ENDANGERED SPECIES ACT-LISTED WILDLIFE -- VALLEY ELDERBERRY LONGHORN BEETLE
STUDY REPORT
DON PEDRO PROJECT
FERC NO. 2299



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MID
Modesto Irrigation District

Prepared for:
Turlock Irrigation District – Turlock, California
Modesto Irrigation District – Modesto, California

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Endangered Species Act-Listed Wildlife – Valley Elderberry Longhorn Beetle Study Report

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ac .....acres

ACEC .....Area of Critical Environmental Concern

AF .....acre-feet

ACOE.....U.S. Army Corps of Engineers

ADA .....Americans with Disabilities Act

ALJ.....Administrative Law Judge

APE .....Area of Potential Effect

ARMR.....Archaeological Resource Management Report

BA .....Biological Assessment

BDCP .....Bay-Delta Conservation Plan

BLM .....U.S. Department of the Interior, Bureau of Land Management

BLM-S .....Bureau of Land Management – Sensitive Species

BMI .....Benthic macroinvertebrates

BMP .....Best Management Practices

BO .....Biological Opinion

CalEPPC .....California Exotic Pest Plant Council

CalSPA.....California Sports Fisherman Association

CAS.....California Academy of Sciences

CCC.....Criterion Continuous Concentrations

CCIC .....Central California Information Center

CCSF .....City and County of San Francisco

CCVHJV .....California Central Valley Habitat Joint Venture

CD .....Compact Disc

CDBW.....California Department of Boating and Waterways

CDEC .....California Data Exchange Center

CDFA .....California Department of Food and Agriculture

CDFG .....California Department of Fish and Game (as of January 2013, Department of Fish and Wildlife)

CDMG.....California Division of Mines and Geology

CDOF .....California Department of Finance

CDPH .....California Department of Public Health

CDPR .....California Department of Parks and Recreation
CDSOD.....California Division of Safety of Dams
CDWR.....California Department of Water Resources
CE .....California Endangered Species
CEII.....Critical Energy Infrastructure Information
CEQA.....California Environmental Quality Act
CESA .....California Endangered Species Act
CFR.....Code of Federal Regulations
cfs.....cubic feet per second
CGS.....California Geological Survey
CMAP .....California Monitoring and Assessment Program
CMC.....Criterion Maximum Concentrations
CNDDB.....California Natural Diversity Database
CNPS.....California Native Plant Society
CORP .....California Outdoor Recreation Plan
CPUE .....Catch Per Unit Effort
CRAM.....California Rapid Assessment Method
CRLF.....California Red-Legged Frog
CRRF .....California Rivers Restoration Fund
CSAS.....Central Sierra Audubon Society
CSBP.....California Stream Bioassessment Procedure
CT .....California Threatened Species
CTR.....California Toxics Rule
CTS .....California Tiger Salamander
CVRWQCB .....Central Valley Regional Water Quality Control Board
CWA .....Clean Water Act
CWHR.....California Wildlife Habitat Relationship
Districts.....Turlock Irrigation District and Modesto Irrigation District
DLA .....Draft License Application
DPRA.....Don Pedro Recreation Agency
DPS .....Distinct Population Segment
EA .....Environmental Assessment
EC .....Electrical Conductivity

EFH.....Essential Fish Habitat
EIR.....Environmental Impact Report
EIS.....Environmental Impact Statement
EPA.....U.S. Environmental Protection Agency
ESA.....Federal Endangered Species Act
ESRCD.....East Stanislaus Resource Conservation District
ESU.....Evolutionary Significant Unit
EWUA.....Effective Weighted Useable Area
FERC.....Federal Energy Regulatory Commission
FFS.....Foothills Fault System
FL.....Fork length
FMU.....Fire Management Unit
FOT.....Friends of the Tuolumne
FPC.....Federal Power Commission
ft/mi.....feet per mile
FWCA.....Fish and Wildlife Coordination Act
FYLF.....Foothill Yellow-Legged Frog
g.....grams
GIS.....Geographic Information System
GLO.....General Land Office
GPS.....Global Positioning System
HCP.....Habitat Conservation Plan
HHWP.....Hetch Hetchy Water and Power
HORB.....Head of Old River Barrier
HPMP.....Historic Properties Management Plan
ILP.....Integrated Licensing Process
ISR.....Initial Study Report
ITA.....Indian Trust Assets
kV.....kilovolt
m.....meters
M&I.....Municipal and Industrial
MCL.....Maximum Contaminant Level
mg/kg.....milligrams/kilogram

mg/L .....milligrams per liter
mgd .....million gallons per day
mi .....miles
mi^2 .....square miles
MID.....Modesto Irrigation District
MOU .....Memorandum of Understanding
MSCS.....Multi-Species Conservation Strategy
msl.....mean sea level
MVA .....Megavolt Ampere
MW .....megawatt
MWh .....megawatt hour
mya.....million years ago
NAE .....National Academy of Engineering
NAHC .....Native American Heritage Commission
NAS.....National Academy of Sciences
NAVD 88 .....North American Vertical Datum of 1988
NAWQA .....National Water Quality Assessment
NCCP .....Natural Community Conservation Plan
NEPA .....National Environmental Policy Act
ng/g .....nanograms per gram
NGOs .....Non-Governmental Organizations
NHI .....Natural Heritage Institute
NHPA.....National Historic Preservation Act
NISC .....National Invasive Species Council
NMFS.....National Marine Fisheries Service
NOAA .....National Oceanic and Atmospheric Administration
NOI .....Notice of Intent
NPS .....U.S. Department of the Interior, National Park Service
NRCS .....National Resource Conservation Service
NRHP .....National Register of Historic Places
NRI.....Nationwide Rivers Inventory
NTU .....Nephelometric Turbidity Unit
NWI.....National Wetland Inventory

