should be adequate to allow additional Swainson's hawk nesting pairs to successfully breed and use the foraging habitat during good prey production years.

Suitable foraging habitat is necessary to provide an adequate energy source for breeding adults, including support of nestlings and fledglings. Adults must achieve an energy balance between the needs of themselves and the demands of nestlings and fledglings, or the health and survival of both may be jeopardized. If prey resources are not sufficient, or if adults must hunt long distances from the nest site, the energetics of the foraging effort may result in reduced nestling vigor with an increased likelihood of disease and/or starvation. In more extreme cases, the breeding pair, in an effort to assure their own existence, may even abandon the nest and young (Woodbridge 1985).

Prey abundance and availability is determined by land and farming patterns including crop types, agricultural practices and harvesting regimes. Estep (1989) found that 73.4% of observed prey captures were in fields being harvested, disced, mowed, or irrigated. Preferred foraging habitats for Swainson's hawks include:

- alfalfa;
- fallow fields;
- beet, tomato, and other low-growing row or field crops;
- dry-land and irrigated pasture;
- rice land (during the non-flooded period); and
- cereal grain crops (including corn after harvest).

Unsuitable foraging habitat types include crops where prey species (even if present) are not available due to vegetation characteristics (e.g. vineyards, mature orchards, and cotton fields, dense vegetation).

Nesting Requirements

Although the Swainson's hawk's current nesting habitat is fragmented and unevenly distributed, Swainson's hawks nest throughout most of the Central Valley floor. More than 85% of the known nests in the Central Valley are within riparian systems in Sacramento, Sutter, Yolo, and San Joaquin counties. Much of the potential nesting habitat remaining in this area is in riparian forests, although isolated and roadside trees are also used. Nest sites are generally adjacent to or within easy flying distance to alfalfa or hay fields or other habitats or agricultural crops which provide an abundant and available prey source. Department research has shown that valley oaks (Quercus lobata), Fremont's cottonwood (Populus fremontii), willows (Salix spp.), sycamores (Platanus spp.), and walnuts (juglans spp.) are the preferred nest trees for Swainson's hawks (Bloom 1980, Schlorff and Bloom 1983, Estep 1989).

Fall and Winter Migration Habitats

During their annual fall and winter migration periods, Swainson's hawks may congregate in large groups (up to 100+ birds). Some of these sites may be used during delayed migration periods lasting up to three months. Such sites have been identified in Yolo, Tulare, Kern and San Joaquin counties and protection is needed for these critical foraging areas which support birds during their long migration.

Historical and Current Population Status

The Swainson's hawk was historically regarded as one of the most common and numerous raptor species in the state, so much so that they were often not given special mention in field notes. The breeding population has declined by an estimated 91% in California since the turn of the century (Bloom 1980). The historical Swainson's hawk population estimates are based on current densities and extrapolated based on the historical amount of available habitat. The historical population estimate is 4,284-17,136 pairs (Bloom 1980). In 1979, approximately 375 (± 50) breeding pairs of Swainson's hawks were estimated in California, and 280 (75%) of those pairs were estimated to be in the Central Valley (Bloom 1980). In 1988, 241 active breeding pairs were found in the Central Valley, with an additional 78 active pairs known in northeastern California. The 1989 population estimate was 430 pairs for the Central Valley and 550 pairs statewide (Estep, 1989). This difference in population estimates is probably a result of increased survey effort rather than an actual population increase.

Reasons for decline

The dramatic Swainson's hawk population decline has been attributed to loss of native nesting and foraging habitat, and more recently to the loss of suitable nesting trees and the conversion of agricultural lands. Agricultural lands have been converted to urban land uses and incompatible crops. In addition, pesticides, shooting, disturbance at the nest site, and impacts on wintering areas may have contributed to their decline. Although losses on the wintering areas in South America may occur, they are not considered significant since breeding populations outside of California are stable. The loss of nesting habitat within riparian areas has been accelerated by flood control practices and bank stabilization programs. Smith (1977) estimated that in 1850

over 770,000 acres of riparian habitat were present in the Sacramento Valley. By the mid-1980s, Warner and Hendrix (1984) estimated that there was only 120,000 acres of riparian habitat remaining in the Central Valley (Sacramento and San Joaquin Valleys combined). Based on Warner and Hendrix's estimates approximately 93% of the San Joaquin Valley and 73% of the Sacramento Valley riparian habitat has been eliminated since 1850.

MANAGEMENT STRATEGIES

Management and mitigation strategies for the Central Valley population of the Swainson's hawk should ensure that:

- suitable nesting habitat continues to be available (this can be accomplished by protecting existing nesting habitat from destruction or disturbance and by increasing the number of suitable nest trees); and

- foraging habitat is available during the period of the year when Swainson's hawks are present in the Central Valley (this should be accomplished by maintaining or creating adequate and suitable foraging habitat in areas of existing and potential nest sites and along migratory routes within the state).

A key to the ultimate success in meeting the Legislature's goal of maintaining habitat sufficient to preserve this species is the implementation of these management strategies in cooperation with project sponsors and local, state and federal agencies.

DEPARTMENT'S ROLES AND RESPONSIBILITIES IN PROJECT CONSULTATION AND ADMINISTRATION OF CEQA AND THE FISH AND GAME CODE

The Department, through its administration of the Fish and Game Code and its trust responsibilities, should continue its efforts to minimize further habitat destruction and should seek mitigation to offset unavoidable losses by (1) including the mitigation measures in this document in CEQA comment letters and/or as management conditions in Department issued Management Authorizations or (2) by developing project specific mitigation measures (consistent with the Commission's and the Legislature's mandates) and including them in CEQA comment letters and/or as management conditions in Fish and Game Code Section 2081 Management Authorizations issued by the Department and/or in Fish and Game Code Section 2090 Biological Opinions.

The Department should submit comments to CEQA Lead Agencies on all projects which adversely affect Swainson's hawks. CEQA requires a mandatory findings of significance if a project's impacts to threatened or endangered species are likely to occur (Sections 21001 fc), 21083. Guidelines 15380, 15064, 15065). Impacts must be: (1) avoided; or (2) appropriate mitigation must be provided to reduce impacts to less than significant levels; or (3) the lead agency must make and support findings of overriding consideration. If the CEQA Lead Agency makes a Finding of Overriding Consideration, it does not eliminate the project sponsor's obligation to comply with the take prohibitions of Fish and Game Code Section 2080. Activities

which result in (1) nest abandonment; (2) starvation of young; and/or (3) reduced health and vigor of eggs and nestlings may result in the take (killing) of Swainson's hawks incidental to otherwise lawful activities (urban development, recreational activities, agricultural practices, levee maintenance and similar activities. The taking of Swainson's hawk in this manner may be a violation of Section 2080 of the Fish and Game Code. To avoid potential violations of Fish and Game Code Section 2080, the Department should recommend and encourage project sponsors to obtain 2081 Management Authorizations.

In aggregate, the mitigation measures incorporated into CEQA comment letters and/or 2081 Management Authorizations for a project should be consistent with Section 2053 and 2054 of the Fish and Game Code. Section 2053 states, in part, "it is the policy of the state that state agencies should not approve projects as proposed which would jeopardize the continued existence of'any endangered or threatened species or result in the destruction or adverse modification of habitat essential to the continued existence of those species, if there are reasonable and prudent alternatives available consistent with conserving the species and or its habitat which would prevent jeopardy" - Section 2054 states: "The Legislature further finds and declares that, in the event specific economic, social, and or other conditions make infeasible such alternatives, individual projects may be approved if appropriate mitigation and enhancement measures are provided."

State lead agencies are required to consult with the Department pursuant to Fish and Game Code Section 2090 to ensure that any action authorized, funded, or carried out by that state agency will not jeopardize the continued existence of any threatened or endangered species. Comment letters to State Lead Agencies should also include a reminder that the State Lead Agency has the responsibility to consult with the Department pursuant to Fish and Game Code Section 2090 and obtain a written findings (Biological Opinion). Mitigation measures included in Biological Opinions issued to State Lead Agencies must be consistent with Fish and Game Code Sections 2051-2054 and 2091-2092.

NEST SITE AND HABITAT LOCATION INFORMATION SOURCES

The Department's Natural Diversity Data Base (NDDB) is a continually updated, computerized inventory of location information on the State's rarest plants, animals, and natural communities. Department personnel should encourage project proponents and CEQA Lead Agencies, either directly or through CEQA comment letters, to purchase NDDB products for information on the locations of Swainson's hawk nesting areas as well as other sensitive species. The Department's Nongame Bird and Mammal Program also maintains information on Swainson's hawk nesting areas and may be contacted for additional information on the species.

Project applicants and CEQA Lead Agencies may also need to conduct site specific surveys (conducted by qualified biologists at the appropriate time of the year using approved protocols) to determine the status (location of nest sites, foraging areas, etc.) of listed species as part of the CEQA and 2081 Management Authorization process. Since these studies may require multiple years to complete, the Department shall identify any needed studies at the earliest possible time in the project review process. To facilitate project review and reduce the potential for costly

project delays, the Department should make it a standard practice to advise developers or others planning projects that may impact one or more Swainson's hawk nesting or foraging areas to initiate communication with the Department as early as possible .

MANAGEMENT CONDITIONS

Staff believes the following mitigation measures (nos. 1-4) are adequate to meet the Commission's and Legislature's policy regarding listed species and are considered as preapproved for incorporation into any Management Authorizations for the Swainson's hawk issued by the Department. The incorporation of measures 1-4 into a CEQA document should reduce a project's impact to a Swainson's hawk(s) to less than significant levels. Since these measures are Staff recommendations, a project sponsor or CEQA Lead agency may choose to negotiate project specific mitigation measures which differ. In such cases, the negotiated Management Conditions must be consistent with Commission and Legislative policy and be submitted to the ESD for review and approval prior to reaching agreement with the project sponsor or CEQA Lead Agency.

Staff recommended Management Conditions are:

1. No intensive new disturbances (e.g. heavy equipment operation associated with construction, use of cranes or draglines, new rock crushing activities) or other project related activities which may cause nest abandonment or forced fledging, should be initiated within 1/4 mile (buffer zone) of an active nest between March 1 - September 15 or until August 15 if a Management Authorization or Biological Opinion is obtained for the project. The buffer zone should be increased to ½ mile in nesting areas away from urban development (i.e. in areas where disturbance [e.g. heavy equipment operation associated with construction, use of cranes or draglines, new rock crushing activities] is not a normal occurrence during the nesting season). Nest trees should not be removed unless there is no feasible way of avoiding it. If a nest tree must be removed, a Management Authorization (including conditions to off-set the loss of the nest tree) must be obtained with the tree removal period specified in the Management Authorization, generally between October 1- February 1. If construction or other project related activities which may cause nest abandonment or forced fledging are necessary within the buffer zone, monitoring of the nest site (funded by the project sponsor) by a qualified biologist (to determine if the nest is abandoned) should be required . If it is abandoned and if the nestlings are still alive, the project sponsor shall fund the recovery and hacking (controlled release of captive reared young) of the nestling(s). Routine disturbances such as agricultural activities, commuter traffic, and routine facility maintenance activities within 1/4 mile of an active nest should not be prohibited.

2. Hacking as a substitute for avoidance of impacts during the nesting period may be used in unusual circumstances after review and approval of a hacking plan by ESD and WMD. Proponents who propose using hacking will be required to fund the full costs of the effort, including any telemetry work specified by the

Department.

3. To mitigate for the loss of foraging habitat (as specified in this document), the Management Authorization holder/project sponsor shall provide Habitat Management (HM) lands to the Department based on the following ratios:

(a) Projects within I mile of an active nest tree shall provide:

- one acre of HM land (at least 10% of the HM land requirements shall be met by fee title acquisition or a conservation easement allowing for the active management of the habitat, with the remaining 90% of the HM lands protected by a conservation easement [acceptable to the Department] on agricultural lands or other suitable habitats which provide foraging habitat for Swainson's hawk) for each acre of development authorized (1:1 ratio); or

- One-half acre of HM land (all of the HM land requirements shall be met by fee title acquisition or a conservation easement [acceptable to the Department) which allows for the active management of the habitat for prey production on-the HM lands) for each acre of development authorized (0.5:1 ratio).

(b) Projects within 5 miles of an active nest tree but greater than 1 mile from the nest tree shall plovide 0.75 acres of HM land for each acre of urban development authorized (0-75:1 ratio). All HM lands protected under this requirement may be protected through fee title acquisition or conservation easement (acceptable to the Department) on agricultural lands or other suitable habitats which provide foraging habitat for Swainson's hawk.

(c) Projects within 10 miles of an active nest tree but gleater than 5 miles from an active nest tree shall provide 0.5 acres of HM land for each acre of urban development authorized (0.5:1 ratio). All HM lands- protected under this requirement may be protected through fee title acquisition or a conservation easement (acceptable to the Department) on agricultural lands or other suitable habitats which provide foraging habitat for Swainson's hawk.