NWIS .....National Water Information System
NWR .....National Wildlife Refuge
NGVD 29 .....National Geodetic Vertical Datum of 1929
O&M .....operation and maintenance
OEHHA.....Office of Environmental Health Hazard Assessment
ORV .....Outstanding Remarkable Value
PAD.....Pre-Application Document
PDO.....Pacific Decadal Oscillation
PEIR.....Program Environmental Impact Report
PGA.....Peak Ground Acceleration
PHG.....Public Health Goal
PM&E .....Protection, Mitigation and Enhancement
PMF.....Probable Maximum Flood
POAOR.....Public Opinions and Attitudes in Outdoor Recreation
ppb.....parts per billion
ppm .....parts per million
PSP.....Proposed Study Plan
QA.....Quality Assurance
QC.....Quality Control
RA.....Recreation Area
RBP.....Rapid Bioassessment Protocol
Reclamation .....U.S. Department of the Interior, Bureau of Reclamation
RM .....River Mile
RMP .....Resource Management Plan
RP.....Relicensing Participant
RSP .....Revised Study Plan
RST .....Rotary Screw Trap
RWF.....Resource-Specific Work Groups
RWG .....Resource Work Group
RWQCB.....Regional Water Quality Control Board
SC.....State candidate for listing under CESA
SCD.....State candidate for delisting under CESA
SCE .....State candidate for listing as endangered under CESA

SCT .....State candidate for listing as threatened under CESA

SD1 .....Scoping Document 1

SD2 .....Scoping Document 2

SE.....State Endangered Species under the CESA

SFP.....State Fully Protected Species under CESA

SFPUC .....San Francisco Public Utilities Commission

SHPO .....State Historic Preservation Office

SJRA .....San Joaquin River Agreement

SJRGA .....San Joaquin River Group Authority

SJTA .....San Joaquin River Tributaries Authority

SPD .....Study Plan Determination

SRA.....State Recreation Area

SRMA .....Special Recreation Management Area or Sierra Resource Management Area (as per use)

SRMP.....Sierra Resource Management Plan

SRP .....Special Run Pools

SSC .....State species of special concern

ST.....California Threatened Species under the CESA

STORET .....Storage and Retrieval

SWAMP.....Surface Water Ambient Monitoring Program

SWE .....Snow-Water Equivalent

SWRCB.....State Water Resources Control Board

TAC.....Technical Advisory Committee

TAF .....thousand acre-feet

TCP .....Traditional Cultural Properties

TDS.....Total Dissolved Solids

TID.....Turlock Irrigation District

TMDL .....Total Maximum Daily Load

TOC.....Total Organic Carbon

TRT.....Tuolumne River Trust

TRTAC .....Tuolumne River Technical Advisory Committee

UC.....University of California

USDA.....U.S. Department of Agriculture

USDOC .....U.S. Department of Commerce
USDOI .....U.S. Department of the Interior
USFS .....U.S. Department of Agriculture, Forest Service
USFWS .....U.S. Department of the Interior, Fish and Wildlife Service
USGS .....U.S. Department of the Interior, Geological Survey
USR.....Updated Study Report
UTM.....Universal Transverse Mercator
VAMP .....Vernalis Adaptive Management Plan
VELB .....Valley Elderberry Longhorn Beetle
VRM .....Visual Resource Management
WPT .....Western Pond Turtle
WSA.....Wilderness Study Area
WSIP .....Water System Improvement Program
WWTP .....Wastewater Treatment Plant
WY .....water year
µS/cm .....microSeimens per centimeter

1.0 INTRODUCTION

1.1 General Description of the Don Pedro Project

Turlock Irrigation District (TID) and Modesto Irrigation District (MID) (collectively, the Districts) are the co-licensees of the 168-megawatt (MW) Don Pedro Project (Project) located on the Tuolumne River in western Tuolumne County in the Central Valley region of California. The Don Pedro Dam is located at river mile (RM) 54.8 and the Don Pedro Reservoir formed by the dam extends 24-miles upstream at the normal maximum water surface elevation of 830 ft above mean sea level (msl; NGVD 29). At elevation 830 ft, the reservoir stores over 2,000,000 acre-feet (AF) of water and has a surface area slightly less than 13,000 acres (ac). The watershed above Don Pedro Dam is approximately 1,533 square miles (mi^2).

Both TID and MID are local public agencies authorized under the laws of the State of California to provide water supply for irrigation and municipal and industrial (M&I) uses and to provide retail electric service. The Project serves many purposes including providing water storage for the beneficial use of irrigation of over 200,000 ac of prime Central Valley farmland and for the use of M&I customers in the City of Modesto (population 210,000). Consistent with the requirements of the Raker Act passed by Congress in 1913 and agreements between the Districts and City and County of San Francisco (CCSF), the Project reservoir also includes a "water bank" of up to 570,000 AF of storage. CCSF may use the water bank to more efficiently manage the water supply from its Hetch Hetchy water system while meeting the senior water rights of the Districts. CCSF's "water bank" within Don Pedro Reservoir provides significant benefits for its 2.6 million customers in the San Francisco Bay Area.

The Project also provides storage for flood management purposes in the Tuolumne and San Joaquin rivers in coordination with the U.S. Army Corps of Engineers (ACOE). Other important uses supported by the Project are recreation, protection of the anadromous fisheries in the lower Tuolumne River, and hydropower generation.

The Project Boundary extends from approximately one mile downstream of the dam to approximately RM 79 upstream of the dam. Upstream of the dam, the Project Boundary runs generally along the 855 ft contour interval which corresponds to the top of the Don Pedro Dam. The Project Boundary encompasses approximately 18,370 ac with 78 percent of the lands owned jointly by the Districts and the remaining 22 percent (approximately 4,000 ac) is owned by the United States and managed as a part of the U.S. Bureau of Land Management (BLM) Sierra Resource Management Area.

The primary Project facilities include the 580-foot-high Don Pedro Dam and Reservoir completed in 1971; a four-unit powerhouse situated at the base of the dam; related facilities including the Project spillway, outlet works, and switchyard; four dikes (Gasburg Creek Dike and Dikes A, B, and C); and three developed recreational facilities (Fleming Meadows, Blue Oaks, and Moccasin Point Recreation Areas). The location of the Project and its primary facilities is shown in Figure 1.1-1.

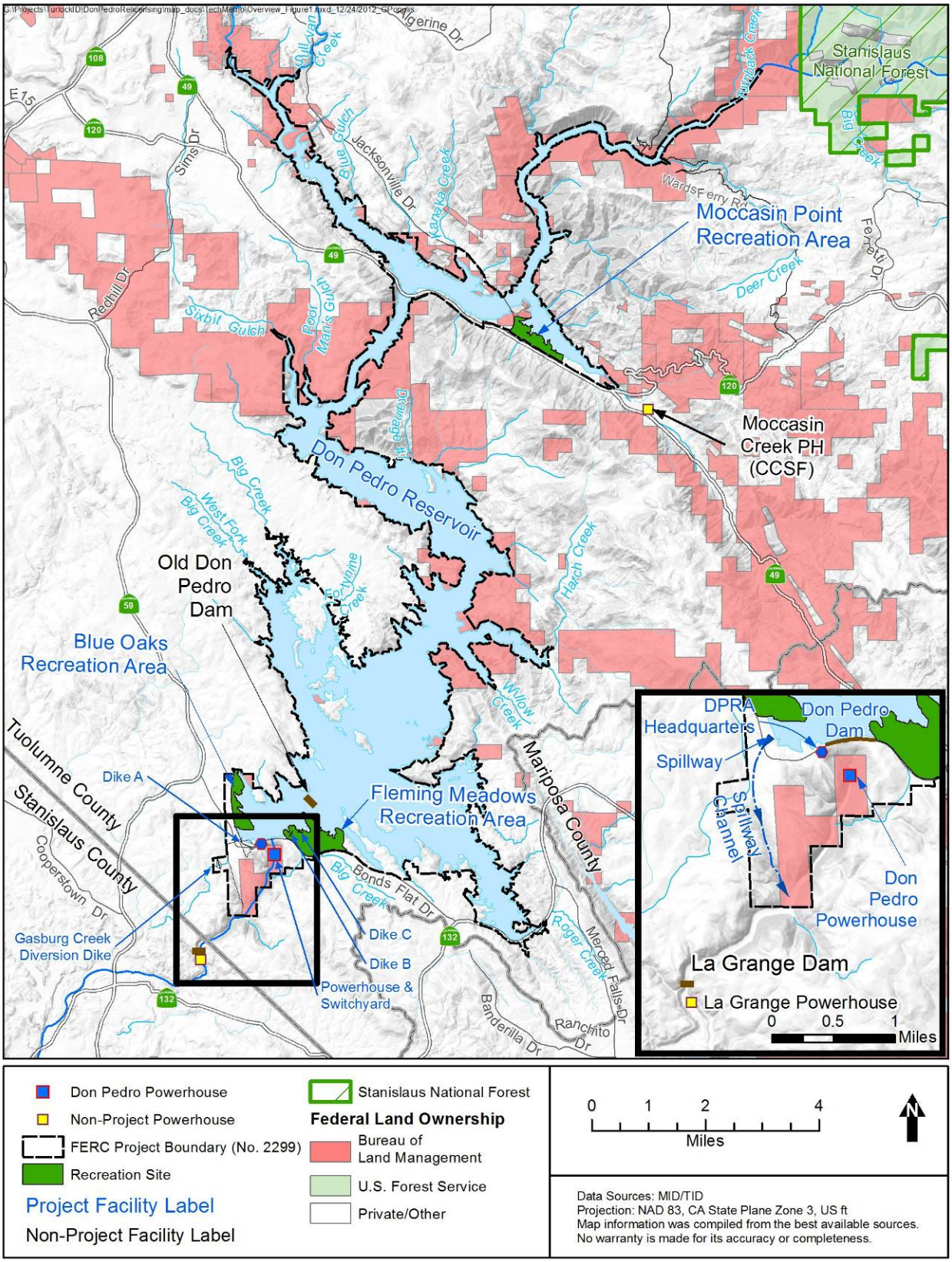

Figure 1.1-1. Don Pedro Project location.