4. Management Authorization holders/project sponsors shall provide for the long-term management of the HM lands by funding a management endowment (the interest on which shall be used for managing the HM lands) at the rate of $400 per HM land acre (adjusted annually for inflation and varying interest rates).

Some project sponsors may desire to provide funds to the Department for HM land protection. This option is acceptable to the extent the proposal is consistent with Department policy regarding acceptance of funds for land acquisition. All HM lands should be located in areas which are consistent with a multi-species habitat conservation focus. Management

Authorization holders/project sponsors who are willing to establish a significant mitigation bank (> 900 acres) should be given special consideration such as 1.1 acres of mitigation credit for each acre preserved.

PROJECT SPECIFIC MITIGATION MEASURES

Although this report includes recommended Management Measures, the Department should encourage project proponents to propose alternative mitigation strategies that provide equal or greater protection of the species and which also expedite project environmental review or issuance of a CESA Management Authorization. The Department and sponsor may choose to conduct cooperative, multi-year field studies to assess the site's habitat value and determine its use by nesting and foraging Swainson's hawk. Study plans should include clearly defined criteria for judging the project's impacts on Swainson's hawks and the methodologies (days of monitoring, foraging effort/efficiency, etc.) that will be used.

The study plans should be submitted to the Wildlife Management Division and ESD for review. Mitigation measures developed as a result of the study.must be reviewed by ESD (for consistency with the policies of the Legislature and Fish and Game Commission) and approved by the Director.

EXCEPTIONS

Cities, counties and project sponsors should be encouraged to focus development on open lands within already urbanized areas. Since small disjunct parcels of habitat seldom provide foraging habitat needed to sustain the reproductive effort of a Swainson's hawk pair, Staff does not recommend requiring mitigation pursuant to CEQA nor a Management Authorization by the Department for infill (within an already urbanized area) projects in areas which have less than 5 acres of foraging habitat and are surrounded by existing urban development, unless the project area is within 1/4 mile of an active nest tree.

REVIEW

Staff should revise this report at least annually to determine if the proposed mitigation strategies should be retained, modified or if additional mitigation strategies should be included as a result of new scientific information.

LITERATURE CITED

Babcock, K.W. 1993. Home range and habitat analysis of Swainson's hawks in West Sacramento. Michael Brandman Associates report prepared for the Southport Property Owner's Group, City of West Sacramento, CA. 21pp.

Bechard, M.J. 1983. Food supply and the occurrence of brood reduction in Swainson's Hawk. Wilson Bull. 95(2):233-242.

Bloom, P.H. 1980. The status of the Swainson's Hawk in California, 1979. Federal Aid in Wildlife Restoration, Project W-54-R-12, Nongame Wildl. Invest. job Final Report 11-8-0. 24p + appendix.

Estep, J.A. 1989. Biology, movements, and habitat relationships of the Swainson's Hawk in the Central Valley of California, 1986-87. Calif. Dept. Fish and Game, Nongame Bird and Mammal Section Report, 53pp.

Palmer, R.S. 1988a. Handbook of North American birds. Vol. 4: diurnal raptors (part 1). Yale Univ. Press, New Haven, CT.

Palmer, R.S. 1988b. Handbook of North American birds. Vol. 5: diurnal raptors (part 2). Yale Univ. Press, New Haven, CT.

Schlorff, R.W. and P.H. Bloom. 1983. Importance of riparian systems to nesting Swainson's Hawks in the Central Valley of California. pp 612-618. In: R.E Warner and K.M. Hendrix, (Eds.). 1984. California Riparian Systems. University of California Press, Berkeley.

Smith, F. 1977. Short review of the status of riparian forests in California. In: Stet, A. (Ed.). Riparian forests in California: Their ecology and conservation. Inst. of Ecology Pubi. 15. Univ. of Calif., Davis.

Warner, R.E. and K. M. Hendrix, Eds. 1984. California riparian systems; ecology, conservation, and productive management. University of California Press, Berkeley.

Woodbridge, B. 1985. Biology and management of Swainson's Hawk in Butte Valley, California. U.S. Forest Service Report, 19pp.

Appendix B
U.S. Fish and Wildlife Service Conservation Guidelines for Valley Elderberry Longhorn Beetle

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825

Conservation Guidelines for the
Valley Elderberry Longhorn Beetle
9 July 1999

The following guidelines have been issued by the U.S. Fish and Wildlife Service (Service) to assist Federal agencies and non-federal project applicants needing incidental take authorization through a section 7 consultation or a section 10(a)(1)(B) permit in developing measures to avoid and minimize adverse effects on the valley elderberry longhorn beetle. The Service will revise these guidelines as needed in the future. The most recently issued version of these guidelines should be used in developing all projects and habitat restoration plans. The survey and monitoring procedures described below are designed to avoid any adverse effects to the valley elderberry longhorn beetle. Thus a recovery permit is not needed to survey for the beetle or its habitat or to monitor conservation areas. If you are interested in a recovery permit for research purposes please call the Service's Regional Office at (503) 231-2063.

Background Information

The valley elderberry longhorn beetle (Desmocerus californicus dimorphus), was listed as a threatened species on August 8, 1980 (Federal Register 45: 52803-52807). This animal is fully protected under the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.). The valley elderberry longhorn beetle (beetle) is completely dependent on its host plant, elderberry (Sambucus species), which is a common component of the remaining riparian forests and adjacent upland habitats of California's Central Valley. Use of the elderberry by the beetle, a wood borer, is rarely apparent. Frequently, the only exterior evidence of the elderberry's use by the beetle is an exit hole created by the larva just prior to the pupal stage. The life cycle takes one or two years to complete. The animal spends most of its life in the larval stage, living within the stems of an elderberry plant. Adult emergence is from late March through June, about the same time the elderberry produces flowers. The adult stage is short-lived. Further information on the life history, ecology, behavior, and distribution of the beetle can be found in a report by Barr (1991) and the recovery plan for the beetle (USFWS 1984).

Surveys

Proposed project sites within the range of the valley elderberry longhorn beetle should be surveyed for the presence of the beetle and its elderberry host plant by a qualified biologist. The beetle's range extends throughout California's Central Valley and associated foothills from about the 3,000-foot elevation contour on the east and the watershed of the Central Valley on the west (Figure 1). All or portions of 31 counties are included: Alameda, Amador, Butte, Calaveras, Colusa, Contra Costa, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Madera, Mariposa, Merced, Napa, Nevada, Placer, Sacramento, San Benito, San Joaquin, San Luis Obispo, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba.