1.2 Relicensing Process

The current FERC license for the Project expires on April 30, 2016, and the Districts will apply for a new license no later than April 30, 2014. The Districts began the relicensing process by filing a Notice of Intent and Pre-Application Document (PAD) with FERC on February 10, 2011, following the regulations governing the Integrated Licensing Process (ILP). The Districts' PAD included descriptions of the Project facilities, operations, license requirements, and Project lands as well as a summary of the extensive existing information available on Project area resources. The PAD also included ten draft study plans describing a subset of the Districts' proposed relicensing studies. The Districts then convened a series of Resource Work Group meetings, engaging agencies and other relicensing participants in a collaborative study plan development process culminating in the Districts' Proposed Study Plan (PSP) and Revised Study Plan (RSP) filings to FERC on July 25, 2011 and November 22, 2011, respectively.

On December 22, 2011, FERC issued its Study Plan Determination (SPD) for the Project, approving, or approving with modifications, 34 studies proposed in the RSP that addressed Cultural and Historical Resources, Recreational Resources, Terrestrial Resources, and Water and Aquatic Resources. In addition, as required by the SPD, the Districts filed three new study plans (W&AR-18, W&AR-19, and W&AR-20) on February 28, 2012 and one modified study plan (W&AR-12) on April 6, 2012. Prior to filing these plans with FERC, the Districts consulted with relicensing participants on drafts of the plans. FERC approved or approved with modifications these four studies on July 25, 2012.

Following the SPD, a total of seven studies (and associated study elements) that were either not adopted in the SPD, or were adopted with modifications, formed the basis of Study Dispute proceedings. In accordance with the ILP, FERC convened a Dispute Resolution Panel on April 17, 2012 and the Panel issued its findings on May 4, 2012. On May 24, 2012, the Director of FERC issued his Formal Study Dispute Determination, with additional clarifications related to the Formal Study Dispute Determination issued on August 17, 2012.

This study report describes the objectives, methods, and results of the Endangered Species Act-Listed Wildlife – Valley Elderberry Longhorn Beetle Study (TR-05) as implemented by the Districts in accordance with FERC's SPD and subsequent study modifications and clarifications. Documents relating to the Project relicensing are publicly available on the Districts' relicensing website at www.donpedro-relicensing.com.

1.3 Study Plan

The Districts' continued operation and maintenance (O&M) of the Don Pedro Project may have an adverse effect on valley elderberry longhorn beetle (*Desmocerus californicus dimorphus,* VELB). These effects may be direct (i.e., result of ground disturbing activities such as mechanical or chemical clearing of vegetation or trampling of plants), indirect (i.e., due to activities such as soil compaction which limits plant growth) or cumulative (i.e., caused by a Project activity in association with a non-Project activity, such as loss of habitat due to the introduction of invasive plants from a non-Project vector). VELB is listed as threatened under the federal Endangered Species Act (ESA).

Special-status plants, noxious weeds, and plants listed under the ESA and/or the California Endangered Species Act (CESA) were studied by the Districts in conjunction with VELB and the results of those studies are provided in Study Report TR-01, Special Status Species Plants; Study Report TR-04, Noxious Weeds; and Study Report TR-02, ESA- and CESA-listed Plants.

2.0 STUDY GOALS AND OBJECTIVES

The goal of the study was to determine the presence and distribution of VELB and potential VELB habitat within the Project study area.

The objectives of the study were to identify and map the locations of appropriate VELB habitat; classify habitat where shrubs are found as riparian or non-riparian and whether shrubs are isolated or clumped; and to document the presence or absence of VELB and VELB indicators at the time of survey.

3.0 STUDY AREA

As specified in the FERC-approved study plan, the study area included 10 drainages within the Project Boundary:[1]

- Sixbit Gulch
- Poor Man's Gulch
- Moccasin Creek
- Deer Creek
- Three Springs
- Hatch Creek
- Big Creek
- Kanaka Creek
- Drainages #7 & #8

In addition, the study included those lands within the Project Boundary that are subject to Project-related O&M or recreation activities, including high-use dispersed recreation areas. Specifically, the study area included:

- The Blue Oaks, Fleming Meadows, and Moccasin Point recreation areas and related facilities, including the 3.5-mile Don Pedro Shoreline Trail;
- High-use dispersed recreation areas as identified by Districts' staff;
- Lands within the Project Boundary designated as part of the Red Hills Area of Critical Environmental Concern;
- Don Pedro Dam, Powerhouse, and Switchyard, including related maintenance and storage facilities and the powerhouse access road;
- The Don Pedro Spillway channel and related access roads;
- The Gasburg Creek diversion dike and related access roads;
- Employee housing near Don Pedro Dam;
- Don Pedro Recreation Agency headquarters and visitor center;
- Dikes A, B and C in the vicinity of Don Pedro Dam; and
- The Ward's Ferry take-out.

The study area also includes up to 100 feet surrounding each of these Project features.

[1] This area coincides with the study area for the Districts' Wetland Habitats Study (TR-3) (TID/MID 2013).

Per the study plan, areas with unsafe terrain, as identified in the field, were not surveyed.[2] These included dangerously steep slopes, areas of thick poison oak (*Toxicodendron diversiloba*) and other areas that were unsafe for field crews to enter. This included some of the steep slopes of below the dam; a steep slope, composed of thick chaparral, at Moccasin Point Recreation Area; a piece of the Willow Creek arm, due to impenetrable chamise, steep slopes and poison oak; the very tip of the Shawmut Rd. area, due to steep slopes; the steepest sections of the Ward's Ferry area; steep slopes in the upper area of Woods Creek Arm and a section of steep slopes on the edge of the Ramos Creek area.

[2] A small percentage (5 percent) of the study area was inaccessible due to unsafe terrain (approximately 200 acres).

4.0 METHODOLOGY

The study was conducted in six steps: 1) gather data and information to prepare for the field effort, including known VELB occurrences in the Project study area; 2) conduct surveys for elderberry plants (*Sambucus* ssp.); 3) evaluate elderberry occurrences for evidence of VELB; 4) compile and provide quality assurance/quality control (QA/QC) of data, 5) consult with the Districts' operations staff and recreation personnel to identify Project O&M, or other Project-related activities that typically occur in the area of elderberry plants and have the potential to affect occurrences, and 6) prepare the report of the study.

4.1 Gather Data and Prepare for Field Effort

A literature review was conducted prior to field surveys to: 1) identify all possible VELB or VELB habitat in the study area; and, 2) identify locations where VELB or VELB habitat was previously observed, and 3) gather life history information for VELB.

Districts searched for recorded occurrences of VELB using queries of the California Natural Diversity Database (CNDDB) RareFind 4 (CDFG 2012).

The Districts located a total of four CNDDB reports spanning from 2000 to 2007. These reports pertained to two occurrences in each of two U.S. Geological Survey 7.5-minute quadrangles: Sonora and Standard. Of these, two reported VELB sightings and two reported VELB exit holes (CDFG 2012).

Life history information for VELB is provided below.

4.1.1 Valley Elderberry Longhorn Beetle (FT)

On August 8, 1980, the United States Fish and Wildlife Service (USFWS) listed VELB as threatened (Federal Register 45:52803). Critical Habitat has been designated for the species, including the American River Parkway and Sacramento Zones. The Don Pedro Project is outside of the Critical Habitat zones, but falls within the potential range of the beetle. The USFWS issued a VELB Recovery Plan on August 28, 1984 (USFWS 2009). On February 14, 2007, the USFWS completed a 5-year review, which resulted in USFWS's recommendation that the species be de-listed. In October of 2012, the USFWS began the process of reviewing the delisting proposal (USFWS 2012). VELB is not listed as threatened or endangered under the CESA, nor is it listed as a sensitive species by the United States, Bureau of Land Management (BLM).

Historically, VELB ranged throughout the California Central Valley, extending up river canyons in the Sierra Nevada foothills to an elevation of about 3,000 ft. The beetle is completely dependent upon its host plant, elderberry, for all of its life stages (i.e., eggs, larvae, and adults). Elderberry is a common component of riparian forests and adjacent uplands. An exit hole created by the larva just prior to pupation is often the only evidence of the beetle's presence. The life cycle takes 1 or 2 years to complete, with most of that time spent as larva living within the stems of the plant. Eggs are laid on elderberry leaves or bark and hatch within 2 days; the

emerged larvae live within the stems of the plants, feeding on the pith for 1 to 2 years. Adults emerge from the stems through holes made by larva prior to pupation. Adults generally emerge from late March through June and are short-lived (USFWS 2009).

The USFWS considers VELB, though wide-ranging, to be in long-term decline due to human activities that have resulted in widespread alteration and fragmentation of riparian habitats and, to a lesser extent, upland habitats which support the beetle. The primary threats to survival of the beetle include:

- Loss and alteration of habitat by agricultural conversion
- Over-grazing
- Levee construction, stream and river channelization, removal of riparian vegetation, and rip-rapping of shoreline
- Non-native animals such as the Argentine ant, which may eat the early phases of the beetle
- Recreational, industrial, and urban development (USFWS 2009).

Indiscriminant insecticide and herbicide use in agricultural areas and along road right-of-ways may be factors limiting the beetle's distribution. The age and quality of individual elderberry shrubs/trees and stands may also be a factor in its limited distribution because elderberry leaves and flowers are its only food source (USFWS 2009).

USFWS issued Conservation Guidelines in 1999 for the VELB (USFWS 1999). Under these Guidelines, elderberry plants with stems that meet the 1.0-inch-diameter threshold on or adjacent to a project site must be thoroughly searched for beetle exit holes to evaluate potential impacts to VELB habitat. Elderberry plants lacking stems 1.0 inch or greater in diameter at ground level are considered unsuitable for use by the beetle and are not protected under the Guidelines. Under the Guidelines, surveys are valid for a period of two years.