If elderberry plants with one or more stems measuring 1.0 inch or greater in diameter at ground level occur on or adjacent to the proposed project site, or are otherwise located where they may be directly or indirectly affected by the proposed action, minimization measures which include planting replacement habitat (conservation planting) are required (Table 1).

All elderberry shrubs with one or more stems measuring 1.0 inch or greater in diameter at ground level that occur on or adjacent to a proposed project site must be thoroughly searched for beetle exit holes (external evidence of beetle presence). In addition, all elderberry stems one inch or greater in diameter at ground level must be tallied by diameter size class (Table 1). As outlined in Table 1, the numbers of elderberry seedlings/cuttings and associated riparian native trees/shrubs to be planted as replacement habitat are determined by stem size class of affected elderberry shrubs, presence or absence of exit holes, and whether a proposed project lies in a riparian or non-riparian area.

Elderberry plants with no stems measuring 1.0 inch or greater in diameter at ground level are unlikely to be habitat for the beetle because of their small size and/or immaturity. Therefore, no minimization measures are required for removal of elderberry plants with no stems measuring 1.0 inch or greater in diameter at ground level with no exit holes. Surveys are valid for a period of two years.

Avoid and Protect Habitat Whenever Possible

Project sites that do not contain beetle habitat are preferred. If suitable habitat for the beetle occurs on the project site, or within close proximity where beetles will be affected by the project, these areas must be designated as avoidance areas and must be protected from disturbance during the construction and operation of the project. When possible, projects should be designed such that avoidance areas are connected with adjacent habitat to prevent fragmentation and isolation of beetle populations. Any beetle habitat that cannot be avoided as described below should be considered impacted and appropriate minimization measures should be proposed as described below.

Avoidance: Establishment and Maintenance of a Buffer Zone

Complete avoidance (i.e., no adverse effects) may be assumed when a 100-foot (or wider) buffer is established and maintained around elderberry plants containing stems measuring 1.0 inch or greater in diameter at ground level. Firebreaks may not be included in the buffer zone. In buffer areas construction-related disturbance should be minimized, and any damaged area should be promptly restored following construction. The Service must be consulted before any disturbances within the buffer area are considered. In addition, the Service must be provided with a map identifying the avoidance area and written details describing avoidance measures.

Protective Measures

1. Fence and flag all areas to be avoided during construction activities. In areas where encroachment on the 100-foot buffer has been approved by the Service, provide a minimum setback of at least 20 feet from the dripline of each elderberry plant.

2. Brief contractors on the need to avoid damaging the elderberry plants and the possible penalties for not complying with these requirements.

3. Erect signs every 50 feet along the edge of the avoidance area with the following information: "This area is habitat of the valley elderberry longhorn beetle, a threatened species, and must not be disturbed. This species is protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment." The signs should be clearly readable from a distance of 20 feet, and must be maintained for the duration of construction.

4. Instruct work crews about the status of the beetle and the need to protect its elderberry host plant.

Restoration and Maintenance

1. Restore any damage done to the buffer area (area within 100 feet of elderberry plants) during construction. Provide erosion control and re-vegetate with appropriate native plants.

2. Buffer areas must continue to be protected after construction from adverse effects of the project. Measures such as fencing, signs, weeding, and trash removal are usually appropriate.

3. No insecticides, herbicides, fertilizers, or other chemicals that might harm the beetle or its host plant should be used in the buffer areas, or within 100 feet of any elderberry plant with one or more stems measuring 1.0 inch or greater in diameter at ground level.

4. The applicant must provide a written description of how the buffer areas are to be restored, protected, and maintained after construction is completed.

5. Mowing of grasses/ground cover may occur from July through April to reduce fire hazard. No mowing should occur within five (5) feet of elderberry plant stems. Mowing must be done in a manner that avoids damaging plants (e.g., stripping away bark through careless use of mowing/trimming equipment).

Transplant Elderberry Plants That Cannot Be Avoided

Elderberry plants must be transplanted if they can not be avoided by the proposed project. All elderberry plants with one or more stems measuring 1.0 inch or greater in diameter at ground level must be transplanted to a conservation area (see below). At the Service's discretion, a plant that is unlikely to survive transplantation because of poor condition or location, or a plant that would be extremely difficult to move because of access problems, may be exempted from transplantation. In cases where transplantation is not possible the minimization ratios in Table 1 may be increased to offset the additional habitat loss.

Trimming of elderberry plants (e.g., pruning along roadways, bike paths, or trails) with one or more stems 1.0 inch or greater in diameter at ground level, may result in take of beetles. Therefore, trimming is subject to appropriate minimization measures as outlined in Table 1.

1. Monitor. A qualified biologist (monitor) must be on-site for the duration of the transplanting of the elderberry plants to insure that no unauthorized take of the valley elderberry longhorn beetle occurs. If unauthorized take occurs, the monitor must have the authority to stop work until corrective measures have been completed. The monitor must immediately report any unauthorized take of the beetle or its habitat to the Service and to the California Department of Fish and Game.

2. Timing. Transplant elderberry plants when the plants are dormant, approximately November through the first two weeks in February, after they have lost their leaves. Transplanting during the non-growing season will reduce shock to the plant and increase transplantation success.

3. Transplanting Procedure.

    a. Cut the plant back 3 to 6 feet from the ground or to 50 percent of its height (whichever is taller) by removing branches and stems above this height. The trunk and all stems measuring 1.0 inch or greater in diameter at ground level should be replanted. Any leaves remaining on the plant should be removed.

b. Excavate a hole of adequate size to receive the transplant.

c. Excavate the plant using a Vemeer spade, backhoe, front end loader, or other suitable equipment, taking as much of the root ball as possible, and replant immediately at the conservation area. Move the plant only by the root ball. If the plant is to be moved and transplanted off site, secure the root ball with wire and wrap it with burlap. Dampen the burlap with water, as necessary, to keep the root ball wet. Do not let the roots dry out. Care should be taken to ensure that the soil is not dislodged from around the roots of the transplant. If the site receiving the transplant does not have adequate soil moisture, pre-wet the soil a day or two before transplantation.

d. The planting area must be at least 1,800 square feet for each elderberry transplant. The root ball should be planted so that its top is level with the existing ground. Compact the soil sufficiently so that settlement does not occur. As many as five (5) additional elderberry plantings (cuttings or seedlings) and up to five (5) associated native species plantings (see below) may also be planted within the 1,800 square foot area with the transplant. The transplant and each new planting should have its own watering basin measuring at least three (3) feet in diameter. Watering basins should have a continuous berm measuring approximately eight (8) inches wide at the base and six (6) inches high.

e. Saturate the soil with water. Do not use fertilizers or other supplements or paint the tips of stems with pruning substances, as the effects of these compounds on the beetle are unknown.

f. Monitor to ascertain if additional watering is necessary. If the soil is sandy and well-drained, plants may need to be watered weekly or twice monthly. If the soil is clayey and poorly-drained, it may not be necessary to water after the initial saturation. However, most transplants require watering through the first summer. A drip watering system and timer is ideal. However, in situations where this is not possible, a water truck or other apparatus may be used.

Plant Additional Seedlings or Cuttings

Each elderberry stem measuring 1.0 inch or greater in diameter at ground level that is adversely affected (i.e., transplanted or destroyed) must be replaced, in the conservation area, with elderberry seedlings or cuttings at a ratio ranging from 1:1 to 8:1 (new plantings to affected stems). Minimization ratios are listed and explained in Table 1. Stock of either seedlings or cuttings should be obtained from local sources. Cuttings may be obtained from the plants to be transplanted if the project site is in the vicinity of the conservation area. If the Service determines that the elderberry plants on the proposed project site are unsuitable candidates for

transplanting, the Service may allow the applicant to plant seedlings or cuttings at higher than the stated ratios in Table 1 for each elderberry plant that cannot be transplanted.

Plant Associated Native Species

Studies have found that the beetle is more abundant in dense native plant communities with a mature overstory and a mixed understory. Therefore, a mix of native plants associated with the elderberry plants at the project site or similar sites will be planted at ratios ranging from 1:1 to 2:1 [native tree/plant species to each elderberry seedling or cutting (see Table 1)]. These native plantings must be monitored with the same survival criteria used for the elderberry seedlings (see below). Stock of saplings, cuttings, and seedlings should be obtained from local sources. If the parent stock is obtained from a distance greater than one mile from the conservation area, approval by the Service of the native plant donor sites must be obtained prior to initiation of the revegetation work. Planting or seeding the conservation area with native herbaceous species is encouraged. Establishing native grasses and forbs may discourage unwanted non-native species from becoming established or persisting at the conservation area. Only stock from local sources should be used.

Examples

Example 1
The project will adversely affect beetle habitat on a vacant lot on the land side of a river levee. This levee now separates beetle habitat on the vacant lot from extant Great Valley Mixed Riparian Forest (Holland 1986) adjacent to the river. However, it is clear that the beetle habitat located on the vacant lot was part of a more extensive mixed riparian forest ecosystem extending farther from the river's edge prior to agricultural development and levee construction. Therefore, the beetle habitat on site is considered riparian. A total of two elderberry plants with at least one stem measuring 1.0 inch or greater in diameter at ground level will be affected by the proposed action. The two plants have a total of 15 stems measuring over 1.0 inch. No exit holes were found on either plant. Ten of the stems are between 1.0 and 3.0 inches in diameter and five of the stems are greater than 5.0 inches in diameter. The conservation area is suited for riparian forest habitat. Associated natives adjacent to the conservation area are box elder (Acer negundo californica), walnut (Juglans californica var. hindsii), sycamore (Platanus racemosa), cottonwood (Populus fremontii), willow (Salix gooddingii and S. laevigata), white alder (Alnus rhombifolia), ash (Fraxinus latifolia), button willow (Cephalanthus occidentalis), and wild grape (Vitis californica).

Minimization (based on ratios in Table 1):

• Transplant the two elderberry plants that will be affected to the conservation area.

• Plant 40 elderberry rooted cuttings (10 affected stems compensated at 2:1 ratio and 5 affected stems compensated at 4:1 ratio, cuttings planted:stems affected)

• Plant 40 associated native species (ratio of associated natives to elderberry plantings is 1:1 in areas with no exit holes):

5 saplings each of box elder, sycamore, and cottonwood
5 willow seedlings
5 white alder seedlings
5 saplings each of walnut and ash
3 California button willow
2 wild grape vines
Total: 40 associated native species

• Total area required is a minimum of 1,800 sq. ft. for one to five elderberry seedlings and up to 5 associated natives. Since, a total of 80 plants must be planted (40 elderberries and 40 associated natives), a total of 0.33 acre (14,400 square feet) will be required for conservation plantings. The conservation area will be seeded and planted with native grasses and forbs, and closely monitored and maintained throughout the monitoring period.

Example 2
The project will adversely affect beetle habitat in Blue Oak Woodland (Holland 1986). One elderberry plant with at least one stem measuring 1.0 inch or greater in diameter at ground level will be affected by the proposed action. The plant has a total of 10 stems measuring over 1.0 inch. Exit holes were found on the plant. Five of the stems are between 1.0 and 3.0 inches in diameter and five of the stems are between 3.0 and 5.0 inches in diameter. The conservation area is suited for elderberry savanna (non-riparian habitat). Associated natives adjacent to the conservation area are willow (Salix species), blue oak (Quercus douglasii), interior live oak (Q. wislizenii), sycamore, poison oak (Toxicodendron diversilobum), and wild grape.

Minimization (based on ratios in Table 1):

• Transplant the one elderberry plant that will be affected to the conservation area.

• Plant 30 elderberry seedlings (5 affected stems compensated at 2:1 ratio and 5 affected stems compensated at 4:1 ratio, cuttings planted:stems affected)

• Plant 60 associated native species (ratio of associated natives to elderberry plantings is 2:1 in areas with exit holes):

20 saplings of blue oak, 20 saplings of sycamore, and 20 saplings of willow, and seed and plant with a mixture of native grasses and forbs

• Total area required is a minimum of 1,800 sq. ft. for one to five elderberry seedlings and up to 5 associated natives. Since, a total of 90 plants must be planted (30 elderberries and 60 associated natives), a total of 0.37 acre (16,200 square feet) will be required for conservation plantings. The conservation area will be seeded and planted with native grasses and forbs, and closely monitored and maintained throughout the monitoring period.

Conservation Area—Provide Habitat for the Beetle in Perpetuity

The conservation area is distinct from the avoidance area (though the two may adjoin), and serves to receive and protect the transplanted elderberry plants and the elderberry and other native plantings. The Service may accept proposals for off-site conservation areas where appropriate.

1. Size. The conservation area must provide at least 1,800 square feet for each transplanted elderberry plant. As many as 10 conservation plantings (i.e., elderberry cuttings or seedlings and/or associated native plants) may be planted within the 1800 square foot area with each transplanted elderberry. An additional 1,800 square feet shall be provided for every additional 10 conservation plants. Each planting should have its own watering basin measuring approximately three feet in diameter. Watering basins should be constructed with a continuous berm measuring approximately eight inches wide at the base and six inches high.