Delisting is being considered at this point because of evidence that VELB may be widespread and under less threat than when initially placed on the ESA. There are over 200 occurrences recorded for VELB, where there were only ten known at the time of listing. Additionally, the destruction of riparian areas has slowed and recovery efforts have led to the restoration and replanting of riparian areas, including with elderberry (USFWS 2012).

4.2 VELB Surveys

The Districts performed botanical surveys between March 5 and June 29, 2012. VELB surveys were done in conjunction with other botanical relicensing studies, including Special-status Plants Study (TR-01); Noxious Weeds Study (TR-04); and ESA- and CESA-listed Plants Study (TR-02). Results of those studies are provided in Study Report TR-01, Special-status Plants; Study Report TR-04, Noxious Weeds; and Study Report TR-02, ESA- and CESA-listed Plants (TID/MID 2013).

Surveys were floristic in nature and generally followed the California Department of Fish and Game's (CDFG's) *Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities* (CDFG 2009). Plants were identified using the *Jepson Manual of Higher Plants of California* (Baldwin 2012) and *Trees and Shrubs of California* (Stuart and Sawyer 2001). As detailed in the FERC-approved study, surveys were conducted using systematic techniques to cover all habitats and identify potential impacts. Surveys were conducted by random meander, meaning the entire area was surveyed without touching every square foot of land; surveyors generally walked in a zigzag through the Project study area, with greater attention and more time spent in areas likely to support elderberry plants (i.e. riparian habitat or uplands adjacent to riparian habitat). This technique is a typical method for surveying vegetation.

The Districts documented all occurrences of elderberry within the study area with global positioning system (GPS), using a Trimble GeoXT, field data forms, and geo-referenced photographs. Number of shrubs, number of stems, and stem diameters at ground level classified shrubs into one of three categories: 1) class I: greater than or equal to 1 inch but less than or equal to 3 inches, 2) class II: greater than 3 inches but less than 5 inches, and 3) class III: greater than 5 inches (USFWS 1999). Surveyors described the surrounding habitat as either riparian or non-riparian, as well as described if the plants were isolated or part of a larger grouping.

Surveyors performed VELB surveys on all elderberry plants found within the study area that contained one or more stems measuring 1 inch or greater at ground height. Each stem was searched for beetle exit holes (external evidence of beetle presence). When found, the exit holes were characterized as recent (stem or plant material shavings may be present) or not. In accordance with the study plan, the USFWS was notified by email within two weeks for each occurrence of elderberry with potential VELB boreholes.

The Districts subjected all data to QA/QC procedures including, but not limited to: daily QA/QC of field data sheets, spot-checks of transcription during data compilation, and comparison of Geographic Information Systems (GIS) maps with field notes and field maps to verify locations. All data was entered into a database by one scientist and crosschecked by a second scientist to ensure data was properly recorded. GIS maps depicting elderberry plant occurrences, Project facilities, and features were generated to verify all plant occurrence locations matched the information on the data sheets. Data corrections were noted in the project file.

After all the observed locations of elderberry plants were verified and mapped, Project operations staff were consulted to identify Project O&M and Project-related activities that typically take place in the area of and have the potential to adversely affect VELB and elderberry plant occurrences.

5.0 RESULTS

A total of 73 occurrences of elderberry plants were located; 31 occurrences were found on public lands administered by the BLM. Locations are mapped in Attachment A, Elderberry Locations: Figures 1 to 25. Potential VELB indicators (i.e., boreholes) were observed at occurrences 4, 6, 9, 10, 17, 18, 26, 31, 32, 38, 46, 47, 301 and 304.[3] Attachment B contains representative photos of some of the occurrences. Attachment C, Elderberry Table, lists field collected data for all elderberry shrub occurrences including occurrence number, presence of riparian habitat, number of shrubs, stem count and stem class, general site location, disturbances and activities in the area, and VELB indicators observed.

5.1 VELB Indicators

Potential VELB indicators were observed at 14 of the 73 occurrences, as summarized in Table 5.1-1. The remaining 59 elderberry occurrences were absent of potential VELB boreholes. Occurrences 10, 31, 32, and 46 were located on public land administered by BLM. Occurrences 4, 6, 9 and 10 were all located in the Moccasin Point Recreation Area. Two of these occurrences, 9 and 10, were located in riparian areas. Occurrences 17 and 18 both were located in non-riparian areas below Don Pedro Dam. Occurrences 31, 32 and 38 were located in non-riparian areas along or near the Jacksonville Road. Also in non-riparian areas were occurrence 26 on Hatch Creek, 46 near the Jacksonville-Harney Road and 47 near the Moccasin transmission line. Two occurrences, 301 and 304, were located in non-riparian areas on the Rogers Creek Arm of Don Pedro Reservoir.

Table 5.1-1. Elderberry plants with observed boreholes.

Occurrence	Riparian Yes|No	Stem Count[1]	Class	Number of Exit Holes	Recent Yes|No	Land Ownership	Site Location
4	No	15	II	15	No	MID/TID	Moccasin Point Recreation Area
6	No	13	II	7	No	MID/TID	Moccasin Point Recreation Area
9	Yes	10	III	43	Yes	MID/TID	Moccasin Point Recreation Area
10	Yes	1	I	2	No	BLM	Moccasin Point Recreation Area
17	No	1	III	8	No	MID/TID	Below dam
18	No	1	III	5	No	MID/TID	Beside sewage pond across from Blue Oaks Recreation Area
26	No	1	III	10	No	MID/TID	Hatch Creek
31	No	1	II	6	No	BLM	Jacksonville Road
32	No	1	II	3	No	BLM	Jacksonville Road
38	No	1	II	2	No	MID/TID	Jacksonville Road
46	No	1	III	2	No	BLM	Jacksonville-Harney Road
47	No	Unknown, as not	I, II, III	19	No	MID/TID	Moccasin transmission line

[3] Occurrence numbers were not recorded in consecutive order in the field, as occurrences were encountered and documented by different teams on different days. Each field team was issued a unique set of numbers to use.

Occurrence	Riparian Yes|No	Stem Count[1]	Class	Number of Exit Holes	Recent Yes|No	Land Ownership	Site Location
		safe to access all of plant					
301	No	18	I, II, III	8	No	MID/TID	Rogers Creek Arm
304	No	7	III	9	No	MID/TID	Rogers Creek Arm

[1] Stems one inch or greater at the base.

5.2 Project Operation and Maintenance and Recreation Activities

Consistent with the FERC-approved study plan, the Districts consulted with Project operations and recreation staff to identify specific Project O&M activities and recreation that typically occur in the area of, and have the potential to affect, elderberry plant occurrences. In addition, observations of plant disturbance were recorded in the field.

The most common observed potential stressors to surveyed elderberry plants included proximity to roads and trails (1-4, 17, 32, 33, 36, 42, 45-7, 301-4, 603-4 and 900), cattle grazing (19, 20, 24-26, 49, 301-6, 308-9, 603-4, 612 and 678) and noxious weeds (5, 6, 8-13, 39, 44-5, 603-4, 612, 901). Additionally, two elderberry occurrences (14 and 18) were located directly next to sewage treatment plants and may be subject to disturbance by Project O&M. Direct signs of disturbance to elderberry occurrences included trash within the branches and next to occurrences 301 and 302, fencing through plant branches at occurrences 6 and 18, trampling in the root areas of occurrences 18, 44 and 300, and noxious weeds directly under occurrences 39, 44-5, 603-4, 612 and 901. Less common potential stressors included reservoir operations (47 and 307), a fuel break located in the immediate vicinity (13), dumping of refuse (18, 42, 46, 301 and 302), proximity of transmission lines (18 and 309), and the proximity of housing (611).

Information gathered from consultation with Districts' staff and from field observations is summarized in Table 5.2-1.

Table 5.2-1. Project O&M, recreation, and non-Project related activities in areas with elderberry plant occurrences.

Occurrence Number	Location Description/Site Feature and Land Ownership	Activities with Potential to Affect Elderberry Plants		
		O&M Activities	Recreation Use	Other
1-6, 8-14, 44, 45, 50	Moccasin Point Recreation Area	Campsites, structures and roadsides (up to 6-10 ft adjacent to roads and turnouts) are sprayed with herbicides (generally Roundup, GoalTender and Milestone) after first soaking rain in the fall. Campgrounds and associated roads are thinned for brush by mechanical means. Prescribed burns of vegetation directly in and around developed camping areas is a seldom used vegetation management tool.	Recreation is heaviest during high water years in the summer months. Campsites are full usually only on holidays and weekends. Walk-in use area is used heavily year-round to access the reservoir.	San Francisco Public Utilities Commission (SFPUC) facility and housing in area of occurrence 4, which is maintained by SFPUC.
28, 32-36	Kanaka Point	Mow edge of road to 6-10 ft off the side to limit fire hazard.	Popular, free area for day-use, particularly fishing. People hike in both directions from parking area to access the reservoir.	Road infrequently maintained by county.
15-17, 19, 20, 24, 25, 601, 602	Powerhouse/Dam access	Structures and roadsides (up to 10 ft adjacent to roads and turnouts) are sprayed with herbicides (generally Roundup, GoalTender and Milestone) after first soaking rain in the fall. Mow down the roadsides (up to 2 feet off road) annually. Use dirt roads to the dams a few times a year, and paved roads daily.	None	Grazing.
26	Hatch Creek Arm	None	Sporadic day use recreation from road by fisherman.	ATV use. Grazing.
27, 29-30, 37-39	Jacksonville Road and surroundings	None	Sporadic day use recreation from Kanaka Point parking.	Road maintained by county.
40-41	Shawmut Road	None	This area is open to free day use. No camping. Fairly heavy use, particularly during summer months.	Road maintained by county.