   The planting density specified above is primarily for riparian forest habitats or other habitats with naturally dense cover. If the conservation area is an open habitat (i.e., elderberry savanna, oak woodland) more area may be needed for the required plantings. Contact the Service for assistance if the above planting recommendations are not appropriate for the proposed conservation area.

   No area to be maintained as a firebreak may be counted as conservation area. Like the avoidance area, the conservation area should connect with adjacent habitat wherever possible, to prevent isolation of beetle populations.

   Depending on adjacent land use, a buffer area may also be needed between the conservation area and the adjacent lands. For example, herbicides and pesticides are

often used on orchards or vineyards. These chemicals may drift or runoff onto the conservation area if an adequate buffer area is not provided.

2. Long-Term Protection. The conservation area must be protected in perpetuity as habitat for the valley elderberry longhorn beetle. A conservation easement or deed restrictions to protect the conservation area must be arranged. Conservation areas may be transferred to a resource agency or appropriate private organization for long-term management. The Service must be provided with a map and written details identifying the conservation area; and the applicant must receive approval from the Service that the conservation area is acceptable prior to initiating the conservation program. A true, recorded copy of the deed transfer, conservation easement, or deed restrictions protecting the conservation area in perpetuity must be provided to the Service before project implementation.

   Adequate funds must be provided to ensure that the conservation area is managed in perpetuity. The applicant must dedicate an endowment fund for this purpose, and designate the party or entity that will be responsible for long-term management of the conservation area. The Service must be provided with written documentation that funding and management of the conservation area (items 3-8 above) will be provided in perpetuity.

3. Weed Control. Weeds and other plants that are not native to the conservation area must be removed at least once a year, or at the discretion of the Service and the California Department of Fish and Game. Mechanical means should be used; herbicides are prohibited unless approved by the Service.

4. Pesticide and Toxicant Control. Measures must be taken to insure that no pesticides, herbicides, fertilizers, or other chemical agents enter the conservation area. No spraying of these agents must be done within one 100 feet of the area, or if they have the potential to drift, flow, or be washed into the area in the opinion of biologists or law enforcement personnel from the Service or the California Department of Fish and Game.

5. Litter Control. No dumping of trash or other material may occur within the conservation area. Any trash or other foreign material found deposited within the conservation area must be removed within 10 working days of discovery.

6. Fencing. Permanent fencing must be placed completely around the conservation area to prevent unauthorized entry by off-road vehicles, equestrians, and other parties that might damage or destroy the habitat of the beetle, unless approved by the Service. The applicant must receive written approval from the Service that the fencing is acceptable prior to initiation of the conservation program. The fence must be maintained in perpetuity, and must be repaired/replaced within 10 working days if it is found to be damaged. Some conservation areas may be made available to the public for appropriate recreational and educational opportunities with written approval from the Service. In

these cases appropriate fencing and signs informing the public of the beetle's threatened status and its natural history and ecology should be used and maintained in perpetuity.

7. Signs. A minimum of two prominent signs must be placed and maintained in perpetuity at the conservation area, unless otherwise approved by the Service. The signs should note that the site is habitat of the federally threatened valley elderberry longhorn beetle and, if appropriate, include information on the beetle's natural history and ecology. The signs must be approved by the Service. The signs must be repaired or replaced within 10 working days if they are found to be damaged or destroyed.

Monitoring

The population of valley elderberry longhorn beetles, the general condition of the conservation area, and the condition of the elderberry and associated native plantings in the conservation area must be monitored over a period of either ten (10) consecutive years or for seven (7) years over a 15-year period. The applicant may elect either 10 years of monitoring, with surveys and reports every year; or 15 years of monitoring, with surveys and reports on years 1, 2, 3, 5, 7, 10, and 15. The conservation plan provided by the applicant must state which monitoring schedule will be followed. No change in monitoring schedule will be accepted after the project is initiated. If conservation planting is done in stages (i.e., not all planting is implemented in the same time period), each stage of conservation planting will have a different start date for the required monitoring time.

Surveys. In any survey year, a minimum of two site visits between February 14 and June 30 of each year must be made by a qualified biologist. Surveys must include:

1. A population census of the adult beetles, including the number of beetles observed, their condition, behavior, and their precise locations. Visual counts must be used; mark-recapture or other methods involving handling or harassment must not be used.

2. A census of beetle exit holes in elderberry stems, noting their precise locations and estimated ages.

3. An evaluation of the elderberry plants and associated native plants on the site, and on the conservation area, if disjunct, including the number of plants, their size and condition.

4. An evaluation of the adequacy of the fencing, signs, and weed control efforts in the avoidance and conservation areas.

5. A general assessment of the habitat, including any real or potential threats to the beetle and its host plants, such as erosion, fire, excessive grazing, off-road vehicle use, vandalism, excessive weed growth, etc.

The materials and methods to be used in the monitoring studies must be reviewed and approved by the Service. All appropriate Federal permits must be obtained prior to initiating the field studies.

Reports. A written report, presenting and analyzing the data from the project monitoring, must be prepared by a qualified biologist in each of the years in which a monitoring survey is required. Copies of the report must be submitted by December 31 of the same year to the Service (Chief of Endangered Species, Sacramento Fish and Wildlife Office), and the Department of Fish and Game (Supervisor, Environmental Services, Department of Fish and Game, 1416 Ninth Street, Sacramento, California 95814; and Staff Zoologist, California Natural Diversity Data Base, Department of Fish and Game, 1220 S Street, Sacramento, California 95814). The report must explicitly address the status and progress of the transplanted and planted elderberry and associated native plants and trees, as well as any failings of the conservation plan and the steps taken to correct them. Any observations of beetles or fresh exit holes must be noted. Copies of original field notes, raw data, and photographs of the conservation area must be included with the report. A vicinity map of the site and maps showing where the individual adult beetles and exit holes were observed must be included. For the elderberry and associated native plants, the survival rate, condition, and size of the plants must be analyzed. Real and likely future threats must be addressed along with suggested remedies and preventative measures (e.g. limiting public access, more frequent removal of invasive non-native vegetation, etc.).

A copy of each monitoring report, along with the original field notes, photographs, correspondence, and all other pertinent material, should be deposited at the California Academy of Sciences (Librarian, California Academy of Sciences, Golden Gate Park, San Francisco, CA 94118) by December 31 of the year that monitoring is done and the report is prepared. The Service's Sacramento Fish and Wildlife Office should be provided with a copy of the receipt from the Academy library acknowledging receipt of the material, or the library catalog number assigned to it.