Occurrence Number	Location Description/Site Feature and Land Ownership	Activities with Potential to Affect Elderberry Plants		
		O&M Activities	Recreation Use	Other
42, 46	Harney Road	None	Recreationists can drive down to the pull off above locked gate and walk down to reservoir.	Dumping off the side of the road and in the pull out area.
				Road maintained by county.
43, 605-609	Railroad Canyon, BLM	None	None	Wild horses in area.
48, 49	Drainage #7 and #8	None	None	Grazing.
47	Moccasin Transmission line	Occurrence is near reservoir maximum inundation line.	Boat-in day use.	Grazing.
				Road maintained by SFPUC.
51, 900, 901, 903		None		Grazing.
				Road maintained by SFPUC.
300	Blue Oaks Recreation Area	Prescribed burns of vegetation directly in and around developed camping areas is a seldom used vegetation management tool.	Recreation is heaviest during high water years in the summer months. Campsites are full usually only on holidays and weekends.	Past history of grazing; fencing recently repaired.
		Campsites, structures and roadsides (up to 6-10 ft adjacent to roads and turnouts) are sprayed with herbicides (generally Roundup, GoalTender and Milestone) after first soaking rain in the fall.		
		Campgrounds and associated roads are thinned for brush by mechanical means.		
301-309	Rogers Creek Arm	Occurrence 307 is near reservoir maximum inundation line.	Heavy day use in the area of pullouts along the road. Trail blazed down by occurrence 301.	Grazing.
				Illegal dumping from road.
				County-maintained road with heavy car use.
603-604	Don Pedro Bar	None	Sporadic use by recreationists boating into the area.	Grazing.
				Trails in area of both occurrences.

Occurrence Number	Location Description/Site Feature and Land Ownership	Activities with Potential to Affect Elderberry Plants		
		O&M Activities	Recreation Use	Other
611	Ramos Point	None	Sporadic use by recreationists boating into the area.	Grazing. Recreation and vegetation maintenance by housing owners above.
612	49er Bay	None	Sporadic use by recreationists boating into the area.	Grazing.
678	Willow Creek	None	None	Grazing.
18	Sewage Pond across from Blue Oaks Recreation Area	Spray around the sides with herbicides (generally Roundup, GoalTender and Milestone) after first soaking rain in the fall.	None	None

6.0 DISCUSSION AND FINDINGS

VELB surveys were conducted over approximately 3,870 ac from March 5, 2012 through June 29, 2012. Surveys were performed by several teams of botanists, working simultaneously throughout the study area. A total of 73 elderberry occurrences were observed and mapped. Of the 73, 14 had potential VELB boreholes, and one occurrence (occurrence 9) showed signs of those exit holes being recent. No VELB were observed.

FERC's Scoping Document 2 identified the following issues potentially affecting species listed under the ESA:

- Effects of project operation, including water level fluctuations, ground-disturbing activities, and maintenance on plants and wildlife species listed as threatened or endangered under the ESA.
- Effects of maintenance and use of project recreation facilities by recreationists on species listed as threatened or endangered under the ESA.
- Effects of project operation and maintenance on designated critical habitat under the ESA.

Don Pedro Project O&M includes normal operations within the currently licensed elevation range (up to 830 feet), as well as operation of three formal recreation areas (Moccasin Point, Blue Oaks, and Fleming Meadows), vegetation management within these recreation areas and Project facilities, and ongoing reservoir debris removal and disposal near Deer Creek and Harney Lane. Recreation activities occur along the majority of the shoreline and include dispersed camping, fishing and hiking. Additionally, the Districts have granted four grazing permits on a limited area within the Project Boundary, on a total of 559 acres.

Project O&M activities may have the potential to affect certain elderberry plant occurrences, based on the occurrences' proximity to Project features. Elderberry occurrences near roads, campsites, or parking areas in recreation facilities could affected by road maintenance, vegetation management, and herbicide treatment, although no effects of these activities were noted in the field. At Moccasin Point Recreation Area, occurrences 1-4, 13 and 45 are located in areas where there is the potential for disturbance (roads and/or campsites) through recreation and management activities. Occurrence 300 at Blue Oaks Recreation Area is also located in an area with disturbances (roads and/or campsites) through recreation and management activities. Occurrences 47 and 307 are located near the maximum inundation line of Don Pedro reservoir; these plants are not adversely affected by current operations, but could be affected by substantial changes in the duration or timing of inundation. Occurrences 14 and 18 are located near a sewage pond and potentially subject to disturbance by vegetation management; occurrence 18 is also on lands permitted for grazing by the Districts. Additionally, occurrences 19, 20, 24, and 25 are within lands permitted for grazing by the Districts. These did not have any evidence of VELB boreholes.

Occurrences 28 and 32-36 at Kanaka Point, 42 at Harney Road, 26 at Hatch Creek, 40-1 on Shawmut Road and 301-306 and 308 at Rogers Creek Arm are potentially subject to disturbances

caused by day-use recreation, particularly during the summer months. Similarly, occurrence 45 is located in the middle of a campground at Moccasin Point Recreation Area.

Finally, noxious weeds may represent a stressor to elderberry occurrences. Occurrences 5, 6, 8-13, 39, 44-5, 603-4, 612, and 901 were all observed to be in close proximity to noxious weeds. Noxious weed surveys conducted by the Districts (Study TR-04) found noxious weed occurrences are common throughout the Project, frequently in association with roads.

The remaining occurrences were located on reservoir shorelines or steep hillsides and generally have limited potential to be affected by Project activities, as only sporadic recreation and little to no Project O&M occur in the associated areas.

7.0 STUDY VARIANCES AND MODIFICATIONS

The study was conducted consistent with the FERC-approved ESA-listed Wildlife - VELB Study Plan (Study TR-05); no variances occurred.

8.0 REFERENCES

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