Access. Biologists and law enforcement personnel from the California Department of Fish and Game and the Service must be given complete access to the project site to monitor transplanting activities. Personnel from both these agencies must be given complete access to the project and the conservation area to monitor the beetle and its habitat in perpetuity.

Success Criteria

A minimum survival rate of at least 60 percent of the elderberry plants and 60 percent of the associated native plants must be maintained throughout the monitoring period. Within one year of discovery that survival has dropped below 60 percent, the applicant must replace failed plantings to bring survival above this level. The Service will make any determination as to the

applicant's replacement responsibilities arising from circumstances beyond its control, such as plants damaged or killed as a result of severe flooding or vandalism.

Service Contact

These guidelines were prepared by the Endangered Species Division of the Service's Sacramento Fish and Wildlife Office. If you have questions regarding these guidelines or to request a copy of the most recent guidelines, telephone (916) 414-6600, or write to:

U.S. Fish and Wildlife Service
Ecological Services
2800 Cottage Way, W-2605
Sacramento, CA 95825

Figure 1: Range of the Valley Elderberry Longhorn Beetle

Literature Cited

Barr, C. B. 1991. The distribution, habitat, and status of the valley elderberry longhorn beetle Desmocerus californicus dimorphus. U.S. Fish and Wildlife Service; Sacramento, California.

Holland, R.F. 1986. Preliminary descriptions of the terrestrial natural communities of California. Unpublished Report. State of California, The Resources Agency, Department of Fish and Game, Natural Heritage Division, Sacramento, California.

USFWS. 1980. Listing the valley elderberry longhorn beetle as a threatened species with critical habitat. Federal Register 45:52803-52807.

USFWS. 1984. Recovery plan for the valley elderberry longhorn beetle. U.S. Fish and Wildlife Service, Endangered Species Program; Portland, Oregon.

Table 1: Minimization ratios based on location (riparian vs. non-riparian), stem diameter of affected elderberry plants at ground level, and presence or absence of exit holes.

Location	Stems (maximum diameter at ground level)	Exit Holes on Shrub Y/N (quantify)[1]	Elderberry Seedling Ratio[2]	Associated Native Plant Ratio[3]
non-riparian	stems > = 1" & = < 3"	No:	1:1	1:1
		Yes:	2:1	2:1
non-riparian	stems > 3" & < 5"	No:	2:1	1:1
		Yes:	4:1	2:1
non-riparian	stems >= 5"	No:	3:1	1:1
		Yes:	6:1	2:1
riparian	stems > = 1" & = < 3"	No:	2:1	1:1
		Yes:	4:1	2:1
riparian	stems > 3" & < 5"	No:	3:1	1:1
		Yes:	6:1	2:1
riparian	stems > = 5"	No:	4:1	1:1
		Yes:	8:1	2:1

[1] All stems measuring one inch or greater in diameter at ground level on a single shrub are considered occupied when exit holes are present anywhere on the shrub.

[2] Ratios in the *Elderberry Seedling Ratio* column correspond to the number of cuttings or seedlings to be planted per elderberry stem (one inch or greater in diameter at ground level) affected by a project.

[3] Ratios in the *Associated Native Plant Ratio* column correspond to the number of associated native species to be planted per elderberry (seedling or cutting) planted.

Appendix C
Cultural Resource Compliance Memos

CULTURAL RESOURCE COMPLIANCE
Mid-Pacific Region
Division of Environmental Affairs
Cultural Resources Branch

MP-153 Tracking Number: 13-MPRO-188

Project Name: Patterson Irrigation District (PID) for the Marshall Road and Spanish Drain Return System Project

NEPA Document: Patterson Irrigation District Two-Drains Project (EA/IS 10-21, FONSI 14-20-MP)

MP 153 Cultural Resources Reviewer: Amy J. Barnes

Date: August 27, 2014

This proposed undertaking by Reclamation is to provide a WaterSMART Water Use Efficiency Grant to PID to construct water efficiency improvements to the Marshall Road Drain and Spanish Land Grant Drain pipelines. This is the type of action that has the potential to cause effects to historic properties pursuant to 36 CFR §800.3 of the Section 106 implementing regulations. As a result of this determination, Reclamation implemented the steps in the Section 106 process as outlined at §800.3 to §800.6.

PID proposes to capture surface drain water from the Marshall Road Drain and Spanish Land Grant Drain pipelines and recirculate that water within the PID conveyance system by installing three new pump stations and four new pipelines with a collective total length of approximately 3.7 miles (Figure 2, enclosed). The area of potential effects (APE) includes an approximately 40-acre area centered around approximately 3.7 linear miles of existing laterals and proposed pipelines in which all project activities will occur. The APE is located in Sections 32-33, T. 5 S., R. 8 E., and Sections 2-4, T. 6 S., R. 8 E., Mount Diablo Baseline and Meridian, as depicted on the Crows Landing 7.5' U.S. Geological Survey topographic quadrangle map.

The historic property identification efforts included a cultural resources survey report prepared by Applied EarthWorks, on behalf of PID, for the proposed project. The Patterson Lift irrigation system was the only cultural resource identified within the APE. A small portion of this system intersects the APE, specifically segments identified by PID as Laterals 2-South (originally Lateral G), 3-South (originally Lateral H), and 4-South (originally Lateral J). Based on the information provided in the cultural resources report, Reclamation determined that the proposed undertaking will result in no adverse effect to historic properties. Utilizing these identification efforts, Reclamation entered into consultation with the California State Historic Preservation Officer (SHPO) on July 21, 2014, seeking their concurrence on a finding of "no adverse effect to historic properties pursuant to 36 CFR § 800.5(b)." SHPO concurred with Reclamations' findings and determination on August 22, 2014 (consultation attached).

I have reviewed EA/IS 10-21, dated May 2014, and concur that this action would not have significant impacts on properties listed, or eligible for listing, on the National Register of Historic Places. Please keep in mind that there is the potential for inadvertent discoveries. If human remains or previously unidentified cultural resources are discovered during the implementation of this action, Reclamation has additional responsibilities pursuant to the Native American Graves Protection and Repatriation Act and/or Section 106 responsibilities pursuant to §800.13. If these resources are identified, please stop work immediately in the area of the discovery and contact Reclamation Regional Archaeologist, Laureen Perry, on how to proceed.

This memorandum is intended to convey the completion of the NHPA Section 106 process for this undertaking. Please retain a copy in the administrative record for this action. Should changes be made to this project, additional NHPA Section 106 review, possibly including consultation with the State Historic Preservation Officer, may be necessary. Thank you for providing the opportunity to comment.

ENV-3.00 fmg

STATE OF CALIFORNIA – THE RESOURCES AGENCY
EDMUND G. BROWN, JR., *Governor*

OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION
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August 22, 2014 Reply in Reference To: BUR_2014_0723_002

Anastasia T. Leigh
Regional Environmental Officer
Bureau of Reclamation, Mid-Pacific Regional Office
2800 Cottage Way
Sacramento, CA 95825-1898

RE: Marshall Road and Spanish Drain Return System Project, Stanislaus County, California (13-MPRO-188)

Dear Ms. Leigh:

Thank you for seeking my consultation regarding the above noted undertaking. Pursuant to 36 CFR Part 800 (as amended 8-05-04) regulations implementing Section 106 of the National Historic Preservation Act (NHPA), the Bureau of Reclamation (Reclamation) is seeking my review and concurrence on a *Finding of No Adverse Effect* to historic properties.

Reclamation proposes to award a WaterSMART Water Use Efficiency Grant to the Patterson Irrigation District (PID) to construct water efficiency improvements to the Marshall Road Drain and Spanish Land Grant Drain pipelines. This will involve installing three new pump stations and four new pipelines to capture surface drain water from the Drains and recirculate that water through the PID conveyance system as follows:

1. Station One: Install a new pump and a 4,000 foot long pipeline to the existing PID Marshall Reservoir.
2. Station Two: Install a new pump and a 10,200 foot long pipeline from the PID Marshall Reservoir to Lateral 3-South.
3. Station Three: Install a new pump and a 2,600 foot long pipeline from Lateral 3-South to Lateral 4-South.
4. Station Four: Install a 2,900 foot long pipeline with a SCADA-controlled gate at the head-works to convey water to Lateral 3-South to Lateral 2-South.

The Area of Potential Effects (APE) is an eighty foot wide corridor; centered on each Lateral with a 120 foot square area centered on each pump location. The vertical APE will be a maximum of ten feet deep in the sump structure locations and six feet for the pipeline.

In addition to your letter received July 23, 2014, you have submitted the *Cultural Resources Survey and Evaluation for the Patterson Irrigation District Proposed Two Drains Project, Stanislaus County, California* (Applied EarthWorks, Inc.; May 2014) as evidence of your efforts to identify and evaluate historic properties in the project APE.

Archival research included a records search from the Central California Information Center on October 15, 2013. No previously recorded cultural resources were identified within the APE.

BUR_2014_0723_002

Native American consultation included contact with the Native American Heritage Commission (October 15, 2013) and Native American tribes and individuals likely to have knowledge of sites of religious or cultural significance to them in the project area (December 12, 2013). No such properties were identified through consultation efforts.

A pedestrian surface survey was conducted on October 22 and 23, 2013 utilizing fifteen meter wide transects along an eighty foot wide corridor centered on each Lateral and a 120-foot square area at each proposed pump location. In addition, a field reconnaissance was conducted by a qualified historian on February 11, 2014. One cultural resource, the Patterson Lift Irrigation System built in 1910, was identified within the project APE.

Reclamation did not formally evaluate the Patterson Lift System; however, based on the archival research, Reclamation is assuming the Patterson Lift System eligible to the National Register of Historic Places (NRHP) under Criterion A for purposes of this project only. Laterals 2-South, 3-South and 4-South are also assumed eligible as contributing elements to the larger Patterson Lift System under Criterion A.

Reclamation has determined the project will not affect the NRHP eligibility of the Patterson Lift System nor Lateral 2-South, 3-South and 4-South. Therefore, pursuant to 36 CFR §800.5(b) Reclamation has determined a *Finding of No Adverse Effect* to historic properties by the proposed project.

Based on your identification efforts, I concur with the *Finding of No Adverse Effect* for the project. Identification efforts are sufficient and I also have no objections to the delineation of the APE, as depicted in the supporting documentation.

Based on the documentation provided and subsequent contact with Reclamation, it was confirmed that identification efforts were sufficient. However, for future reference, in addition to the list of individuals contacted as Native American (NA) consulting parties please provide a sample of the letter mailed to them. Please document and include attempts at follow-up to the initial NA contact letters via phone or email, etc. Document their concerns for the project or lack thereof. This information is important in determining the sufficiency of identification efforts as well as accuracy of the archival record.

Thank you for considering effects to historic properties in your project planning. Be advised that under certain circumstances, such as unanticipated discovery or a change in project description, Reclamation may have additional future responsibilities for this undertaking under 36 CFR Part 800. Thank you for seeking my comments and considering historic properties as part of your project planning. If you have any questions or concerns regarding archaeological resources, please contact Associate State Archaeologist, Kim Tanksley at (916) 445-7035 or by email at kim.tanksley@parks.ca.gov. Any questions concerning the built environment should be directed to State Historian, Kathleen Forrest at (916)445-7022 or by email at kathleen.forrest@parks.ca.gov.

Sincerely,

Carol Roland-Nawi, Ph.D.

Carol Roland-Nawi, PhD
State Historic Preservation Officer

Appendix D
Indian Trust Assets Compliance Memo

Re: Patterson I.D. 2 drains Project ITA request

From: RIVERA, PATRICIA <privera@usbr.gov> Mon, Dec 16, 2013 at 9:38 AM

To: DOUGLAS KLEINSMITH dkleinsmith@usbr.gov

Doug,

I reviewed the proposed action to approve Patterson Irrigation District's proposal to construct three pump stations and four pipelines to capture drain water and recirculate it into the PID irrigation system. Reclamation proposes to provide $1,500,000 to PID to help fund the proposed action:
• Construction of a proposed conveyance facility. The proposed conveyance facilities would include three pump stations and four pipelines totaling approximately 20,000 linear feet.
• Capture drain water from the Marshall Road Drain and Spanish Land Grant Drain and recirculate approximately 5,000 acre feet per year of drainage water into the PID irrigation system as a supplemental water supply.

The Proposed Project would capture and deliver agricultural drainwater from the Marshall Road Drain and Spanish Land Grant Drain to portions of the District's southerly conveyance system. The Project would provide the District's southerly service area with supplemental water and promote on-farm efficiency by giving the District the ability to meet the fluctuating demands of high-efficiency irrigation systems. As a result of this Project, an estimated 5000 acre-feet per year of supplemental water supply would be made available to growers in the district.

The proposed action does not have a potential to impact Indian Trust Assets. The nearest ITA is the Chicken Ranch Rancheria, approximately 48 Miles Northeast of the Project location.

Patricia Rivera
Native American Affairs Program Manager
US Bureau of Reclamation
Mid-Pacific Region
2800 Sacramento, California 95825
(916) 978-5194